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SOME PHASES OF PROTEIN CATABOLISM AND FATIGUE.

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The work of many observers, notably that of Luciani and of Benedict and Cathcart, has shown conclusively that normally very little protein is utilized as a source of energy. Most investigators agree that muscular work is not accompanied by an increased nitrogen excretion, although there may be a marked increase some hours later. Garratt found that the maximum occurred about 12 hours after the cessation of work, and Tissie found a high excretion during the following day. This is in agreement with the lag of 24 hours reported by Atwater, Woods, and Benedict. Although it is probably true that the proteins of the cells do not commonly serve as a primary source of energy, they are nevertheless a part of the working machine, and, as such, are subject to the wear and tear experienced by the machine. It is then not surprising that to a certain extent protein catabolism is involved in muscular effort.

One may take, however, an entirely different point of view. Many of the amino-acids comprising the protein molecule are complex in structure and composition. Some of them are of interest because of the ease with which certain of their components enter into reactions involving the transfer of oxygen. Such components or side chains may reasonably be thought of as being intimately and fundamentally bound up with cellular respiration. This is particularly true of the sulphur bearing amino-acids, as has been pointed out by Mathews.

Assuming that the sulphur moiety of an amino-acid is involved in cellular respiration, one might expect an increased sulphur output, probably in the oxidized state, concomitant with any augmentation in the rate of cellular respiration. This would not necessarily involve an immediate disruption of the remainder of the protein molecule and the consequent release of nitrogen. Some time after increased

[1] Analyses made prior to Nov. 1, 1917, were done by E. C. Britton, Scientific Assistant, United States Public Health Service.

demands have ceased to be made upon the cell, possibly not until a succeeding period of sleep, it is conceivable that the impaired respiratory mechanism might be restored to its normal condition by replacing the desulphurized portion of the molecule with amino-acids of the necessary composition or structure. Such amino-acids as have given up their sulphur would be of no further service for this purpose and would therefore be de-aminized, utilized as a source of energy, and excreted simply as an exogenous oversupply of these acids. This provides a plausible explanation of the delayed nitrogen excretion which follows work, as was noted above, and forms the theoretical basis of the present research.

Practically, our immediate purpose in undertaking this problem was to determine a change in the chemical composition of the urine, which could be used as an index of fatigue in industrial workers. In view of the fact that our observations were necessarily made on factory employees engaged in their usual occupations and mode of living, it was impossible to regulate or secure accurate knowledge of the diets of our subjects. For this reason a large number of workingmen were studied in order that an approximation of the conditions existing in the average individual might be obtained. As a point of comparison we performed a similar series of determinations on men who were recovering from noncomplicated hernia operations, but who were still confined to their beds in the hospital. These, we believed, were the most readily accessible resting subjects from whom we could obtain the necessary control data.

Another element of inaccuracy was introduced by the manner in which we were obliged to obtain our specimens of urine. Because of the conditions under which these observations were made, we were unable either to obtain 24-hour samples for analysis or to know the length of the period of excretion which each specimen represented. In order to obtain a basis for comparing analyses, the following routine procedure was carried out. A morning sample was obtained shortly after the subject had reached his post for work. This represented the second voiding of the day, inasmuch as he had been instructed to empty the bladder immediately upon rising. An afternoon sample was procured shortly before work stopped for the day. The same relations were observed when hospital patients were the subjects as when the subjects were factory employees.

Part I. Sulphurs.

Determinations of the total sulphur and total sulphates were made from the point of view just outlined. Total and free phenols and ethereal sulphates were also estimated on the same specimens; but

since the purpose of these latter analyses was essentially different from that of the former, they will be described in a separate section. Naturally, the concentration of the urines tended to be greater in the afternoon than in the morning, as indicated by specific gravity determinations, so that expressing our results as grams per 100 c. c. would merely illustrate the greater evaporation of water from the skin or lungs during work. Because of the fact previously referred to, that the proteins are not essentially involved in the production of energy, and since the total nitrogen of the urine is a rough index of protein metabolism, this constituent was determined simultaneously with those already mentioned and all data were converted into parts per gram of nitrogen in order to permit a comparison of the results obtained from different specimens. The total sulphur was determined by Benedict's method, using Denis' sulphur reagent. Folin's technique was employed in estimating the total and ethereal sulphates. The total nitrogen was determined by the Kjeldahl method with copper sulphate as the catalyzer.

DISCUSSION OF RESULTS.

Those portions of the data in the extended tables at the end of the paper which are of interest for our present purpose are the morning and evening ratios of total sulphur and sulphates and the variations in the percentage of total sulphur which occurs in the oxidized state.

TABLE I.—*Morning and afternoon ratios of total sulphur and sulphate per gram of nitrogen in the urine of the controls and the entire group of workingmen.*

Occupation.	Number of subjects.	Number of experiments.	Total sulphur÷total nitrogen × 1,000.			Total sulphate÷total nitrogen × 1,000.			Total sulphate÷total sulphur × 100.		
			a. m.	*p. m.*	*p.m./a.m.*	*a. m.*	*p. m.*	*p.m./a.m.*	*a. m.*	*p. m.*	*p.m./a.m.*
Rest	15	30	80	87	109	69	69	100	86	79	92
Work	27	80	75	90	120	61	77	126	81	85	105

In Table I our experimental results, so expressed, have been summarized for the control series and for the entire group of workingmen. From this table it will be seen that the total sulphur per gram of nitrogen excreted in the afternoon was greater than that excreted in the morning in the case of both sets of men. We have interpreted this increase as resulting primarily from the ingestion of food. It is possible that the increased rate of metabolism, which was naturally present, even in the controls, was a contributing cause of this increase, though of considerably less importance than the character of the diet. Such an increase may be presumed from the diurnal temperature curve and from the slightly greater activity during the waking period.

Contrasted with the total sulphur, we find that whereas the output of total sulphate per gram of nitrogen remained practically the same in the afternoon as it was in the morning in the case of the controls, there was an increase of 26 per cent in the case of the active men. This increase, we believe, should be largely, if not wholly, attributed to the augmented cellular activity associated with increased muscular work. Correlated with the two points just noted, we find that there was a smaller proportion of the total sulphur excreted as sulphates in the afternoon than in the morning by the resting men, while the reverse is true of those who were active.

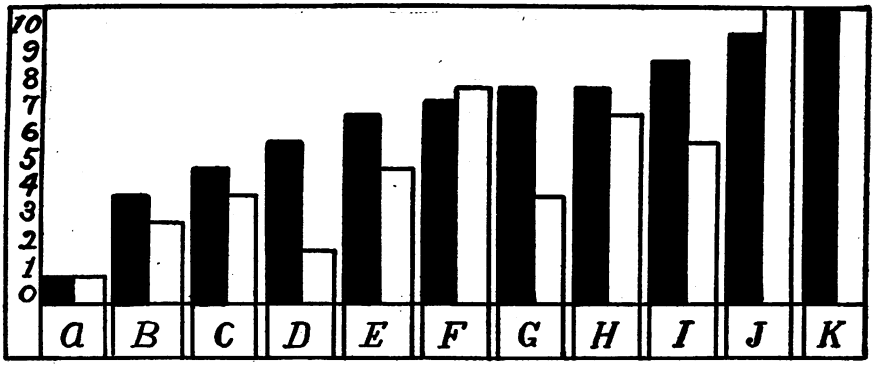

FIG. 1.—Comparison of the arduousness of occupations as estimated by four observers and as indicated by total sulphate excretion, the former being represented by solid columns and the latter by outline. A=rest; B=laboratory work; C=laboratory work and 10-mile walk; D=brazing; E=cyanide furnace; F=drop forge; G=5-pound hammer work; H=25-pound sledge work; I=ramming cores; J=excavating; K=running a 12-mile Marathon race.

In order to carry the analysis further, four men familiar with the various occupations were asked to arrange them in a list in the order of their arduousness. The values given to each occupation in the several lists were then averaged and a final list was made in which the severity of the work increased progressively from resting in bed to running a 12-mile race. In Figure 1 this arbitrary estimate of the degree of arduousness of the various occupations has been compared with a grouping derived from the morning-evening sulphate ratios. When the operations were arranged in this manner the order did not differ from that of any of the four lists more than they differed among themselves; and it will be seen that with two or possibly three exceptions there were no striking differences between the order indicated by the experiment and that arrived at by other means of estimation. The sulphate ratios from which this figure was prepared are given in column 9 of Table II.

TABLE II.—*Morning and afternoon ratios of total sulphur and sulphate per gram of nitrogen in the urine of the controls and the group of workingmen arranged in order of the arduousness of their work.*

Occupation.	Number of subjects.	Number of experiments.	Total sulphur÷total nitrogen×1,000.			Total sulphate÷total nitrogen×1,000.			Total sulphate÷total sulphur×100.		
			a.m.	*p.m.*	*p.m./a.m.*	*a.m.*	*p.m.*	*p.m./a.m.*	*a.m.*	*p.m.*	*p.m./a.m.*
Rest	15	30	80	87	109	69	69	100	86	79	92
Brazing	1	4	87	98	113	75	87	116	87	88	102
Laboratory work.	4	9	73	85	116	70	81	116	96	96	100
Laboratory work +walking	2	2	68	77	113	56	69	123	83	90	108
Using 5-pound hammer	2	10	80	99	124	67	83	124	84	85	101
General factory work	5	7	70	85	121	57	73	128	81	86	106
At cyanide furnace	2	8	77	95	123	63	82	130	82	86	105
Ramming cores	3	13	63	80	127	51	68	133	81	85	105
Using 25-pound sledge	1	5	64	81	127	49	68	139	76	84	111
Drop forge	1	2	76	108	142	58	90	155	77	83	108
Excavating	1	6	56	92	164	46	82	179	82	88	107
Running 12 miles.	3	3	96	161	168	64	130	204	66	81	123

Column 6 of the same table shows that there was a tendency for the total sulphur to increase in the same manner, but here we find a rather striking exception in the case of the bed patients. A comparison of column 6 with the last column of this table shows, however, that in most cases, especially in occupations involving heavy work, there was not only an increase in total sulphur but a relative increase in the oxidized sulphur. Here again the inactive men were an exception to the rule, as there occurs in their case a relative fall of 8 per cent in the oxidized sulphur. This is in accord with our conception of the changes in the sulphur metabolism. The increase in total sulphur we attribute largely to the ingestion of food.

The majority of the men in the hospital chosen for this study were on an ordinary mixed diet, well balanced and adequate in quantity. Hence their increase in total sulphur comparable, in magnitude, to that of the average man, is not to be regarded as unexpected. The unchanged total sulphate excretion indicates that in contrast with the working men the energy demand of the organism and its cellular respiration was not sufficiently augmented to involve the increased supply of sulphur with its subsequent oxidation.

TABLE III.—*Morning and afternoon ratios, by days, of total sulphur and sulphate per gram of nitrogen in the urine of core rammers.*

Subject.	Date of observation.	Total sulphur÷total nitrogen×1,000.			Total sulphate÷total nitrogen×1,000.			Total sulphate÷total sulphur×100.		
	1917.	*a. m.*	*p. m.*	*p.m./a.m.*	*a. m.*	*p. m.*	*p.m./a.m.*	*a. m.*	*p. m.*	*p.m./a.m.*
R_1	Nov. 5	65	91	140	54	78	144	83	85	103
	Nov. 6	52	82	158	41	72	176	80	87	109
	Nov. 7	62	79	128	53	69	130	86	88	102
	Nov. 8	61	69	113	53	62	117	86	90	105
	Average	60	80	133	50	70	140	84	87	104
R_2	Nov. 15	63	84	133	49	72	147	78	86	110
	Nov. 16	62	79	127	51	65	127	81	82	101
	Nov. 17	73	69	94	43	54	125	59	78	132
	Nov. 19	83	86	104	67	70	104	80	81	101
	Nov. 20	77	88	114	69	73	106	89	83	93
	Nov. 21	61	82	135	50	74	148	82	89	109
	Nov. 22	60	71	118	50	60	120	83	84	101
	Average	68	80	118	54	67	124	79	84	106

In Table III will be found the data of two core rammers, given by days. A study of column 8 will reveal the fact that though there was a qualitative agreement from day to day and from man to man, there was at the same time considerable individual and daily variation. Thus, R_1 showed a general tendency to run higher in sulphur and sulphate ratios than R_2, and had he alone been studied, the rammers would have been placed between the heavy sledge and drop-forge men, which would have been in almost complete agreement with the list prepared by the four observers. R_2 not only ran much lower but showed more daily variations than R_1. This we believe does not invalidate the scheme suggested for determining the arduousness of an operation, but merely shows the necessity of making a large number of observations on a considerable number of men.

In 1900 Sherman and Hawk published a paper giving data from which their sulphate excretion per gram of nitrogen could be calculated. They also gave in detail their habits of life during the experiment, and the character and amount of the food consumed. When the morning and evening output of sulphate sulphur is compared as in our experiments, we find that at 6.30 p. m. there was a rise of 16 per cent of sulphur per gram of nitrogen above that present at 9.30 a. m. They were at the time working in the laboratory. It is significant that this value is the same as that obtained for the laboratory workers in our own series.

They also gave figures from which the rate of sulphur excretion may be calculated. This has been done for the average of the data obtained on five normal days for both men, and the result is shown in Figure 2.

It will be seen from this figure that there was practically no rise in the first three hours after breakfast, but that there was a marked rise after lunch, followed by a still greater one after dinner. This they interpreted as due to the cumulative effect of the ingested sul-

phur, and a comparison with the curves obtained after high protein feeding would indicate that no doubt this is a factor. May not the effect of work be a factor as well, however? On this hypothesis the six-hour lag would represent the lag which would necessarily occur between the freeing of the sulphur from the protein molecule and its excretion, that is, the time necessary for initial metabolism, complete oxidation, and excretion.

This figure also shows that the S/N curve is roughly parallel to the curve showing the rate of sulphur excretion. Therefore, although S/N values may not be replaced by those denoting the rate of sulphur excretion, a general qualitative correspondence exists between them and permits one to get some idea of the rate of sulphur elimination even though the exact period of excretion is unknown.

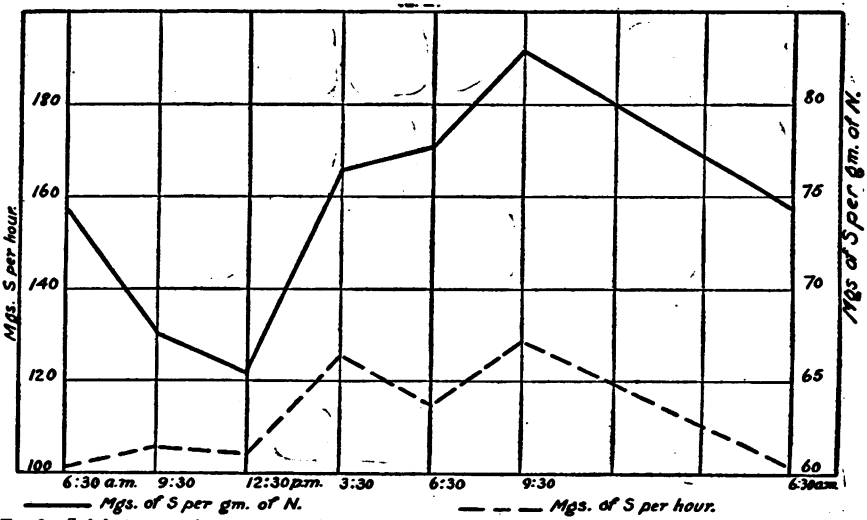

FIG. 2.—Sulphate excretion per gram of nitrogen and rate of sulphur excretion per hour, computed from data obtained by Sherman and Hawk.

Part II. Phenols.

Because of the different point of view which has been assumed in the study of the phenols, it was thought advisable to discuss the results upon phenols independently, although they were obtained upon the same subjects and from the same specimens of urine as those reported in the previous section.

Lee has obtained fatigue effects on excised muscle with indol and skatol which were analogous to those obtained with lactic acid, the classic example of the so-called fatigue substances. In the human organism, indol and skatol, together with phenol and the cresols, arise from bacterial activity in the intestine and are absorbed. Their toxicity in the free state when they are in sufficient concentration is not doubted. That the organism reduces their toxicity by conjugation with sulphuric and glucuronic acids has been established by Baumann and later workers in this field. Folin has shown within

recent years that, contrary to the general supposition, the phenols are by no means excreted quantitatively in the conjugated state. Whether or not the ability of the organism to conjugate these toxic substances is altered by muscular effort, therefore, was thought worthy of investigation.

As previously mentioned, the following analyses were made on the urine collected as described in the foregoing section: free and total phenols, ethereal sulphates, and total nitrogen. The phenols were determined by the method of Folin and Denis. The methods involved in the other analyses have been described. As in presenting the results of our sulphur analyses, the concentrations of total and conjugated phenols have been divided by the concentration of total nitrogen. This may not be strictly justifiable, for, as Moore has stated, trebling the protein intake doubles the phenol excretion; but in view of the fact that 24-hour specimens of urine were not available, and that it was not known how long a period each sample of urine represented, this was the most practical means which occurred to the authors of making afternoon and morning samples comparable. It should be pointed out, moreover, that our conclusions are drawn from relative and not absolute values.

DISCUSSION OF RESULTS.

TABLE IV.—*Morning and afternoon ratios of phenol and sulphate per gram of nitrogen in the urine of controls and the entire group of workingmen, prepared from the average of all determinations.*

Occupation.	Number of subjects.	Number of experiments.	Total phenol÷N×1,000.			Free phenol÷N×1,000.		
			a. m.	*p. m.*	*p.m./a.m.*	*a. m.*	*p. m.*	*p.m./a.m.*
Rest	15	30	47	45	96	25	25	100
Work	27	79	30	33	110	20	22	110

Occupation.	Number of subjects.	Number of experiments.	Conjugated phenol÷N×1,000.			Conjugated phenol÷total phenol×100.		
			a. m.	*p. m.*	*p.m./a.m.*	*a. m.*	*p. m.*	*p.m./a.m.*
Rest	15	30	22	20	91	47	45	96
Work	27	79	10	11	110	33	33	100

Occupation.	Number of subjects.	Number of experiments.	Total sulphate÷N×1,000.			Inorganic sulphate÷N×1,000.		
			a. m.	*p. m.*	*p.m./a.m.*	*a. m.*	*p. m.*	*p.m./a.m.*
Rest	15	30	69	69	100	64	65	102
Work	27	80	61	77	126	54	70	130

Occupation.	Number of subjects.	Number of experiments.	Ethereal sulphate÷N×1,000.			Ethereal sulphate÷total sulphate×100.		
			a. m.	*p. m.*	*p.m./a.m.*	*a. m.*	*p. m.*	*p.m./a.m.*
Rest	15	30	4.5	3.7	82	6.5	5.4	83
Work	27	80	7.1	6.8	96	11.6	8.8	76

Table IV, prepared from the average of all our determinations and classified as to whether the subjects were at rest or work, indicates the following points: The total phenol excretion of men at rest averaged slightly less in the afternoon than in the morning. The percentage conjugated was also comparably decreased, thereby making the value of free phenol excreted the same in the afternoon as in the morning, i. e., 25 mg. per gram of nitrogen. We interpret this as indicating that free phenols, to this extent at least, were without sufficient toxic effect to require their conjugation before elimination. Benedict and Theis have reported an average of 4.7 mg. of free phenols per 100 c. c. of blood for 83 specimens, but no conjugated phenols were found. The failure of the organism to conjugate a constant percentage of the phenols present is to our minds, therefore, not as important as its ability to keep the concentration of free phenols in the blood below a certain more or less definite figure. In this connection it should be noted that our observations on men at rest were made on patients recovering from hernia operations and that Benedict and Theis found the blood phenols of hernia patients to average higher than for other pathological conditions. This suggests the explanation of the fact that our average values for resting men were much higher than those for workingmen, but does not necessarily invalidate the use of these men as controls, since we are comparing morning and evening ratios rather than absolute amounts.

The total phenol excretion of men at work was greater in the afternoon than in the morning. The percentage conjugated was the same, but the amount of free phenols increased from 20 to 22 mg. per gram of nitrogen. Comparing these figures with those obtained for men at rest, several points of interest appear. First, with an increase in total phenols of from 30 to 47 mg., the percentage conjugated increased from 33 to 47. This is in keeping with the results of Dubin, who found that an increase in total phenols resulted in an increased conjugation. Second, notwithstanding the great difference between the total phenols, the free phenols of the resting men were not greatly different from those of the workingmen. This is in keeping with our conception of the purpose of detoxication by conjugation, namely, that it is a mechanism to keep the free phenols from reaching a concentration beyond which they are toxic to the organism. Viewing the unchanged percentage conjugation of phenols of men at work, one concludes that muscular effort has had no effect upon this mechanism. Centering our attention upon the slight absolute increase in free phenols, one may tentatively say that there is a tendency for the free phenols to increase, resulting from work, a tendency which, if carried sufficiently far, would reach significant

proportions. This, we shall see, actually occurs when the exercise is very severe. It should be mentioned that, as indicated by Table IV, no relationship between the total sulphate and ethereal sulphate excretion is apparent. This might have been anticipated from the fact that the total sulphates were in great excess of the substances requiring conjugation.

The ethereal sulphates are clinically regarded as an index of the extent of intestinal putrefaction. But they, together with the glucuronates, may also be taken as a measure of the degree to which detoxication is effective. We have then to consider the possibilities of combination between the phenols, using the term to include the cresols, and the class of substances represented by indol and skatol on the one hand, and at least two important means of conjugation, sulphuric and glucuronic acids, on the other hand. There are, of course, other substances, such as acetic or propionic acids, which have a share in detoxication; but since their part is a relatively unimportant one, we shall not consider them in this discussion. The possibility exists, and undoubtedly to some extent is always realized, of the following reactions taking place:

(1) Phenols (A) + sulphuric acid (B) = phenylsulphates (C).

(2) Phenols (A) + glucuronic acid (D) = phenylglucuronates (E).

(3) Indol, etc. (F) + sulphuric acid (B) = indoxylsulphates (G).

(4) Indol, etc. (F) + glucuronic acid (D) = indoxylglucuronates (H).

TABLE V.—*Conjugated phenols and ethereal sulphates, in milligram equivalents per gram of nitrogen, in the urine of men at rest and at work.*

	Men at rest.		Men at work.	
	a. m.	*p. m.*	*a. m.*	*p. m.*
Conjugated phenol in milligram equivalents	0.23	0.21	0.11	0.12
Ethereal sulphates in milligram equivalents	.14	.12	.22	.21
Difference	+.09	+.09	−.11	−.09

By making the assumption, which, though undoubtedly not wholly correct, is nevertheless useful for purposes of discussion, that the conjugated phenols may be expressed by the formula $C_6H_5OSO_3R$, we have expressed in Table V the conjugated phenols and the ethereal sulphates in milligram equivalents per gram of nitrogen. These figures show that the equivalents of conjugated phenols excreted by men at rest exceeded those of ethereal sulphates by about 0.09. This excess was the same in the afternoon as in the morning, notwithstanding the fact that the total phenols and the conjugated phenols

were less in the second period than in the first. In terms of the above equations these facts may be restated as $C+E=C+G+0.09$, or the phenylsulphates exceeded the indoxylsulphates by 0.09 equivalents. Making the same comparisons for men at work, we find that the reverse condition obtains. The ethereal sulphates were 0.11 greater in the morning and 0.09 greater in the afternoon than the conjugated phenols. In other words, for men at work $C_1+E_1+0.11=C_1+G_1$ in the morning, and $C_2+E_2+0.09=C_2+G_2$ in the afternoon.

In presenting these formulæ we have no idea that they represent a complete or entirely accurate picture of the mechanism of detoxication, but we believe that we are justified in introducing them because they permit one to draw certain significant conclusions. One of these is that the men in the hospital either excreted urines poor in the indoxylsulphate group of substances or rich in the phenylglucuronates; whereas in the men chosen for studies on fatigue the tendency to excrete relatively more of the indoxylsulphates was more pronounced. One arrives at this conclusion in the following way: Suppose that an extreme case is assumed for the resting men, in which $C=O$. G would then equal 0.14 and E, 0.23. On the other hand, assume the case where C equals its maximum, 0.14. Then $G=O$, and $E=0.09$. Thus we see that if varying values for phenylsulphates from their minimum to their maximum are assumed, the indoxylsulphates will vary from 0.14 to 0. We believe that in the case of hospital patients the assumption of maximum values for phenylsulphates and minimum values for the phenylglucuronates and indoxylsulphates more nearly represents the true condition than the reverse. This belief is based upon the fact noted by Folin that indican is seldom present in the urine of hospital patients and upon the general teaching that phenylsulphates exceed the phenylglucuronates.

In a similar way it is possible to indicate for the other class of men, the workers, that when $C=O$, $E=0.11$ and $G=0.22$. When C equals its maximum, or 0.11, $E=O$ and $G=0.11$. In other words, the indoxylsulphate group varies from 0.22 to 0.11 as the phenylsulphates pass from their minimum to their maximum values.

Again, it is more plausible to assume the case wherein C approaches its maximum than the reverse. This corresponds to the minimum indoxylsulphate value of 0.11. It is seen then that our results point to a greater excretion of indoxylsulphates in the morning by the men classed as workers than by our controls. The same relationship holds for the afternoon. We interpret this difference as attributable to differences in diet and mode of living, and believe that it indicates that the average worker unduly taxes his protective mechanism by irregular habits and injudicious eating.

TABLE VI.—*Amount of phenol excretion of subjects at rest and at work, arranged according to the arduousness of the work.*

Operation.	Number of subjects.	Number of experiments.	Total phenol+ N×1,000.			Free phenol+ N×1,000.		
			a. m.	*p. m.*	*p.m./a.m.*	*a. m.*	*p. m.*	*p.m/a.m.*
1. Rest	15	30	47	45	96	25	25	100
2. Brazing	1	4	28	32	114	15	15	100
3. Laboratory work	3	4	32	39	122	17	19	112
4. Using 5-pound hammer	2	10	28	28	100	23	23	100
5. General factory work	6	12	31	26	84	17	16	94
6. At cyanide furnace	2	8	28	29	104	18	18	100
7. Foundry, ramming cores	4	13	23	24	104	17	18	106
8. Using 25-pound sledge	1	6	30	34	113	20	23	115
9. At drop forge	1	2	36	31	86	20	18	90
10. Excavating	1	6	37	33	89	24	22	92
11. Race, running 12 miles	4	4	38	61	160	27	38	141

Operation.	Number of subjects.	Number of experiments.	Conjugated phenol+ N×1,000.			Ethereal sulphate+ N×1,000.		
			a. m.	*p. m.*	*p.m./a.m.*	*a. m.*	*p. m.*	*p.m./a.m.*
1. Rest	15	30	22	20	91	4.5	3.7	82
2. Brazing	1	4	13	17	131	5.8	4.2	73
3. Laboratory work	3	4	15	20	133	14.8	16.6	112
4. Using 5-pound hammer	2	10	5	5	100	5.3	6.2	117
5. General factory work	6	12	14	10	72	7.5	5.4	72
6. At cyanide furnace	2	8	10	11	110	6.1	8.2	134
7. Foundry, ramming cores	4	13	6	6	100	5.6	4.8	86
8. Using 25-pound sledge	1	6	10	11	110	5.3	4.3	81
9. At drop forge	1	2	16	13	81	10.1	7.2	71
10. Excavating	1	6	13	11	85	6.2	5.4	87
11. Race, running 12 miles	4	4	11	23	210	.8	5.9	738

In order to ascertain whether any progressive relationship existed between the phenols and the arduousness of the work performed, as in the case of the oxidized sulphur excretion, Table VI has been prepared, in which the empirical order of presentation adopted in the previous section has been preserved. An examination of this table shows no regularity of either increase or decrease of total, free, or conjugated phenols during the day in passing down the list of occupations. In fact, only in the case of the men who ran in the 12-mile Marathon race was there a marked change in the quantities eliminated during the period of activity. Here an increase in all quantities was found after the severe exercise. It may be of significance that the subjects in operations 2, 3, 5, 6, and 7 excreted noticeably lower amounts of free phenols than those in operations 4, 8, 9, 10, and 11. If, as we have supposed, the concentration of free phenols is the significant factor in estimating the protective ability of the organism, then, if the organism is functioning efficiently, one would not anticipate an increase in this constituent beyond narrow limits, even though the excretion of total phenols was considerably augmented. Disregarding variations of less than plus or minus 10 per cent, we find that in 8 out of 11 cases this quantity was unchanged; in 2 of the remaining cases there was a rise of 12 and 15 per cent, respectively; whereas in the case of the Marathon runners there was an increase of 41 per cent.

It should be noted that in the latter case the total phenols increased 60 per cent, and the conjugated phenols 110 per cent. This again seems to indicate that the ability of the organism to detoxify phenols increased with an increase in their total concentration. Whether or not the figure of 38 mg. of free phenols excreted represents such a concentration of free phenols in the blood or tissue that it became a factor in the phenomena of fatigue is yet to be determined.

TABLE VII.—*Total morning phenol excretion, arranged in ascending order of amount and by operation of subjects.*

	Operation number.									
	7	6	2	5	3	4	8	9	10	11
Total phenol	23	28	28	31	32	28	30	36	37	38
Conjugated phenol	6	10	13	14	15	5	10	16	13	11
Ethereal sulphate	5	6	6	8	15	5	5	10	6	6
Free phenol	17	18	15	17	17	23	20	20	24	27

In the first half of Table VII we have arranged in the ascending order of their total phenol excretion in the morning those operations in which the ethereal sulphates, conjugated phenols, and total phenols varied in the same direction. The free phenols were practically constant in these instances. It is significant that these operations, namely, 2, 3, 5, 6, and 7, are the same as those above noted for their low excretion of free phenols. In the second half of the table the remaining operations are studied. These showed an appreciably higher, relatively less constant, free phenol excretion.

TABLE VIII.—*Comparison of phenol excretion between runners and subjects engaged in an arduous occupation (core rammers).*

	Rammers.		Runners.	
	a. m.	*p. m.*	*a. m.*	*p. m.*
Total phenol in milligram equivalents	0.25	0.26	0.40	0.65
Free phenol in milligram equivalents	.18	.19	.29	.40
Conjugated phenol in milligram equivalents	.07	.07	.11	.25
Ethereal sulphate in milligram equivalents	.17	.15	.02	.18
Difference	.10	.08	.09	.07

Table VIII permits of a comparison between subjects engaged in one of the relatively more arduous occupations, that of ramming molds in a foundry, and men indulging in the excessive exercise of running 12 miles. In the former case there was a slight increase in total phenols, which was reflected in a comparable increase in free phenols. The conjugated phenols were unchanged. The men who ran in the Marathon race showed an increase of 0.25 milligram equivalents of total phenols, which was almost equally distributed between the free and conjugated phenols. The ethereal sulphates

increased 0.16 parts, indicating that not only could the 0.14 additional parts of conjugated phenols thus be accounted for, but 0.02 parts remained, which either had replaced a corresponding amount of glucuronic acid or had combined with that equivalent of indol bodies. Because of the fact that these men were in excellent physical condition, having been under the constant care of a physician and coach for several weeks, we believe that bacterial putrefaction in the intestine was at a minimum and that indol bodies were not responsible for this excess of sulphate conjugation. Rather, we think that a portion of the glucuronic and other organic acids previously instrumental in affecting conjugation was oxidized because of the unusual demand made upon the organism for energy, and that it was consequently replaced in part by the sulphates, of which, as we have shown in Part I, there was an increased quantity.

Summary.

1. The concentration of total and neutral sulphur, total, ethereal, and inorganic sulphates, total and combined phenols, and total nitrogen in the morning and afternoon urines of a number of resting individuals and individuals subjected to work of varying degrees of arduousness has been determined.

2. A tendency for a greater excretion of total sulphur per gram of nitrogen at night than in the morning has been noted in both groups of men. The greater part of this increase has been attributed to the sulphur of the food ingested. There seems, however, to be a somewhat greater output in men subjected to the more severe operations.

3. There is practically no increase in the output of sulphate sulphur per gram of nitrogen during the day in men in bed, whereas there is an undoubted increase in men subjected to labor. This increase is larger the more severe the labor.

4. There is a tendency for the proportion of total sulphur (which is eliminated as sulphate) to increase during a day of exercise; and this tendency is much more marked the more severe the exercise.

5. The severity or arduousness of any particular form of labor may be judged by the ratio of the morning to the afternoon sulphate of the urine, providing a sufficient number of determinations have been made upon several individuals.

6. Our experimental results apparently indicate that the ability of the human organism to conjugate the phenol bodies is unchanged by moderate muscular effort.

7. Directing our attention to the absolute excretion of unconjugated phenols, we find that this quantity is increased slightly by moderate work and greatly by strenuous exercise. This suggests that the free phenol excretion may be a factor in severe fatigue.

8. Theoretical considerations indicate that the average worker excretes more indol and allied substances, particularly as sulphates, than men with whom care is taken to maintain regularity of habits and a wise selection of food.

9. Because of the greater dependence of the phenol production and excretion upon the peculiarities of habit and diet of men than upon their muscular activity, no progressive change in quantities or proportion of phenol excretion could be correlated with increasing arduousness of occupation, except in the instance of strenuous exercise.

10. It is thought that simultaneous analytical studies must be made of the phenol and indol groups and the substances with which they are conjugated, notably sulphuric and glucuronic acids, before a positive statement of their relation to fatigue is justified.

TABLE IX.—*Data of individuals grouped by occupations.*

[Data are expressed as grams of nitrogen, sulphur, or phenol per 100 c. c.

GROUP I—REST.

No.	Date.	Time.	Specific gravity.	Total nitrogen.	Total sulphur.	Total sulphate.	Inorganic sulphate.	Total phenol.	Free phenol.
	1917.								
32	Sept. 4	A. M.	1.012	0.487	0.0313	0.0321	0.0224	0.0147	0.0088
B-1		P. M.	1.023	1.419	.1063	.0912	.0847	.0338	.0205
33	Sept. 6	A. M.	1.014	.828	.0659	.0516	.0466	.0265	.0150
B-2		P. M.	1.014	.814	.0640	.0499	.0459	.0276	.0153
34	Sept. 6	A. M.	1.020	1.092	.0722	.0599	.0548	.0234	.0134
B-3		P. M.	1.024	1.548	.1122	.0930	.0878	.0343	.0180
35	Sept. 6	A. M.	1.010	.638	.0255	.0205	.0183	.0136	.0075
B-4		P. M.	1.022	1.200	.0907	.0766	.0708	.0336	.0197
	1918.								
63	Mar. 12	A. M.	1.027	1.513	.1354	.1142	.1103	.0581	.0465
B-5		P. M.	1.022	1.062	.0937	.0787	.0783	.0486	.0350
66	Mar. 15	A. M.	1.025	1.233	.0788	.0687	.0679	.0436	.0264
B-5		P. M.	1.025	1.043	.0886	.0702	.0689	.0344	.0197
64	Mar. 13	A. M.	1.024	1.625	.1120	.0895	.0854	.0765	.0298
B-6		P. M.	1.023	1.818	.1434	.1181	.1137	.0668	.0302
65	Mar. 14	A. M.	1.025	1.338	.2065	.1831	.1793	.0605	.0354
B-7		P. M.	1.022	1.184	.1605	.1440	.1383	.0475	.0222
83	Apr. 11	A. M.	1.022	.532	.0472	.0374	.0346	.0431	.0233
B-8		P. M.	1.024	.913	.0659	.0570	.0462	.0570	.0246
69	Mar. 21	A. M.	1.019	1.879	.2456	.2087	.1989	.....	.....
B-9		P. M.	1.020	1.590	.2019	.1649	.1562	.....	.....
70	Mar. 22	A. M.	.....	1.432	.1820	.1549	.1468	.0484	.0276
B-9		P. M.	.....	1.394	.1128	.0887	.0813	.0625	.0337
73	Mar. 27	A. M.	1.022	1.352	.0981	.0863	.0793	.0595	.0364
B-9		P. M.	1.023	1.016	.0757	.0650	.0622	.0417	.0259
74	Mar. 28	A. M.	1.028	1.408	.1009	.0893	.0800	.0514	.0379
B-9		P. M.	1.026	1.359	.0896	.0803	.0734	.0495	.0338
75	Mar. 29	A. M.	1.029	1.555	.1134	.1001	.0916	.0610	.0412
B-9		P. M.	1.031	1.737	.1261	.1115	.1057	.0682	.0500
72	Mar. 26	A. M.	1.021	1.394	.1047	.0946	.0802	.0388	.0239
B-10		P. M.	1.028	1.478	.1336	.1204	.0906	.0503	.0305
76	Mar. 30	A. M.	1.022	1.078	.0818	.0667	.0536	.0457	.0262
B-10		P. M.	1.029	1.195	.1027	.0881	.0835	.0528	.0290
71	Mar. 23	A. M.	1.015	.812	.0734	.0578	.0555	.0366	.0232
B-11		P. M.	1.016	.896	.0758	.0615	.0584	.0430	.0234
87	Apr. 17	A. M.	1.026	1.632	.1087	.0899	.0818	.0790	.0347
B-12		P. M.	1.025	1.188	.0879	.0696	.0643	.0635	.0329
88	Apr. 18	A. M.	1.028	1.348	.0984	.0847	.0752	.0773	.0341
B-12		P. M.	1.027	.949	.0690	.0575	.0536	.0481	.0254
89	Apr. 19	A. M.	1.012	.322	.0342	.0240	.0215	.0389	.0157
B-12		P. M.	.....	.430	.0370	.0257	.0240	.0330	.0159
67	Mar. 18	A. M.	1.014	.490	.0437	.0334	.0302	.0368	.0188
B-13		P. M.	1.025	1.639	.1291	.1043	.1004	.0893	.0298
68	Mar. 19	A. M.	1.011	.427	.0302	.0160	.0158	.0271	.0132
B-13		P. M.	.....	.784	.1011	.0599	.0541	.0807	.0393
85	Apr. 13	A. M.	1.020	.672	.0590	.0464	.0437	.0500	.0220
B-14		P. M.	1.028	.833	.0616	.0611	.0561	.0565	.0264
86	Apr. 16	A. M.	1.023	.728	.0625	.0483	.0461	.0493	.0204

TABLE IX.—*Data of individuals grouped by occupations*—Continued.

GROUP I—REST—Continued.

No.	Date.	Time.	Specific gravity.	Total nitrogen.	Total sulphur.	Total sulphate.	Inorganic sulphate.	Total phenol.	Free phenol.
	1918.								
B-14		P. M.	1.021	0.532	0.0499	0.0358	0.0340	0.0416	0.0159
77	Apr. 3	A. M.	1.021	1.025	.0773	.0648	.0621	.0480	.0223
B-15		P. M.	1.026	1.646	.1519	.1270	.1261	.0664	.0245
78	Apr. 4	A. M.	1.031	1.835	.1770	.1533	.1479	.0426	.0361
B-15		P. M.	1.028	1.380	.0969	.0797	.0755	.0310	.0270
79	Apr. 5	A. M.	1.028	1.429	.1249	.1102	.1051	.0517	.0242
B-15		P. M.	1.031	1.418	.1169	.1014	.0959	.0691	.0308
80	Apr. 6	A. M.	1.030	1.411	.1049	.0848	.0819	.0763	.0332
B-15		P. M.	1.030	1.264	.1489	.1139	.1133	.0591	.0362
81	Apr. 9	A. M.	1.028	1.432	.1051	.0912	.0865	.0581	.0315
B-15		P. M.	1.014	.437	.0457	.0370	.0353	.0311	.0178
82	Apr. 10	A. M.	1.026	1.341	.1121	.0971	.0917	.0536	.....
B-15		P. M.	1.008	.350	.0265	.0196	.0185	.0156	.....
84	Apr. 12	A. M.	1.028	1.440	.1119	.0945	.0894	.0581	.0268
B-15		P. M.	1.025	.963	.0815	.0609	.0581	.0510	.0250

GROUP II—BRAZING.

	1917.								
W1	Oct. 1	A. M.	1.026	1.137	0.1195	0.1057	0.0980	0.0445	0.0235
F-1		P. M.	1.030	1.436	.1700	.1520	.1480	.0673	.0396
W2	Oct. 2	A. M.	1.022	1.193	.1010	.0827	.0782	.0357	.0181
F-1		P. M.	1.027	1.475	.1571	.1360	.1271	.0520	.0249
W3	Oct. 3	A. M.	1.034	2.466	.2271	.2029	.1838	.0622	.0355
F-1		P. M.	1.033	2.419	.1781	.1533	.1462	.0553	.0254
W4	Oct. 4	A. M.	1.026	1.373	.0898	.0769	.0702	.0300	.0198
F-1		P. M.	1.033	1.859	.1755	.1524	.1434	.0430	.0246

GROUP III—LABORATORY WORK.

W63	June 12	A. M.	.....	0.919	0.0548	0.0508	0.0426	.....	.....
E. L. S		P. M.	.....	.744	.0556	.0480	.0424	.....	.....
W64	June 21	A. M.	1.020	.818	.0564	.0508	.0448	.....	.....
E. L. S		P. M.	1.024	1.018	.0976	.0849	.0764	.....	.....
W65	July 2	A. M.	1.027	1.572	.1290	.1060	.0949	.....	.....
E. L. S		P. M.	1.029	1.656	.1432	.....	.1092	.....	.....
W66	July 16	A. M.	1.024	1.375	.1174	.1000	.0800	.....	.....
E. L. S		P. M.	1.023	1.183	.1054	.0922	.0853	.....	.....
W67	Aug. 15	A. M.	1.007	.394	.0234	.0199	.0173	0.0108	0.0055
E. L. S		P. M.	1.025	1.074	.0660	.0561	.0477	.0379	.0409
W68	July 2	A. M.	1.022	1.620	.1273	.1090	.1002	.....	.....
F. W. K		P. M.	1.022	1.442	.1355	.1170	.1095	.....	.....
W69	July 5	A. M.	1.018	1.320	.0974	.0802	.0734	.....	.....
F. W. K		P. M.	1.025	1.494	.1480	.1269	.1142	.....	.....
W70	July 5	A. M.	1.016	.840	.0595	.0465	.0410	.....	.....
F. S. L		P. M.	1.030	1.382	.1148	.0944	.0864	.....	.....
W71	Aug. 31	A. M.	1.022	.810	.0651	.0499	.0382	.0337	.0176
E. C. B		P. M.	1.021	.701	.0554	.0396	.0337	.0277	.0129

GROUP IV—LABORATORY WORK AND 10-MILE WALK.

W72	July 17	A. M.	1.023	1.305	0.0961	0.0818	0.0736	.....	.....
E. L. S		P. M.	1.025	1.217	.1062	.0943	.0850	.....	.....
W73	July 17	A. M.	1.022	1.134	.0705	.0556	.....	.....	.....
F. S. L		P. M.	1.030	1.621	.1078	.0995	.0921	.....	.....

GROUP V—USING 5-POUND HAMMER.

	1917.								
W41	Nov. 26	A. M.	1.028	1.045	0.0977	0.0841	0.0818	0.0179	0.0149
F-2		P. M.	1.032	1.304	.1722	.1585	.1530	.0249	.0264
W42	Nov. 27	A. M.	1.026	1.107	.0931	.0773	.0766	.0115	.0158
F-2		P. M.	1.030	1.869	.1791	.1593	.1467	.0168	.0221
W43	Nov. 28	A. M.	1.027	1.345	.1041	.0921	.0855	.0390	.0231
F-2		P. M.	1.030	1.506	.1622	.1486	.1391	.0607	.0481
W44	Dec. 1	A. M.	1.021	.699	.0505	.0401	.0359	.0248	.0187
F-3		P. M.	1.018	.887	.0845	.0654	.0578	.0246	.0258
W45	Dec. 3	A. M.	1.026	1.019	.0822	.0683	.0615	.0395	.0286
F-3		P. M.	1.016	.609	.0498	.0407	.0366	.0201	.0151
W46	Dec. 4	A. M.	1.026	.912	.0903	.0752	.0661	.0268	.0328
F-3		P. M.	1.029	.833	.1110	.0963	.0940	.0288	.0172

TABLE IX.—*Data of individuals grouped by occupations*—Continued.

GROUP V—USING 5-POUND HAMMER—Continued.

No.	Date.	Time.	Specific gravity.	Total nitrogen.	Total sulphur.	Total sulphate.	Inorganic sulphate.	Total phenol.	Free phenol.
	1917.								
W47	Dec. 5	A. M.	1.029	0.802	0.0874	0.0764	0.0721	0.0316	0.0208
F-3		P. M.	1.025	.939	.0934	.0770	.0727	.0287	.0223
W48	Dec. 6	A. M.	1.025	.692	.0506	.0400	.0374	.0202	.0140
F-3		P. M.	1.023	.698	.0583	.0464	.0412	.0282	.0229
W49	Dec. 7	A. M.	1.017	.588	.0442	.0272	.0248	.0151	.0115
F-3		P. M.	1.023	.997	.0806	.0700	.0645	.0275	.0216
W50	Dec. 8	A. M.	1.025	1.044	.0576	.0471	.0437	.0224	.0195
F-3		P. M.	1.025	1.103	.0848	.0714	.0674	.0239	.0157

GROUP VI—GENERAL FACTORY WORK.

W78	Aug. 15	A. M.		1.052	0.0645	0.0512	0.0403	0.0307	0.0187
S-1		P. M.		1.059	.1024	.0860	0802	.0325	.0195
W79	Aug. 22	A. M.		1.445	.0864	.0711	.0641	.0331	.0172
S-1		P. M.		1.249	.1075	.0910	.0855	.0370	.0197
W80	Aug. 15	A. M.		1.793	.1262	.1116	.0927	.0376	.0209
S-2		P. M.		1.747	.1430	.1246	.1149	.0355	.0250
W81	Aug. 22	A. M.		2.051	.1312	.1056	.0962	.0345	.0225
S-2		P. M.		1.793	.1387	.1179	.1112	.0463	.0212
W82	Aug. 15	A. M.		.826	.0719	.0586	.0536	.0228	.0138
S-3		P. M.		1.228	.1114	.0957	.0923	.0251	.0144
W83	Aug. 22	A. M.		1.464	.1184	.0964	.0845	.0500	.0236
S-4		P. M.		1.354	.1209	.0967	.0844	.0417	.0236
W84	Aug. 22	A. M.		.799	.0571	.0466	.0418	.0315	.0202
S-5		P. M.		1.179	.0942	.0802	.0747	.0345	0219

GROUP VII—CYANIDE FURNACE.

W12	Oct. 22	A. M.	1.031	1.603	0.1539	0.1332	0.1192	0.0436	0.0272
F-4		P. M.	1.036	1.683	.1631	.1455	.1281	.0500	.0286
W13	Oct. 23	A. M.	1.031	1.609	.1080	.0919	.0792	.0446	.0268
F-4		P. M.	1.033	1.448	.1276	.1068	.0961	.0422	.0243
W14	Oct. 24.	A. M	1.031	1.595	.1327	.1067	1003	.0480	.0328
F-4		P. M.	1.029	1.220	.1196	.1038	.0938	.0414	.0224
W15	Oct. 25	A. M.	1.029	1.129	.0976	.0815	.0747	.0355	.0214
F-4		P. M.	1.034	1.296	.1290	.1119	.0966	.0343	.0207
W17	Nov. 1	A. M.	1.028	1.737	.1094	.0954	.0809	.0403	.0212
F-4		P. M.	1.035	1.534	.1430	.1227	.1053	.0478	.0281
W25	Nov. 6	A. M.	1.028	1.034	.0677	.0527	.0502	.0290	.0184
F-4		P. M.	1.030	1.263	.0962	.0809	.0763	.0358	.0219
W32	Nov. 15	A. M.	1.038	2.070	.1855	.1649	.1507	.0481	.0312
F-4		P. M.	1.030	1.192	.0929	.0803	.0743	.0284	.0194
W40	Nov. 26	A. M.	1.029	.637	.0408	.0300	.0261	.0193	.0142
F-5		P. M.	1.027	1.275	.1502	.1312	.1179	.0334	.0316

GROUP VIII—RAMMING CORES.

W21	Nov. 5	A. M.	1.030	1.362	0.0831	0.0736	0.0674	0.0353	0.0206
F-6		P. M.	1.033	1.540	.1406	.1202	.1125	.0408	.0272
W22	Nov. 6	A. M.	1.029	1.611	.0830	.0647	.0615	.0343	.0227
F-6		P. M.	1.027	1.481	.1215	.1064	.1018	.0572	.0372
W23	Nov. 7	A. M.	1.028	1.383	.0858	.0735	.0684	.0369	.0227
F-6		P. M.	1.028	1.513	.1193	.1024	.0991	.0503	.0310
W24	Nov. 8	A. M.	1.028	2.079	.1277	.1083	.1016	.0536	.0328
F-6		P. M.	1.030	1.471	.1013	.0916	.0823	.0421	.0307
W29	Nov. 15	A. M.	1.021	.609	.0375	.0288	.0275	.0274	.0149
F-7		P. M.	1.027	1.023	.0858	.0741	.0691	.0281	.0204
W30	Nov. 16	A. M.	1.028	1.200	.0747	.0608	.0540	.0292	.0214
F-7		P. M.	1.027	.857	.0679	.0559	.0422	.0247	.0194
W31	Nov. 17	A. M.	1.007	.106	.0079	.0047	.0032	.0125	.0089
F-7		P. M.	1.026	.893	.0618	.0482	.0432	.0225	.0180
W33	Nov. 19	A. M.	1.021	.557	.0465	.0374	.0327	.0167	.0140
F-7		P. M.	1.028	.958	.0827	.0677	.0603	.0327	.0243
W34	Nov. 20	A. M.	1.022	.657	.0507	.0453	.0363	.0202	.0160
F-7		P. M.	1.028	1.135	.1001	.0836	.0794	.0299	.0255
W35	Nov. 21	A. M.	1.025	1.016	.0619	.0509	.0439	.0231	.0192
F-7		P. M.	1.029	1.149	.0948	.0848	.0749	.0233	.0211
W36	Nov. 22	A. M.	1.017	.532	.0322	.0263	.0219	.0105	.0103
F-7		P. M.	1.026	.922	.0657	.0555	.0514	.0219	.0162
W37	Nov. 21	A. M.	1.024	.634	.0448	.0321	.0304	.0135	.0116
F-8		P. M.	1.033	1.357	.1076	.0918	.0872	.0260	.0222
W39	Nov. 23	A. M.	1.028	1.149	.0551	.0493	.0455	.0198	.0193
F-8		P. M.	1.033	1.459	.1254	.1013	.0926	.0328	.0303

TABLE IX.—*Data of individuals grouped by occupations*—Continued.

GROUP IX—USING 25-POUND SLEDGE.

No.	Date.	Time.	Specific gravity.	Total nitrogen.	Total sulphur.	Total sulphate.	Inorganic sulphate.	Total phenol.	Free phenol.
	1917.								
W51	Dec. 10	A. M.	1.023	1.604	0.1084	0.0800	0.0740	0.0418	0.0252
F-9		P. M.	1.028	1.191	.0978	.0863	.0815	.0273	.0224
W53	Dec. 12	A. M.	1.020	1.026	.0615	.0500	.0435	.0212	.0148
F-9		P. M.	1.027	1.240	.0993	.0837	.0789	.0400	.0229
W54	Dec. 13	A. M.	1.013	.539	.0295	.0236	.0217	.0178	.0100
F-9		P. M.	1.027	1.320	.0997	.0870	.0801	.0357	.0243
W55	Dec. 14	A. M.	1.013	.444	.0279	.0226	.0204	.0146	.0096
F-9		P. M.	1.025	.913	.0796	.0686	.0632	.0185	.0157
W56	Dec. 15	A. M.	1.013	.252	.0195	.0126	.0105	.0102	.0076
F-9		P. M.	1.024	.731	.0583	.0448	.0424	.0361	.0179
			GROUP X—DROP FORGE.						
W9	Oct. 16	A. M.	1.020	0.808	0.0485	0.0374	0.0323	0.0315	0.0140
F-10		P. M.	1.023	1.105	.0958	.0773	.0713	.0318	.0191
W10	Oct. 18	A. M.	1.023	.867	.0788	.0610	.0489	.0289	.0197
F-10		P. M.	1.033	1.614	.2096	.1793	.1646	.0532	.0310
			GROUP XI—EXCAVATING.						
W57	Dec. 17	A. M.	1.019	0.731	0.0372	0.0293	0.0239	0.0392	0.0278
F-11		P. M.	1.028	1.313	.1548	.1366	.1247	.0556	.0353
W58	Dec. 18	A. M.	1.029	1.663	.0985	.0809	.0698	.0630	.0323
F-11		P. M.	1.033	1.586	.1379	.1250	.1194	.0510	.0327
W59	Dec. 19	A. M.	1.024	1.243	.0741	.0607	.0528	.0482	.0292
F-11		P. M.	1.032	1.604	.1446	.1300	.1210	.0454	.0357
W60	Dec. 20	A. M.	1.012	.490	.0251	.0196	.0169	.0185	.0135
F-11		P. M.	1.028	1.150	.1054	.0938	.0889	.0321	.0231
W61	Dec. 21	A. M.	1.028	1.635	.0807	.0679	.0583	.0372	.0280
F-11		P. M.	1.029	1.233	.1115	.0958	.0899	.0364	.0276
W62	Dec. 22	A. M.	1.028	1.410	.0887	.0649	.0566	.0437	.0291
F-11		P. M.	1.032	1.370	.1045	.0920	.0849	.0528	.0304
			GROUP XII—RUNNING 12 MILES.						
	1918.								
M-1	May 4	A. M.	1.027	1.034	0.0692	0.0563	0.0543	0.0369	0.0211
		P. M.	1.033	1.284	.2008	.1665	.1568	.0658	.0375
M-2	May 4	A. M.	1.021	.710	.....	.....	.....	.0278	.0274
		P. M.	.....	.742	.....	.....	.....	.0658	.0421
M-3	May 4	A. M.	1.022	1.116	.1050	.0647	.0646	.0327	.0222
		P. M.	1.034	1.191	.2120	.1651	.1621	.0577	.0421
M-4	May 4	A. M.	1.029	.630	.0800	.0493	.0492	.0294	.0179
		P. M.	1.024	.826	.1234	.1006	.0942	.0462	.0272

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SLEEP REQUIREMENTS OF CHILDREN.

The Public Health Service has received a number of inquiries from mothers from time to time regarding the amount of sleep required by children at different age periods. It has been a matter of common observation that the average mother is quite ignorant of the importance of sleep from the standpoint of growth and development of young children. In fact, no nutrition worker can hope to secure successful results in the conduct of nutrition classes without due insistence that the child obtain the required amount of sleep. In addition to the damage to the nervous system occasioned by stress and excitement usually associated with late hours, it will be found on inquiry that fidgety and nervous children are also suffering from "sleep hunger."

The London County Council has issued a leaflet on children's sleep, which is presented herewith for the information of those who are interested in this problem.

"1. Medical authorities and others agree that school children need the following amount of sleep:

Age in years.	Hours of sleep required.
4	12
5 to 7	11–12
8 to 11	10–11
12 to 14	9–10

"2. Children grow mainly while sleeping or resting. *Do you want your children to grow up stunted?*

"3. Tired children learn badly, make little progress at school, and often drift to the bottom of the class. *Do you want your children to grow up stupid?*

"4. When children go to bed late their sleep is often disturbed by dreams and they do not get complete rest. *Do you want your children to sleep badly and become nervous?*

"5. Sufficient sleep draws a child onward and upward in school and in home life. Insufficient sleep drags it backward and downward. *Which way do you want your child to go?*

"6. Tiresome children are often only tired children. *Will you put the truth of this to the test?*

"7. Time spent out of bed means more wear and tear to children's clothes and boots. *Why not save such wear and tear?*

"8. A tired mother might get a quiet hour or two if the children were in bed by 6.30 p. m. *Why not take advantage of this?*

"9. The fact that a neighbor's child is sent to bed too late is not a good reason for sending your child to bed too late. *Two wrongs don't make a right, do they?*

"10. Going to bed late has by now become a bad habit, which may be difficult to cure. *Will you persevere till you succeed in curing it?*

THE RÔLE OF LIVE STOCK IN MALARIA PROPHYLAXIS.

Of interest in connection with the experiments made by Dr. C. W. Metz, Carnegie Institution of Washington, Collaborating Biologist, United States Public Health Service, in 1918 and 1919, an account of which was published in the Public Health Reports (vol. 35, No. 34), August 20, 1920, under the title "On the possibilities of using mosquito traps in antimalaria work," the following abstract of an article by Dr. E. Roubaud is of interest.

The article "Les conditions de nutrition des Anophéles en France (*Anopheles maculipennis*) et le rôle du bétail dans la prophylaxie du paludisme" appeared in the *Annales de l'Institut Pasteur* (vol. 34, No. 4), April, 1920. The abstract here given is taken from the *Tropical Diseases Bulletin* (vol. 16, No. 2), August 15, 1920.

"The author has been much impressed by the spontaneous disappearance of malaria in the settled parts of western Europe without any simultaneous extinction of the local species of Anopheles, and, in seeking for particular explanations of the phenomenon, he is again impressed by the fact that the common insect carrier, *Anopheles maculipennis*, has among other significant propensities a preference for the blood of domestic animals. As a consequence he has here elaborated with great sagacity and skill a theory of the natural protective function of farm animals against malaria; and the paper is well worthy of the most attentive perusal *in extenso*, for even those who reasonably dissent from the implied major premise, that a preference for one species can not have any other result than protection to another species, will find the argument stimulating and suggestive in a high degree and in many directions.

"Among the significant habits of *Anopheles maculipennis*, as observed in the settled parts of Europe, are, besides a marked natural preference for the blood of cattle, horses, etc., a strong reluctance to bite in the open, notwithstanding its daily-recurrent after-sundown flights abroad, and a corresponding predilection to seek its hosts in their sheds and stables. These habits are specifically characteristic in many parts of western Europe, where, indeed, the species is much oftener noticed as a larva than as an adult, the doings of the adult in a state of nature having until lately been so little observed that the older dipterologists doubted its being a blook sucker at all.

"In the Department of La Vendée, where the conditions under which *Anopheles maculipennis* lives are far from uniform, the author has been able to test his theory by the method of concomitant variations. The species is found all over the Department: in the extensive marshy tracts, the adults are amazingly abundant, though larvæ are not at all conspicious in the spreading waters; in the pastoral tracts beyond the marshes, the larvæ are easily found in their limited breeding places, though the adults are not nearly so evident. In the pastoral tracts, cattle are plentiful, the insects and man are seldom found in contact, and malarial fevers are becoming more and more a memory: in the marsh tracts cattle are not so numerous nor so generally folded at night, and the insects come into human habitations, where they are sometimes a very plague.

"Thus, in La Vendée, the author demonstrates the working of an 'animal prophylaxis' progressing in efficiency with the progressive diminution of the 'anopheline density'—a state of affairs which in some other parts of Europe has culminated in equilibrium.

"The author proposes that along with the approved measures for reducing anopheline density in countries still notoriously malarious, the organization of 'animal prophylaxis' should be undertaken. He remarks that in some parts of the world enough is already known of the preferences of the dangerous local Anopheles for certain local domestic animals to warrant the deliberate employment of the shelters of these animals as gigantic traps. The first step in every case is an accurate study of the habits and predilections of each Anopheles species and of its relations to its preferential host; and it is this emphatic insistence upon, and logical demonstration of, the necessity of a sound basis in pure biology for rational sanitary enterprise that gives this paper a more than ordinary value."

BIRTH STATISTICS AND INFANT MORTALITY, 1919.[1]

PRELIMINARY REPORT OF THE BUREAU OF THE CENSUS FOR THE BIRTH REGISTRATION AREA.

In the birth registration area of the United States, exclusive of Rhode Island, which failed to send in transcripts of birth certificates, 1,365,585 infants were born alive in 1919. The total number of deaths in the same area was 791,732, the births exceeding the deaths by 573,853, or 72.5 per cent.

Birth Registration Area.

The birth registration area was established in 1915, when it comprised only 10 States, the 6 New England States, New York, Pennsylvania, Michigan, and Minnesota, and the District of Columbia. In 1916 Maryland was added, and in 1917 Virginia, North Carolina, Kentucky, Ohio, Indiana, Wisconsin, Kansas, Utah, and Washington were added. No States were added in 1918, but in 1919 Oregon and California, covering the Pacific coast area, were admitted, and South Carolina, which extended the area along the Atlantic coast, was added, making the per cent of estimated population included about 58.

Comparison.

The number of births for the year 1919 compared with 1918 shows a decrease of 7 per cent in the registration area. Each State shows a decrease, the per cent ranging from less than 1 in Maryland to 10 in Utah and Wisconsin. This is in marked contrast to previous years, as the number of births had increased from year to year.

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[1] A similar summary for 1918 was published in Public Health Reports for May 14, 1920, pp. 1149-1152.

Infant Mortality.

The infant mortality rate (number of deaths of infants under 1 year of age per 1,000 born alive) is 87 in 1919 and is the lowest infant mortality rate on record in the birth registration area. Among the States these rates range from 63 in Oregon and Washington to 113 in South Carolina.

The foregoing are among the salient facts brought out in the accompanying table.

Births and infant mortality, 1919.

Area.	Number of births.	Deaths of infants under 1 year of age per 1,000 live births.
Registration area, total	1,365,585	87
STATES.		
California	56,527	70
Connecticut	33,912	86
Indiana	59,286	79
Kansas	36,373	70
Kentucky	57,737	82
Maine	15,496	91
Maryland	33,972	105
Massachusetts	87,817	88
Michigan	83,910	90
Minnesota	51,942	67
New Hampshire	8,778	93
New York	226,108	84
North Carolina	73,854	84
Ohio	113,054	90
Oregon	13,540	63
Pennsylvania	207,905	100
Rhode Island	[1]	[1]
South Carolina	44,624	113
Utah	13,040	71
Vermont	7,032	85
STATES—continued.		
Virginia	60,785	91
Washington	25,112	63
Wisconsin	54,781	80
CITIES.		
California:		
Los Angeles	9,130	67
San Francisco	8,369	62
Washington, D. C.	8,180	85
Baltimore, Md.	17,539	98
Boston, Mass.	18,793	97
Detroit, Mich.	25,625	97
Minneapolis, Minn.	8,126	65
Buffalo, N. Y.	12,694	110
New York City	130,308	81
Cincinnati, Ohio	6,939	88
Cleveland, Ohio	18,393	95
Philadelphia, Pa.	41,924	91
Pittsburgh, Pa.	14,465	114
Milwaukee, Wis.	10,173	101

[1] Figures for Rhode Island for 1919 are not shown because that State failed to furnish transcripts for the entire year.

PRINCIPAL CAUSES OF DEATH, JULY AND AUGUST, 1920.

The accompanying table is reprinted, by permission, from the Statistical Bulletin of the Metropolitan Life Insurance Co. for September, 1920. The figures are based on the strength of approximately 13,000,000.

Although these rates apply to a selected group, they give comparative mortality conditions for the periods covered.

During August, there was practically no change from the low death rate shown in this same group for July, namely 8.2 per 1,000. For the last four months the rate has been well below 10 per 1,000.

Death rates per 100,000 for principal causes, July and August, 1920, and year 1919.

[Industrial Department, Metropolitan Life Insurance Co.]

Cause of death.	Rate per 100,000 lives exposed.		
	August, 1920.	July, 1920.	Year 1919.
Total, all causes	817.9	815.5	1,063.0
Typhoid fever	8.2	5.6	7.3
Measles	3.2	7.5	3.5
Scarlet fever	3.2	2.7	3.9
Whooping cough	6.6	4.8	3.2
Diphtheria	12.1	12.4	20.9
Influenza	5.8	8.2	96.9
Tuberculosis (all forms)	120.1	132.5	156.5
Cancer	67.4	67.8	67.0
Meningitis (all forms)	6.1	5.7	6.4
Cerebral hemorrhage	51.0	48.3	59.8
Organic diseases of heart	95.0	100.7	113.9
Pneumonia (all forms)	31.7	34.0	117.2
Other respiratory diseases	12.1	11.4	17.0
Diarrhea and enteritis	30.2	18.0	16.9
Bright's disease	60.7	63.7	73.5
Puerperal state	20.0	19.3	20.0
Suicides	5.9	6.1	6.8
Homicides	6.8	5.3	6.9
Other external casuses (excluding suicides and homicides)	76.2	72.9	80.4
Traumatism by automobile	14.5	13.5	10.7
War deaths	(1)	(1)	16.6
All other causes	195.5	188.9	184.9

[1] Less than 0.05 per 100,000.

ALABAMA STATE BOARD OF HEALTH HELD TO BE A LEGAL BODY.[1]

The State Board of Health of Alabama was attacked on the ground that, as constituted by the statutes of Alabama since 1875, it "is an illegal body, because it is in fact a private corporation, and because the legislature can not make such a private corporation a repository of governmental powers, even for purely administrative purposes."

Under the statutes the Medical Association of the State of Alabama is the State board of health, and the board of censors of that association is the State committee of public health. The State board of health elects the State health officer and fixes his term of office and salary. When the State board of health is not in session, the State committee of public health acts for said board, and when the committee is not in session, the State health officer acts for the board and committee.

The Supreme Court of Alabama held "that the State board of health is a legal body, lawfully empowered, and that it is entitled, through its legally qualified State health officer, to receive and, within the law, to expend the money appropriated thereto by the

[1] Parke et al. *v.* Bradley, State Treasurer, et al. (86 South., 28).

legislature." The reasoning of the court is shown by the following excerpts from the opinion:

A consideration of the statutes which create and organize the State board of health will at once disclose the fundamental fallacy in the contention of complainants. Whether the medical association of the State be regarded as a private or a public or as quasi public corporation is, we think, wholly immaterial; for that association, as such, is not invested with any power or authority whatever. On the contrary, recognizing its peculiar aptitude for the important and responsible service required, the State has availed itself of a ready-made organization of professional and practical medical scientists and has by legislative fiat converted it bodily into a State board of health, and to this public board, not to the State medical association, the legislature has granted authority and jurisdiction in the premises. (State *v.* Sanders, 187 Ala., 79; 65 South., 378; L. R. A., 1915A, 295.)

We are advised of no constitutional inhibition against such legislative action. The implied limitation against any delegation by the legislature of its lawmaking power is in no way involved or concerned; * * *

The chief point of attack in the structure of the State Board of Health of Alabama is in the mode of selecting its members, the objection being that in effect they are selected by the vote of members of the medical association of the State who, with respect to such action, are acting in a private capacity, in accordance with the rules of their association and without responsibility to the State or to the people. Conceding that this is true, and admitting the moral force of the objection, we are still unable to see that any constitutional inhibition is thereby violated. * * *

It is to be observed that the power of private corporate selection here complained of is indirect and not immediate, for, after all, the legislature designates the board of health, though it selects therefor a corporate organization whose individual membership is predetermined by the rules of that corporation. But, even so, there is a legislative adoption of those rules as the appropriate mode of selection, and it is clearly within the power of the legislature to direct and formulate those rules and to change them at its pleasure. * * *

We might have conceded, for the purposes of the above discussion, that the Medical Association of the State of Alabama was and is a private corporation, without affecting our conclusion. We are, nevertheless, of the opinion, having regard to its organization, aims, and activities, and its relation to the State board of health and to the public welfare in general, that it is a quasi public corporation, charged with duties and responsibilities which it can not evade, and is therefore, even under a much narrower construction of legislative power than we have accorded, an appropriate agency for service in the administration of the health laws of the State. * * *

DEATHS DURING WEEK ENDED OCT. 2, 1920.

[From the "Weekly Health Index," Oct. 5, 1920, issued by the Bureau of the Census, Department of Commerce.]

Deaths from all causes in certain large cities of the United States during the week ended Oct. 2, 1920, infant mortality (per cent), annual death rate, and comparison with corresponding week of preceding years.

City.	Population Jan. 1, 1920, subject to revision.	Week ended Oct. 2, 1920.		Average annual death rate per 1,000.[2]	Per cent of deaths under 1 year.	
		Total deaths.	Death rate.[1]		Week ended Oct. 2, 1920.	Previous year or years.[2]
Akron, Ohio	208,435	29	7.3	[3]6.9	27.6	[3]15.9
Albany, N. Y	113,344	42	19.3	C 12.5	9.5	C 11.1
Atlanta, Ga	200,616	67	17.4	C 12.4	17.9	C 8.5
Baltimore, Md	733,826	194	13.8	A 15.0	16.5	A 21.7
Birmingham, Ala	178,270	53	15.5	A 13.3	15.1	A 11.6
Boston, Mass	747,923	196	13.7	A 15.2	17.3	A 20.8
Bridgeport, Conn	143,152	28	10.2	A 13.0	14.3	A 21.3
Buffalo, N. Y	506,775	107	11.0	C 11.2	20.6	C 19.4
Cambridge, Mass	109,456	30	14.3	A 13.1	20.0	A 22.8
Chicago, Ill	2,701,705	509	9.8	A 12.6	20.2	A 20.2
Cincinnati, Ohio	401,247	86	11.2	C 12.8	9.3	C 11.2
Cleveland, Ohio	796,836	160	10.5	C 10.3	23.1	C 16.1
Columbus, Ohio	237,031	63	13.9	C 11.8	14.3	C 22.6
Dallas, Tex	158,976	24	7.9	A 8.6	16.7	A 10.4
Dayton, Ohio	153,830	32	10.8	C 9.6	28.1	C 21.4
Denver, Colo	256,491	88	17.9	A 11.5	11.4	.....
Detroit, Mich	993,739	181	9.5	.....	22.7	.....
Fall River, Mass	120,485	48	20.8	C 7.8	22.9	C 27.8
Grand Rapids, Mich	137,634	31	11.7	C 9.2	29.0	C 12.5
Hartford, Conn	138,036	38	14.4	.....	18.4	.....
Indianapolis, Ind	314,194	83	13.8	C 10.9	9.6	C 18.5
Jersey City, N. J	298,079	69	12.1	C 10.6	23.2	C 28.3
Kansas City, Kans	101,177	26	13.4	.....	30.8	.....
Kansas City, Mo	324,410	63	10.1	C 10.9	34.9	C 13.4
Los Angeles, Calif	576,673	125	11.3	A 12.1	7.2	A 8.7
Louisville, Ky	234,891	50	11.1	C 14.7	18.0	C 10.6
Lowell, Mass	112,479	32	14.8	A 16.2	37.5	A 36.8
Milwaukee, Wis	457,147	90	10.3	A 11.1	23.3	A 20.8
Minneapolis, Minn	380,582	78	10.7	C 8.3	15.4	C 13.3
Nashville, Tenn	118,342	29	12.8	C 15.9	17.2	C 8.3
Newark, N. J	414,216	75	9.4	C 10.0	17.3	C 19.0
New Bedford, Mass	121,217	18	7.7	A 15.2	38.9	A 43.2
New Haven, Conn	162,519	30	9.6	C 11.0	10.0	C 20.6
New Orleans, La	387,219	98	13.2	A 17.0	9.2	A 12.1
New York, N. Y	5,620,048	1,054	9.8	C 10.3	16.0	C 17.7
Norfolk, Va	115,777	12	5.4	.....	16.7	.....
Oakland, Calif	216,361	44	10.6	A 12.1	20.5	A 12.2
Philadelphia, Pa	1,823,158	413	11.8	[3]12.7	16.7	[3]18.2
Pittsburgh, Pa	588,193	139	12.3	C 12.9	23.7	C 23.4
Portland, Oreg	258,288	50	10.1	C 9.8	8.0	C 12.5
Providence, R. I	237,595	56	12.3	C 10.3	14.3	C 23.4
Richmond, Va	171,667	50	15.2	C 16.3	32.6	C 24.5
Rochester, N. Y	295,750	50	8.8	C 9.1	10.0	C 15.7
St. Louis, Mo	772,897	149	10.1	C 11.3	14.8	C 7.2
St. Paul, Minn	234,595	39	8.7	C 8.3	15.4	C 13.5
Salt Lake City, Utah	118,110	24	10.6	A 9.3	25.0	.....
San Francisco, Calif	506,676	104	10.7	C 12.2	10.6	C 6.8
Spokane, Wash	104,204	17	8.5	C 11.0	.....	C 13.6
Springfield, Mass	129,338	35	14.1	.....	20.0	.....
Syracuse, N. Y	171,647	43	13.1	C 11.7	11.6	C 26.3
Toledo, Ohio	243,164	55	11.8	A 16.0	25.5	A 17.2
Trenton, N. J	119,289	28	12.2	A 16.8	28.6	A 21.8
Washington, D. C	437,571	101	12.0	A 14.1	24.8	A 13.6
Worcester, Mass	179,754	46	13.3	C 10.3	47.8	C 11.4
Yonkers, N. Y	100,176	20	10.4	A 12.1	30.0	A 26.9
Youngstown, Ohio	132,358	28	11.0	.....	17.9	.....

[1] Annual rates per 1,000 population.
[2] "A" indicates data for the corresponding week of the years 1913 to 1917, inclusive. "C" indicates data for the corresponding week of the year 1919.
[3] Data are based on statistics of 1915, 1916, and 1917.

Summary of information received by telegraph from industrial insurance companies for week ended Oct. 2, 1920.

Policies in force	44,692,241
Number of death claims	6,988
Death claims per 1,000 policies in force, annual rate	8.2

PREVALENCE OF DISEASE.

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

UNITED STATES.

CURRENT STATE SUMMARIES.

Telegraphic Reports for Week Ended Oct. 9, 1920.

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

ALABAMA.

	Cases.
Cerebrospinal meningitis	4
Dengue	27
Diphtheria	58
Hookworm	15
Malaria	27
Mumps	7
Pellagra	2
Scarlet fever	17
Smallpox	8
Tuberculosis	17
Typhoid fever	20

ARKANSAS.

Chicken pox	2
Diphtheria	54
Hookworm	3
Influenza	9
Malaria	351
Measles	19
Ophthalmia neonatorum	1
Pellagra	6
Scarlet fever	20
Trachoma	6
Tuberculosis	15
Typhoid fever	44
Whooping cough	35

CONNECTICUT.

Cerebrospinal meningitis	4
Chicken pox	17
Diphtheria:	
Hartford	14
New Haven	9
Waterbury	7
Scattering	32
Dysentery	1
Influenza	1
Lethargic encephalitis	1

CONNECTICUT—continued.

	Cases.
Measles	10
Mumps	15
Pneumonia	15
Scarlet fever:	
New Haven	13
Scattering	34
Trachoma	2
Tuberculosis (all forms)	46
Typhoid fever	19
Whooping cough	57

DELAWARE.

Diphtheria	6
Scarlet fever	2
Tuberculosis	4
Typhoid fever	2
Whooping cough	1

FLORIDA.

Diphtheria	26
Influenza	7
Malaria	74
Pneumonia	3
Scarlet fever	4
Typhoid fever	5

GEORGIA.

Chicken pox	5
Conjunctivitis (acute infectious)	8
Diphtheria	93
Dysentery (amebic)	1
Dysentery (bacillary)	7
German measles	12
Hookworm	3
Influenza	29
Malaria	365
Measles	13
Mumps	6

GEORGIA—continued.

	Cases.
Paratyphoid fever	2
Pellagra	1
Pneumonia	11
Scarlet fever	24
Septic sore throat	32
Smallpox	5
Tetanus	1
Tuberculosis (all forms)	26
Typhoid fever	46
Whooping cough	37

ILLINOIS.

Cerebrospinal meningitis:	
Champaign County—	
Compromise Township	1
Chicago	4
Diphtheria:	
Cicero	8
Chicago	142
Evanston	15
Scattering	54
Pneumonia	14
Poliomyelitis:	
Algonquin	1
Cicero	1
Chicago	6
Decatur	1
East St. Louis	1
Jasper County—	
Smallwood Township	1
Trenton	1
Wilmette	1
Scarlet fever:	
Chicago	80
Springfield	11
Scattering	71
Smallpox:	
Bloomington	17
Scattering	17
Typhoid fever:	
Chicago	10
Scattering	20

IOWA.

Diphtheria	36
Influenza	1
Poliomyelitis:	
Cherokee	1
Iowa City	2
Scarlet fever	62
Smallpox	21
Tuberculosis (pulmonary)	2
Typhoid fever	5

KANSAS.

Cerebrospinal meningitis	2
Chicken pox	3
Diphtheria	123
Dysentery	1
Influenza	6
Malaria	1
Measles	18
Mumps	7
Pneumonia	5
Poliomyelitis	3

KANSAS—continued.

	Cases.
Scarlet fever	175
Smallpox	20
Tetanus	1
Trachoma	4
Tuberculosis	42
Typhoid fever	49
Whooping cough	28

LOUISIANA.

Diphtheria	7
Malaria	168
Scarlet fever	15
Smallpox	6
Typhoid fever	26

MAINE.

Chicken pox	3
Diphtheria	13
German measles	1
Influenza	1
Measles	20
Mumps	3
Pellagra	1
Pneumonia	2
Poliomyelitis:	
Bowdoin	1
Fort Fairfield	2
Scarlet fever	4
Smallpox	3
Tuberculosis	11
Typhoid fever	25
Whooping cough	3

MARYLAND.[1]

Cerebrospinal meningitis	1
Chicken pox	10
Diphtheria	57
Dysentery	7
Influenza	23
Measles	5
Mumps	3
Ophthalmia neonatorum	3
Paratyphoid fever	1
Pneumonia (all forms)	10
Poliomyelitis	3
Scarlet fever	33
Septic sore throat	1
Tuberculosis	39
Typhoid fever	31
Vincents angina	1
Whooping cough	26

MASSACHUSETTS.

Anthrax	1
Cerebrospinal meningitis	2
Chicken pox	24
Conjunctivitis (suppurative)	8
Diphtheria	121
German measles	2
Influenza	8
Malaria	1
Measles	130
Mumps	22
Ophthalmia neonatorum	19
Pneumonia (lobar)	53
Poliomyelitis	53

[1] Week ended Friday.

MASSACHUSETTS—continued.

	Cases.
Scarlet fever	105
Tetanus	2
Trachoma	2
Tuberculosis (all forms)	192
Typhoid fever	31
Whooping cough	89

MINNESOTA.

Smallpox (new foci):	
Cottonwood County—	
Great Bend Township	2
Windom	1
Hennepin County—Excelsior	1
Kandiyohi County—Roseland Township	1
Nicollet County—Lafayette Township	1
Renville County—Sacred Heart Township	4
Poliomyelitis	1

MISSISSIPPI.

Diphtheria	42
Scarlet fever	2
Smallpox	1
Typhoid fever	22

MONTANA.

Diphtheria	8
Scarlet fever	11
Smallpox	11
Typhoid fever	8

NEBRASKA.

Chicken pox	10
Diphtheria:	
Omaha	23
Cass County	11
Scattering	8
Measles	3
Mumps	1
Poliomyelitis:	
Dorsey	1
Seward	1
Scarlet fever	15
Smallpox	5
Typhoid fever	3
Whooping cough	3

NEW JERSEY.

Influenza	7
Pneumonia	51

NEW MEXICO.

Chicken pox	4
Diphtheria:	
Eddy	9
Scattering	14
Measles	1
Scarlet fever	1
Smallpox	2
Tuberculosis:	
Grant	63
Lincoln	11
Scattering	9
Typhoid fever:	
Santa Fe	9
Scattering	11
Whooping cough	8

NEW YORK.

(Exclusive of New York City.)

	Cases.
Diphtheria	191
Influenza	20
Lathargic encephalitis	3
Measles	153
Paratyphoid fever	1
Pneumonia	109
Poliomyelitis:	
Briarcliff Manor	3
Pleasantville	1
Valatie	1
Yonkers	2
Scarlet fever	127
Smallpox	4
Typhoid fever	79
Whooping cough	168

NORTH CAROLINA.

Chicken pox	6
Diphtheria	192
Measles	13
Poliomyelitis	1
Scarlet fever	69
Septic sore throat	3
Smallpox	4
Typhoid fever	68
Whooping cough	78

SOUTH DAKOTA.

Chicken pox	2
Diphtheria	13
Scarlet fever	5
Smallpox	10
Tuberculosis	1
Typhoid fever	1
Whooping cough	5

TEXAS.

Diphtheria	100
Dysentery	2
Influenza	13
Malaria	220
Mumps	1
Paratyphoid fever	3
Pellagra	4
Plague:	
Galveston	1
Houston	1
Pneumonia	5
Scarlet fever	27
Smallpox	18
Trachoma	6
Tuberculosis	31
Typhoid fever	39
Whooping cough	22

VERMONT.

Chicken pox	7
Diphtheria	2
Measles	3
Mumps	3
Pneumonia	1
Scarlet fever	11
Smallpox	5
Typhoid fever	4
Whooping cough	36

VIRGINIA.

	Cases.
Smallpox—Washington County	1

WASHINGTON.

Chicken pox	12
Diphtheria	24
Influenza	1
Measles	8
Mumps	1
Pneumonia	2
Scarlet fever	14
Smallpox	29
Tuberculosis	18
Typhoid fever	27
Whooping cough	2

WEST VIRGINIA.

Diphtheria	25
Measles	1
Scarlet fever:	
Grafton	8
Scattering	15
Poliomyelitis—Keyser	1

WEST VIRGINIA—continued.

	Cases.
Smallpox	3
Typhoid fever	7

WISCONSIN.

Milwaukee:	
Chicken pox	5
Diphtheria	41
Measles	6
Scarlet fever	26
Smallpox	9
Tuberculosis	15
Whooping cough	10
Scattering:	
Chicken pox	19
Diphtheria	53
Influenza	7
Measles	34
Poliomyelitis	1
Scarlet fever	71
Smallpox	27
Tuberculosis	14
Typhoid fever	6
Whooping cough	101

Kentucky Report for Week Ended Oct. 2, 1920.

	Cases.
Chicken pox	8
Cholera infantum	1
Diphtheria:	
Franklin County	7
Jefferson County	10
McLean County	10
Scattering	50
Dysentery	4
German measles	1
Influenza	8
Malaria	4
Measles	11
Mumps	3
Paratyphoid fever	2
Pneumonia	13
Poliomyelitis—Boyd County	1
Scarlet fever	37
Septic sore throat	6
Smallpox	12
Tonsillitis	7
Trachoma	25
Tuberculosis	14
Typhoid fever	55
Whooping cough	9

SUMMARY OF CASES REPORTED MONTHLY BY STATES.

Tables showing by counties the reported cases of cerebrospinal meningitis, influenza, malaria, pellagra, poliomyelitis, smallpox, and typhoid fever are published under the names of these diseases. (See names of these and other diseases in the table of contents.)

The following monthly State reports include only those which were received during the current week. These reports appear each week as received.

State.	Cerebrospinal meningitis.	Diphtheria.	Influenza.	Malaria.	Measles.	Pellagra.	Poliomyelitis.	Scarlet fever.	Smallpox.	Typhoid fever.
1920.										
Colorado (July)	.....	55	.....	.....	119	.....	1	33	117	30
Colorado (August)	.....	63	.....	.....	36	.....	2	20	69	89
Connecticut (August)	10	162	14	8	102	.....	5	104	.....	64
Massachusetts (September)	24	411	39	8	207	1	274	285	.....	199

RECIPROCAL NOTIFICATION.

Connecticut—September, 1920.

Cases of communicable diseases referred during September, 1920, to other State health departments by department of health of the State of Connecticut.

Diseases and locality of notification.	Referred to health authority of—	Why referred.
Diphtheria:		
Windsor Locks, Conn.	State Department of Health, Albany, N. Y.	Onset of disease within 24 hours after returning from 5-day visit to New York City.
Typhoid fever:		
Hartford, Conn	do	Onset of disease 14 days after returning from a 7-day visit to New York City.
Forest Hill, L. I	do	2 persons left East Hampton, Conn., after exposure to polluted water, and had typhoid fever within 2 weeks.
New London, Conn	do	Patient arrived in New London, Conn., from Yonkers, N. Y., ill with typhoid fever.
Bristol, Conn	do	Onset of disease 4 days after arriving at New York, from Havre, France.
Waterbury, Conn	do	Onset of disease 6 days after arriving at Waterbury, Conn., from Accord, N. Y.
Orange, Conn	do	Patient arrived ill in Orange, Conn., from Syracuse, N. Y.
Bristol, Conn	State Department of Health, Springfield, Ill.	2 persons returned to their home in Chicago, Ill., after exposure to infection in Bristol, Conn.
Hartford, Conn	State Department of Public Health, Boston, Mass.	Onset of disease 16 days after leaving his home in Charlestown, Mass.
New London, Conn	State Board of Health, Providence, R. I.	Patient visited Providence for 2 days while in the incubation stage of typhoid fever.
Woodcliffe, N. J	State Department of Health, Trenton, N. J.	Patient left East Hampton, Conn., after exposure to polluted water, and had typhoid fever at Woodcliffe-on-the-Hudson, N. J.
Tuberculosis (pulmonary):		
Greenwich, Conn	State Department of Health, Albany, N. Y.	Patient left Greenwich for Saranac Lake, N. Y.
Do	do	Patient left Greenwich for Port Chester, N. Y.

ACTINOMYCOSIS.

Massachusetts—September, 1920.

During September, 1920, one case of actinomycosis was reported in Massachusetts.

ANTHRAX.

Connecticut and Massachusetts—August and September, 1920.

During August, 1920, one case of anthrax was reported in Connecticut, and during September three cases were reported in Massachusetts.

CEREBROSPINAL MENINGITIS.

State Reports for August and September, 1920.

Place.	New cases reported.
Connecticut (August):	
Fairfield County—	
Bridgeport	2
Stratford	1
Hartford County—	
Southington	1
New Haven County—	
Cheshire	1
New Haven	3
Wallingford	1
New London County—	
Groton	1
Total	10

Place.	New cases reported.
Massachusetts (September):	
Berkshire County—	
Pittsfield	2
Bristol County—	
Fall River	1
Essex County—	
Haverhill	1
Lawrence	1
Lynn	2
Salem	1
Hampshire County—	
Ware (town)	1
Middlesex County—	
Lowell	1
Maynard (town)	1

CEREBROSPINAL MENINGITIS—Continued.

State Reports for August and September, 1920—Continued.

Place.	New cases reported.
Massachusetts (September)—Continued.	
Middlesex County—Continued.	
Somerville	1
Waltham	1
Watertown (town)	1
Norfolk County—	
Quincy	2
Weymouth (town)	1
Suffolk County—	
Boston	6
Worcester County—	
Worcester	1
Total	24

City Reports for Week Ended Sept. 25, 1920.

The column headed "Average cases" gives the average number of cases reported during the corresponding week of the years 1915 to 1919, inclusive. In instances in which the information is not available for the full five years, the average includes from one to four years.

Place.	Average cases.	1920	
		Cases.	Deaths.
Alabama:			
Birmingham	0	1	1
Colorado:			
Pueblo	.....	1	1
Connecticut:			
New London	0	1	1
Illinois:			
Chicago	4	2	.....
Quincy	(1)	1	1
Indiana:			
Elwood	.....	1	1
Maine:			
Portland	0	1	1
Massachusetts:			
Boston	1	1	.....
Lowell	0	1	1
Somerville	0	.....	1
Watertown	0	1	.....
Worcester	0	.....	1
Michigan:			
Flint	0	.....	1
Missouri:			
Kansas City	(1)	1	.....
St. Louis	(1)	1	.....
New Hampshire:			
Manchester	(1)	1	.....
New Jersey:			
Passaic	(1)	1	.....
Trenton	0	1	1
West New York	0	.....	1
New York:			
New York	4	3	1
Oregon:			
Portland	0	1	.....
Utah:			
Salt Lake City	0	1	1
Virginia:			
Alexandria	.....	.....	1
Richmond	0	1	1

[1] Average less than 1.

DIPHTHERIA.

See Telegraphic weekly reports from States, p. 2470; Monthly summaries by States, p. 2473; and Weekly reports from cities, p. 2485.

INFLUENZA.

City Reports for Week Ended Sept. 25, 1920.

Place.	Cases.	Deaths.
California:		
Los Angeles	5	.....
Oakland	.....	1
San Bernardino	1	1
San Francisco	1	.....
Colorado:		
Denver	.....	1
Georgia:		
Atlanta	1	.....
Rome	7	.....
Illinois:		
Chicago	10	2
Kansas:		
Wichita	1	.....
Maryland:		
Baltimore	4	.....
Cumberland	1	.....
Massachusetts:		
Boston	1	.....
Lynn	3	.....
Springfield	1	.....
New Jersey:		
Bayonne	1	.....
Jersey City	1	.....
New York:		
New York	10	4
Ohio:		
Cincinnati	1	.....
Pennsylvania:		
Philadelphia	2	.....
Texas:		
Dallas	2	1
Virginia:		
Roanoke	1	.....
West Virginia:		
Martinsburg	1	.....

LEPROSY.

New Orleans, La., and Biloxi, Miss.

During July, 1920, one case of leprosy was reported at Biloxi, Miss., in the person of O. J. F., white, male, age 16. The patient is reported as having a first cousin living in the same city who has had leprosy for several years.

During the week ended September 25, 1920, one case of leprosy was reported at New Orleans, La.

LETHARGIC ENCEPHALITIS.

California and Connecticut.

During the month of August, 1920, one case of lethargic encephalitis was reported in Connecticut, and during the week ended September 25, 1920, one case and one death were reported at San Francisco, Calif.

MALARIA.

State Reports for August and September, 1920.

Place.	New cases reported.	Place.	New cases reported.
Connecticut (August):		Massachusetts (September):	
Fairfield County—		Norfolk County—	
Greenwich	2	Dedham (town)	2
Norwalk	1	Norwood (town)	2
Hartford County—		Suffolk County—	
Hartford	1	Boston	2
Rocky Hill	4	Worcester County—	
		Fitchburg	1
Total	8	Northbridge (town)	1
		Total	8

City Reports for Week Ended Sept. 25, 1920.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Alabama:			Louisiana:		
Birmingham	1		Alexandria	14	
Mobile		1	New Orleans	2	
Arkansas:			Massachusetts;		
Hot Springs	2		Boston	1	
Little Rock	10		Dedham	1	
California:			Pennsylvania:		
Oakland	1		Philadelphia	1	
Sacramento	1		Texas:		
San Francisco	1	1	Beaumont		1
Georgia:			Dallas	28	
Atlanta	7		Waco	2	
Brunswick	19		Virginia:		
Rome	3		Petersburg	1	
Savannah	4		Richmond		1
Kansas:					
Kansas City	2				

MEASLES.

See Telegraphic weekly reports from States, p. 2470; Monthly summaries by States, p. 2473; and Weekly reports from cities, p. 2485.

PELLAGRA.

Massachusetts—September, 1920.

During September, 1920, one case of pellagra was reported at Wrentham, Norfolk County, Mass.

City Reports for Week Ended Sept. 25, 1920.

Place	Cases.	Deaths.
Alabama:		
Montgomery		1
Texas:		
Dallas	3	1
Virginia:		
Norfolk	1	
Petersburg	1	1

PLAGUE.

Human Cases of Plague Reported.

Place.	Period covered.	Cases.	Deaths.	Remarks.
Florida:	1920.			
Pensacola	May 31 to Aug. 31	10	4	
	Sept. 1 to Oct. 9	0	0	
Louisiana:	1919.			
New Orleans	Oct. 22 to Dec. 31	12	4	
	1920.			
	Jan. 1 to Apr. 30	0	0	
	May 1 to Aug. 31	7	3	
	Sept. 1 to Oct. 9	0	0	
Texas:				
Beaumont	June 19 to Aug. 20	14	5	
	Aug. 21 to Oct. 9	0	0	
Galveston	June 8 to Sept. 7	11	8	
	Sept. 8 to 29	1	1	
	Sept. 30	1	0	
	Oct. 1 to 3	0	0	
	Oct. 4	1	0	
	Oct. 5 to 9	0	0	
	Oct. 10	1	0	
Port Arthur	July 7	1	1	From Galveston.

Plague-Infected Rodents.

Place.	Period covered.	Rodents found plague infected
Florida:	1920.	
Pensacola	June 28 to Sept. 19	31
	Sept. 20 to Oct. 9	0
Louisiana:	1919.	
New Orleans	Nov. 1 to Dec. 31	276
	1920.	
	Jan. 1 to July 31	285
	Aug. 1 to Sept. 11	0
	Sept. 12 to 25	2
	Sept. 26 to Oct. 9	0
Texas:		
Beaumont	July 1 to Sept. 19	122
	Sept. 20 to Oct. 9	0
Galveston	June 21 to Sept. 17	56
	Sept. 18 to Oct. 9	0

PNEUMONIA (ALL FORMS).

City Reports for Week Ended Sept. 25, 1920.

Place.	Cases.	Deaths.
Alabama:		
Birmingham		1
California:		
Long Beach	1	1
Los Angeles	11	5
Oakland		3
Pasadena		1
Riverside		1
Sacramento		3
San Diego	2	2
San Francisco	9	6
Colorado:		
Denver		6
Connecticut:		
Bridgeport	6	1
Hartford		1
New Britain	1	1
New Haven		3
Waterbury	1	2
Delaware:		
Wilmington		3
District of Columbia:		
Washington		6
Georgia:		
Atlanta		6
Savannah		3
Illinois:		
Chicago	66	22
Peoria		3
Quincy		1
Rockford	1	
Springfield		1
Indiana:		
East Chicago		1
Gary		1
Indianapolis		3
Kokomo		1
Kansas:		
Coffeyville	1	1
Topeka	1	
Kentucky:		
Lexington		1
Louisville	1	4
Maine:		
Portland	2	
Maryland:		
Baltimore	11	7
Massachusetts:		
Arlington	1	
Beverly	1	1
Boston	10	12
Cambridge	1	1
Chelsea	1	1
Fall River		3
Haverhill	1	
Holyoke		1
Lowell	1	2
Methuen		2
New Bedford		1
Newton	1	1
Salem	1	
Somerville		1
Taunton		2
Waltham	4	
Watertown	1	1
Winthrop	1	
Worcester	3	5
Michigan:		
Detroit	16	9
Flint		1
Grand Rapids	1	
Ironwood	1	
Kalamazoo		1
Pontiac		1
Port Huron	1	1
Minnesota:		
Minneapolis		1
St. Paul		3
Missouri:		
Jefferson City		1
Kansas City		2
Montana:		
Butte		5
Great Falls	2	1
Nebraska:		
Beatrice		1
Lincoln	1	
Omaha		1
New Hampshire:		
Concord		1
Manchester	5	5
New Jersey:		
Belleville	2	
East Orange	1	3
Elizabeth	2	2
Irvington	1	
Jersey City	1	
Passaic	1	1
Perth Amboy		1
Phillipsburg		1
West Hoboken	1	
New York:		
Albany	6	
Binghamton	2	
Buffalo	8	8
Jamestown	1	
Lackawanna	5	
Lockport	1	
Middletown	1	
New York	82	71
North Tonawanda		2
Port Chester	1	
Poughkeepsie	4	
Rochester	3	2
Saratoga Springs	1	2
Schenectady	2	
Syracuse	7	4
Troy	4	1
White Plains	1	
Yonkers	1	1
North Carolina:		
Charlotte		2
Durham		1
Greensboro		1
Rocky Mount		1
Winston-Salem		1
Ohio:		
Akron	3	
Ashtabula		1
Chillicothe	1	
Cincinnati		1
Cleveland	3	2
Columbus		4
Dayton	1	
Lancaster		1
Youngstown	1	5
Pennsylvania:		
Philadelphia	29	24
Rhode Island:		
Pawtucket		1
Providence		1
South Carolina:		
Charleston		4
Tennessee:		
Nashville	1	2
Texas:		
Dallas	2	1
El Paso		1
Galveston		1
Utah:		
Salt Lake City		2
Vermont:		
Burlington		1
Virginia:		
Norfolk	1	
Richmond		1
West Virginia:		
Wheeling		1
Wisconsin:		
Milwaukee		10

POLIOMYELITIS (INFANTILE PARALYSIS).

State Reports for July, August, and September, 1920.

Place.	New cases reported.
Colorado (July):	
Adams County	1
Colorado (August):	
Denver	1
Pueblo County—	
Pueblo	1
Total	2
Connecticut (August):	
New London County—	
New London	2
Waterford	1
New Haven County—	
Waterbury	2
Total	5
Massachusetts (September):	
Barnstable County—	
Bourne (town)	1
Berkshire County—	
Pittsfield	1
Bristol County—	
Fall River	1
Taunton	2
Essex County—	
Beverly	5
Danvers (town)	1
Haverhill	3
Lynn	17
Manchester (town)	1
Marblehead (town)	1
Methuen	1
Nahant (town)	1
Peabody	2
Salem	3
Franklin County—	
Montague (town)	1
Hampden County—	
Springfield	1
Hampshire County—	
Northampton	1
Middlesex County—	
Arlington (town)	1
Cambridge	9
Concord (town)	1
Massachusetts (September)—Continued.	
Middlesex County—Continued.	
Everett	2
Framingham (town)	7
Holliston (town)	3
Hudson (town)	1
Lexington (town)	2
Lowell	3
Malden	5
Medford	3
Melrose	1
Natick (town)	3
Newton	7
Reading (town)	3
Somerville	9
Stoneham (town)	2
Wakefield (town)	1
Waltham	10
Wilmington (town)	1
Winchester (town)	1
Norfolk County—	
Braintree (town)	3
Brookline (town)	5
Dedham (town)	1
Milton (town)	3
Needham (town)	2
Norwood (town)	1
Quincy	3
Sharon (town)	1
Weymouth (town)	12
Plymouth County—	
Brockton	6
Hanover (town)	1
Hull (town)	1
Norwell (town)	2
Rockland (town)	1
Suffolk County—	
Boston	94
Chelsea	7
Revere	4
Winthrop (town)	2
Worcester County—	
Ashburnham (town)	1
Grafton (town)	1
Southboro (town)	3
Worcester	2
Total	274

City Reports for Week Ended Sept. 25, 1920.

The column headed "Average cases" gives the average number of cases reported during the corresponding week of the years 1915 to 1919, inclusive. In instances in which the information is not available for the full five years, the average includes from one to four years.

Place.	Average cases.	1920	
		Cases.	Deaths.
California:			
Oakland	0	1	.....
Connecticut:			
Bridgeport	(1)	1	.....
Hartford	2	1	1
Illinois:			
Chicago	[2]1	6	.....
Quincy	0	1	.....
Springfield	0	.....	3
Iowa:			
Dubuque	0	1	.....
Massachusetts:			
Beverly	0	3	.....
Boston	[2]1	30	4
Brockton	(1)	1	.....
Brookline	(1)	2	.....
Cambridge	1	4	1
Chelsea	(1)	1	.....
Dedham	0	1	.....
Framingham	0	2	.....
Lynn	(1)	1	.....
Malden	1	2	.....

[1] Average less than 1.
[2] Excluding 1916 and 1917, epidemic years.
[2] Excluding 1916, an epidemic year.

POLIOMYELITIS (INFANTILE PARALYSIS)—Continued.

City Reports for Week Ended Sept. 25, 1920—Continued.

Place.	Average cases.	1920	
		Cases.	Deaths.
Massachusetts—Continued.			
Medford	0	1	
Melrose	0	1	
Methuen	0	1	
Newton	(1)	2	
Northampton	(1)	1	
Salem		2	
Springfield	2	1	1
Waltham	0	4	
Michigan:			
Flint	1	1	
Missouri:			
St. Louis	(1)	5	
New Jersey:			
East Orange	(1)		1
New York:			
New York	[2]4	7	1
Rochester	(1)	1	
Ohio:			
Cleveland	4	1	
Pennsylvania:			
Erie	(1)	2	
Philadelphia	(3)	1	
Rhode Island:			
Cranston		1	

[1] Average less than 1. [2] Excluding 1916, an epidemic year. [3] Excluding 1916, average less than 1.

SCARLET FEVER.

See Telegraphic weekly reports from States, p. 2470; Monthly summaries by States, p. 2473; and Weekly reports from cities, p. 2485.

SMALLPOX.

Colorado Reports for July and August, 1920—Vaccination Histories.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Vaccinated within 7 years preceding attack.	Last vaccinated more than 7 years preceding attack.	Never successfully vaccinated.	History not obtained or uncertain.
Colorado (July):						
Archuleta County	3				3	
Custer County	1				1	
Delta County	1				1	
Denver	32		5		26	1
Eagle County	2		2			
El Paso County	8				7	1
Fremont County	1				1	
Grand County	4				4	
Huerfano County	8				8	
La Plata County	6				6	
Larimer County	4				2	2
Moffat County	4				3	1
Montrose County	5				5	
Morgan County	6					6
Phillips County	5				5	
Prowers County	3				3	
Pueblo County	5				5	
Rio Grande County	1				1	
San Miguel County	7				7	
Summit County	10		3			7
Weld County	1		1			
Total	117		11		88	18
Colorado (August):						
Adams County	1				1	
Alamosa County	1		1			
Archuleta County	3		1		2	
Custer County	1				1	
Denver	17		6		9	2
Eagle County	2		1		1	
El Paso County	3		1		2	
Fremont County	7		1		6	
Garfield County	2		2			
Huerfano County	1				1	

SMALLPOX—Continued.

Colorado Reports for July and August, 1920—Vaccination Histories—Continued.

Place.	New cases preorted.	Deaths.	Vaccination history of cases.			
			Vaccinated within 7 years preceding attack.	Last vaccinated more than 7 years preceding attack.	Never successfully vaccinated.	History not obtained or uncertain.
Colorado—Continued.						
Jefferson County	1				1	
Larimer County	6					6
Ouray County	1				1	
Phillips County	2					2
Prowers County	7					7
Pueblo County	2		1		1	
San Miguel County	4				4	
Teller County	6					6
Weld County	2				2	
Total	69		14		32	23

City Reports for Week Ended Sept. 25, 1920.

The column headed "Average cases" gives the average number of cases reported during the corresponding week of the years 1915 to 1919, inclusive. In instances in which the information is not available for the full five years, the average includes from one to four years.

Place.	Average cases.	1920		Place.	Average cases.	1920	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				Missouri:			
Birmingham	(1)	1		Independence	0	1	
Arkansas:				Kansas City	0	4	
Fort Smith		1		St. Joseph	1	2	
California:				St. Louis	(1)	1	
Alameda	0	2		Montana:			
Los Angeles	(1)	4		Missoula	0	2	
Oakland	(1)	9		Nebraska:			
Sacramento	0	1		Lincoln	1	1	
Santa Barbara	0	2		Omaha	9	6	
Colorado:				Nevada:			
Denver	2	8		Reno	0	1	
Pueblo	0	3		North Carolina:			
Georgia:				Winston-Salem	0	1	
Atlanta	1	2		North Dakota:			
Idaho:				Fargo	0	5	
Boise	1	3		Ohio:			
Illinois:				Cincinnati	(1)	6	
Bloomington		1		Oklahoma:			
Chicago	(1)	1		Oklahoma City	(1)	1	
Elgin	0	1		Oregon:			
Jacksonville	0	2		Portland	2	2	
Quincy	0	1		South Carolina:			
Indiana:				Charleston	0	1	
Gary		1		Spartanburg	0	1	
Mishawaka	0	6		Utah:			
South Bend	0	5		Salt Lake City	2	10	
Terre Haute	0	1		Washington:			
Iowa:				Bellingham	4	1	
Burlington	0	1		Seattle	2	5	
Des Moines	(1)	1		Spokane	3	2	
Dubuque	(1)	4		Tacoma	0	2	
Marshalltown	16	2		Yakima	(1)	1	
Kansas:				Wisconsin:			
Fort Scott	0	1		Appleton	0	1	
Topeka	0	2		Green Bay	0	1	
Wichita	(1)	3		Kenosha	(1)	1	
Michigan:				La Crosse	0	2	
Detroit	4	5		Milwaukee	(1)	5	
Flint	(1)	4		Oshkosh	0	2	
Minnesota:				Sheboygan		5	
Minneapolis	7	16					
Winona	0	1					

[1] Average less than 1.

TETANUS.

City Reports for Week Ended Sept. 25, 1920.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Illinois:			Texas:		
Aurora		1	Dallas		1
Michigan:			Virginia:		
Detroit		1	Norfolk	1	
Pennsylvania:					
Philadelphia	2	1			

TUBERCULOSIS.

See Telegraphic weekly reports from States, p. 2470, and Weekly reports from cities, p. 2485.

TYPHOID FEVER.

State Reports for July, August, and September, 1920.

Place.	New cases reported.
Colorado (July):	
Arapahoe County	1
Denver	11
Garfield County	1
Larimer County	3
Las Animas County	5
Montrose County	1
Otero County	2
Pueblo County	5
Weld County	1
Total	30
Colorado (August):	
Alamosa County	1
Denver	35
Jefferson County	3
Kit Carson County	1
Larimer County	27
Las Animas County	2
Logan County	1
Montrose County	3
Morgan County	1
Prowers County	2
Pueblo County	8
Weld County	5
Total	89
Connecticut (August):	
Fairfield County—	
Bridgeport	3
Fairfield	2
Danbury	2
Norwalk	3
Stratford	1
Hartford County—	
Bristol	4
East Hartford	1
Hartford	13
New Britain	3
Newington	1
Plainville	1
Litchfield County—	
North Canaan	1
Torrington	1
Middlesex County—	
East Hampton	1
Middletown	4
New Haven County—	
Madison	1
Meriden	3
Milford	1
New Haven	7
Connecticut—Continued.	
New Haven County—Continued.	
Orange	2
Waterbury	3
New London County—	
New London	2
Norwich	2
Waterford	1
Windham County—	
Putnam	1
Total	64
Massachusetts (September):	
Barnstable County—	
Truro (town)	1
Berkshire County—	
Adams (town)	1
Lenox (town)	1
New Marlboro (town)	1
North Adams (town)	1
Pittsfield	7
Bristol County—	
Attleboro (town)	4
Dartmouth (town)	1
Fall River	39
New Bedford	14
Taunton (town)	8
Essex County—	
Andover (town)	1
Gloucester	2
Haverhill	3
Ipswich (town)	15
Lawrence	5
Lynn	5
Nahant (town)	1
Peabody (town)	1
Rockport (town)	3
Saugus (town)	1
Hampden County—	
Chicopee	3
Holyoke	5
Palmer (town)	1
Westfield (town)	1
Middlesex County—	
Ashby (town)	1
Cambridge	3
Lowell	4
Malden	2
Marlboro	4
Melrose (town)	2
Somerville	3
Stoneham (town)	2
Wakefield (town)	1

TYPHOID FEVER—Continued.

State Reports for July, August, and September, 1920—Continued.

Place.	New cases reported.
Massachusetts—Continued.	
Middlesex County—Continued.	
Newton	1
Wilmington (town)	1
Winchester (town)	1
Woburn	1
Norfolk County—	
Braintree (town)	1
Foxboro (town)	1
Needham (town)	1
Norwood (town)	2
Wellesley (town)	1
Plymouth County—	
Brockton	1
Hingham (town)	2
Hull (town)	1
Massachusetts—Continued.	
Plymouth County—Continued.	
Kingston (town)	1
Plymouth (town)	1
Scituate (town)	1
Suffolk County—	
Boston	26
Chelsea	3
Worcester County—	
Gardner (town)	2
Leicester (town)	1
Leominster	1
Worcester	7
Total	199

City Reports for Week Ended Sept. 25, 1920.

The column headed "Average cases" gives the average number of cases reported during the corresponding week of the years 1915 to 1919, inclusive. In instances in which the information is not available for the full five years, the average includes from one to four years.

Place.	Average cases.	1920 Cases.	1920 Deaths.
Alabama:			
Birmingham	20	8	1
Mobile	2	1	.....
Arkansas:			
Fort Smith	.....	2	.....
Hot Springs	.....	.....	1
Little Rock	3	2	.....
North Little Rock	1	.....	1
California:			
Los Angeles	6	9	.....
Oakland	2	1	2
Riverside	2	1	.....
Sacramento	1	3	.....
San Francisco	4	7	1
Colorado:			
Denver	3	3	.....
Pueblo	1	5	1
Connecticut:			
Hartford	1	10	3
New Britain	(1)	2	.....
New Haven	3	2	.....
District of Columbia:			
Washington	17	12	2
Georgia:			
Atlanta	4	3	.....
Rome	2	2	.....
Savannah	(1)	2	.....
Idaho:			
Boise	(1)	1	.....
Illinois:			
Cairo	1	.....	1
Chicago	19	16	.....
Decatur	0	.....	1
East St Louis	2	1	.....
Jacksonville	0	1	.....
Mattoon	0	1	.....
Indiana:			
Elwood	.....	1	.....
Fort Wayne	1	3	1
Gary	.....	1	.....
Indianapolis	10	2	.....
Richmond	.....	2	.....
Iowa:			
Des Moines	0	1	.....
Kansas:			
Coffeyville	1	3	.....
Hutchinson	2	1	.....
Kansas City	1	3	.....
Topeka	2	2	.....
Kentucky:			
Lexington	3	.....	1
Louisville	8	11	1
Paducah	.....	1	.....
Louisiana:			
Alexandria	2	1	.....
New Orleans	7	7	2
Maine:			
Portland	2	2	.....
Maryland:			
Baltimore	42	14	.....
Cumberland	2	1	.....
Massachusetts:			
Attleboro	1	2	.....
Boston	6	7	.....
Brockton	(1)	1	.....
Cambridge	(1)	1	.....
Chelsea	1	1	.....
Fall River	8	18	.....
Holyoke	0	1	.....
Lowell	1	3	.....
Lynn	1	1	.....
Melrose	(1)	1	.....
New Bedford	3	.....	1
Newton	(1)	1	.....
Pittsfield	(1)	2	.....
Springfield	3	1	.....
Taunton	(1)	1	.....
Worcester	3	2	.....
Michigan:			
Ann Arbor	1	1	.....
Detroit	15	12	2
Flint	5	1	1
Marquette	1	1	.....
Minnesota:			
Duluth	2	1	.....
Hibbing	0	1	.....
Minneapolis	3	4	1
St. Paul	2	8	1

[1] Average less than 1.

TYPHOID FEVER—Continued.

City Reports for Week Ended Sept. 25, 1920—Continued.

Place.	Average cases.	1920 Cases.	1920 Deaths.
Missouri:			
Independence	1	2	1
Kansas City	2	2	1
St. Joseph	2	1	1
St. Louis	18	6	1
Montana:			
Billings	0	1	.....
Great Falls	0	3	.....
Missoula	(1)	1	.....
Nebraska:			
Omaha	4	5	.....
Nevada:			
Reno	0	2	.....
New Hampshire:			
Concord	0	.....	1
Dover	0	2	.....
New Jersey:			
Elizabeth	(1)	2	.....
Hoboken	(1)	2	1
Jersey City	1	1	.....
Paterson	1	1	.....
Trenton	(1)	1	.....
New York:			
Albany	6	3	.....
Buffalo	7	3	1
Ithaca	0	2	.....
Jamestown	(1)	1	.....
Middletown	0	1	.....
New York	81	41	5
North Tonawanda	2	1	.....
Schenectady	(1)	1	.....
Syracuse	5	6	.....
Watertown	(1)	1	.....
Yonkers	1	1	.....
North Carolina:			
Durham	6	3	.....
Raleigh	0	1	.....
Ohio:			
Akron	6	9	.....
Ashtabula	2	8	.....
Chillicothe	1	1	.....
Cincinnati	3	2	.....
Cleveland	7	4	.....
Dayton	5	1	.....
Fremont	(1)	1	.....
Lorain	(1)	1	.....
Piqua	1	26	.....
Springfield	2	1	.....
Toledo	6	6	.....
Youngstown	1	.....	1
Zanesville	(1)	1	.....
Oklahoma:			
Oklahoma City	2	3	.....
Oregon:			
Salem	0	3	.....
Pennsylvania:			
Bethlehem	2	2	.....
Johnstown	2	1	.....
Lancaster	1	1	.....
McKeesport	0	1	.....
New Castle	2	4	.....
North Braddock	0	1	.....
Philadelphia	27	13	2
Pittsburgh	7	3	.....
Pottsville	0	1	.....
Reading	6	2	.....
Scranton	0	3	.....
Steelton	(1)	1	.....
Uniontown	0	2	.....
Washington	1	2	.....
Wilkes-Barre	(1)	1	.....
York	2	1	.....
South Carolina:			
Charleston	5	6	.....
Columbia	1	1	.....
Tennessee:			
Knoxville	(1)	2	.....
Nashville	11	2	.....
Texas:			
Dallas	2	2	1
Waco	2	1	.....
Utah:			
Salt Lake City	4	3	.....
Vermont:			
Barre	.....	1	.....
Virginia:			
Danville	1	.....	1
Lynchburg	1	2	.....
Petersburg	(1)	1	.....
Richmond	5	4	.....
Roanoke	2	4	1
Washington:			
Spokane	(1)	1	.....
Tacoma	(1)	1	.....
Vancouver	0	1	.....
Walla Walla	(1)	7	.....
Yakima	1	3	.....
West Virginia:			
Fairmont	(1)	2	.....
Huntington	.....	.....	3
Moundsville	0	1	.....
Wyoming:			
Cheyenne	0	1	.....

[1] Average less than 1.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

City Reports for Week Ended Sept. 25, 1920.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Adams, Mass.	14,406	.....	.....	.....	.....	.....	.....	.....	4	.....
Akron, Ohio	93,604	52	11	.....	.....	.....	4	.....	7	.....
Alameda, Calif.	28,433	5	1	.....	.....	.....	1	.....	.....	.....
Albany, N. Y.	106,632	.....	5	.....	1	.....	2	.....	2	.....
Alexandria, La.	16,232	3	.....	.....	.....	.....	.....	.....	.....	.....
Alexandria, Va.	17,959	4	.....	.....	.....	.....	.....	.....	.....	.....
Allentown, Pa.	65,109	.....	3	.....	3	.....	.....	.....	.....	.....
Alton, Ill.	23,783	6	5	.....	.....	.....	.....	.....	2	.....
Altoona, Pa.	59,712	.....	1	.....	.....	.....	.....	.....	.....	.....
Amesbury, Mass.	10,200	2	.....	.....	.....	.....	.....	.....	.....	.....
Anaconda, Mont.	10,631	1	.....	.....	.....	.....	.....	.....	.....	.....
Ann Arbor, Mich.	15,041	14	.....	.....	.....	.....	1	.....	.....	.....
Arlington, Mass.	13,073	2	1	.....	.....	.....	1	.....	4	.....
Asbury Park, N. J.	14,629	3	1	.....	.....	.....	.....	.....	.....	.....
Ashtabula, Ohio	22,008	8	.....	.....	.....	.....	.....	.....	1	1
Atlanta, Ga.	196,144	54	6	.....	.....	.....	2	.....	1	6
Atlantic City, N. J.	59,515	11	.....	.....	.....	.....	.....	.....	1	.....
Attleboro, Mass.	19,776	.....	.....	.....	.....	.....	.....	.....	.....	2
Auburn, Me.	16,607	6	.....	.....	.....	.....	1	.....	.....	.....
Aurora, Ill.	34,795	13	.....	.....	.....	.....	.....	.....	.....	.....
Baltimore, Md.	594,637	178	34	1	10	.....	4	.....	35	18
Bangor, Me.	26,958	.....	.....	.....	3	.....	2	.....	.....	.....
Barberton, Ohio	14,187	4	.....	.....	.....	.....	.....	.....	.....	.....
Barre, Vt.	12,401	.....	.....	.....	.....	.....	1	.....	.....	.....
Baton Rouge, La.	17,544	3	2	.....	.....	.....	2	.....	1	1
Bayonne, N. J.	72,204	.....	3	.....	.....	.....	.....	.....	4	.....
Beatrice, Nebr.	10,437	4	.....	.....	.....	.....	.....	.....	.....	.....
Beaumont, Tex.	28,851	7	.....	.....	.....	.....	.....	.....	.....	.....
Beaver Falls, Pa.	13,749	.....	5	.....	.....	.....	1	.....	.....	.....
Bedford, Ind.	10,613	1	.....	.....	.....	.....	.....	.....	.....	.....
Belleville, Ill.	21,154	.....	4	.....	.....	.....	.....	.....	.....	.....
Benton Harbor, Mich.	11,099	3	1	.....	.....	.....	.....	.....	.....	.....
Bethlehem, Pa.	14,353	.....	3	.....	.....	.....	1	.....	.....	.....
Beverly, Mass.	22,128	5	.....	.....	.....	.....	.....	.....	2	.....
Biddeford, Me.	17,760	.....	.....	.....	.....	.....	.....	.....	2	1
Billings, Mont.	13,123	3	.....	.....	2	.....	3	.....	.....	.....
Binghamton, N. Y.	54,864	11	1	.....	8	.....	.....	.....	.....	.....
Birmingham, Ala.	189,716	42	3	2	.....	.....	1	.....	7	4
Bloomfield, N. J.	19,013	2	.....	.....	.....	.....	.....	.....	2	.....
Bloomington, Ill.	27,462	10	.....	.....	.....	.....	1	.....	1	.....
Bloomington, Ind.	11,661	2	.....	.....	.....	.....	4	.....	.....	.....
Bluefield, W. Va.	16,123	.....	3	.....	.....	.....	.....	.....	.....	.....
Boise, Idaho	35,951	7	1	1	1	.....	.....	.....	.....	.....
Boston, Mass.	767,813	173	32	1	5	.....	16	.....	37	12
Braddock, Pa.	22,060	.....	2	.....	.....	.....	.....	.....	1	.....
Bradford, Pa.	14,544	.....	.....	.....	5	.....	.....	.....	.....	.....
Brazil, Ind.	10,472	7	.....	.....	.....	.....	1	.....	.....	.....
Bridgeport, Conn.	124,724	24	4	.....	3	.....	4	.....	2	4
Bristol, Conn.	16,318	6	.....	.....	2	.....	.....	.....	.....	.....
Brockton, Mass.	69,152	9	.....	.....	.....	.....	.....	.....	1	.....
Brookline, Mass.	33,526	5	2	.....	.....	.....	.....	.....	.....	.....
Brunswick, Ga.	10,984	5	1	.....	.....	.....	.....	.....	1	.....
Buffalo, N. Y.	475,781	.....	36	5	18	.....	3	1	18	8
Burlington, Vt.	21,802	8	.....	.....	.....	.....	2	.....	.....	.....
Butler, Pa.	28,677	.....	.....	.....	.....	.....	1	.....	.....	.....
Butte, Mont.	44,057	21	1	.....	22	.....	.....	.....	1	.....
Cairo, Ill.	15,995	2	.....	.....	.....	.....	.....	.....	.....	1
Cambridge, Mass.	114,293	25	4	.....	5	.....	.....	.....	8	2
Canton, Ill.	13,674	3	.....	.....	.....	.....	.....	.....	.....	.....
Canton, Ohio	62,566	11	12	1	.....	.....	1	.....	1	.....
Cape Girardeau, Mo.	11,146	3	.....	.....	.....	.....	.....	.....	.....	.....
Carbondale, Pa.	19,597	.....	.....	.....	1	.....	.....	.....	.....	.....
Carlisle, Pa.	10,795	.....	2	.....	.....	.....	1	.....	.....	.....
Cedar Rapids, Iowa	38,033	.....	7	.....	.....	.....	.....	.....	.....	.....
Centralia, Ill.	11,838	2	.....	.....	.....	.....	.....	.....	1	.....
Charleston, S. C.	61,041	22	.....	.....	.....	.....	.....	.....	.....	.....
Charleston, W. Va.	31,060	.....	1	.....	.....	.....	.....	.....	.....	.....
Charlotte, N. C.	40,759	14	8	.....	.....	.....	1	.....	3	4
Chelsea, Mass.	46,405	8	.....	.....	.....	.....	.....	.....	2	.....
Chester, Pa.	41,857	.....	1	.....	.....	.....	1	.....	.....	.....
Cheyenne, Wyo.	[1] 11,320	1	.....	.....	.....	.....	.....	.....	.....	.....
Chicago Heights, Ill.	22,863	4	.....	.....	.....	.....	.....	.....	.....	.....

[1] Population Apr. 15, 1910.

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

City Reports for Week Ended Sept. 25, 1920—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Chicago, Ill.	2,547,201	538	108	8	26	.....	66	4	188	53
Chicopee, Mass.	29,950	3	1	.....	.....	.....	2	.....	2	.....
Chillicothe, Ohio.	15,625	2	.....	.....	.....	.....	.....	.....	1	1
Cincinnati, Ohio.	414,243	95	14	1	.....	.....	9	1	22	14
Cleveland, Ohio.	692,259	147	20	1	4	.....	32	2	36	9
Clinton, Mass.	[1] 13,075	2	.....	.....	.....	.....	.....	.....	.....	.....
Coatesville, Pa.	14,998	.....	2	.....	.....	.....	.....	.....	.....	.....
Coffeyville, Kans.	18,331	5	.....	.....	.....	.....	1	.....	.....	.....
Cohoes, N. Y.	25,292	2	.....	.....	.....	.....	.....	.....	.....	.....
Colorado Springs, Colo.	38,965	12	.....	.....	.....	.....	.....	.....	.....	2
Columbia, S. C.	55,165	.....	1	.....	.....	.....	.....	.....	.....	.....
Columbus, Ohio.	220,135	63	8	.....	.....	.....	3	.....	5	6
Concord, N. H.	22,858	9	.....	.....	.....	.....	2	.....	.....	1
Connellsville, Pa.	15,876	.....	2	.....	.....	.....	.....	.....	.....	.....
Corpus Christi, Tex.	10,789	4	.....	.....	.....	.....	.....	.....	.....	1
Council Bluffs, Iowa.	31,938	7	.....	.....	1	.....	3	.....	.....	.....
Covington, Ky.	59,623	19	.....	.....	.....	.....	2	.....	.....	3
Cranston, R. I.	26,773	2	.....	.....	.....	.....	.....	.....	.....	.....
Cumberland, Md.	26,686	12	2	.....	.....	.....	.....	.....	2	.....
Dallas, Tex.	129,738	37	17	1	3	.....	.....	.....	4	2
Danbury, Conn.	22,931	7	.....	.....	.....	.....	.....	.....	.....	.....
Danvers, Mass.	10,037	.....	.....	.....	.....	.....	.....	.....	.....	1
Danville, Va.	20,183	1	2	.....	.....	.....	1	.....	2	.....
Davenport, Iowa.	49,618	.....	.....	.....	.....	.....	1	.....	.....	.....
Dayton, Ohio.	128,939	30	9	.....	.....	.....	8	.....	1	.....
Decatur, Ill.	41,483	8	.....	.....	.....	.....	.....	.....	.....	1
Dedham, Mass.	10,618	2	1	.....	.....	.....	.....	.....	.....	1
Denver, Colo.	268,439	67	21	2	1	.....	4	.....	.....	15
Des Moines, Iowa.	104,052	.....	8	.....	.....	.....	3	.....	.....	.....
Detroit, Mich.	619,648	210	75	6	3	1	46	.....	54	13
Dubuque, Iowa.	40,096	.....	3	.....	.....	.....	5	.....	.....	.....
Duluth, Minn.	97,077	11	6	.....	.....	.....	1	.....	5	.....
Durham, N. C.	26,160	6	.....	.....	.....	.....	1	.....	.....	.....
East Chicago, Ind.	30,286	8	.....	2	.....	.....	.....	.....	.....	.....
Easton, Pa.	30,854	.....	.....	.....	.....	.....	.....	.....	1	.....
East Orange, N. J.	43,761	10	.....	.....	2	.....	.....	.....	.....	2
East St. Louis, Ill.	77,312	15	1	.....	.....	.....	.....	.....	1	1
Elgin, Ill.	28,562	10	.....	.....	.....	.....	.....	.....	.....	1
Elizabeth, N. J.	88,830	18	5	.....	1	.....	7	1	5	2
Elkhart, Ind.	22,273	5	1	.....	.....	.....	1	.....	.....	.....
El Paso, Tex.	69,149	33	.....	1	1	.....	3	.....	.....	7
Elwood, Ind.	[1] 11,028	.....	3	1	1	.....	1	.....	.....	.....
Englewood, N. J.	12,603	0	.....	.....	.....	.....	1	.....	.....	.....
Erie, Pa.	76,592	.....	5	.....	.....	.....	12	.....	3	.....
Eugene, Oreg.	14,357	7	.....	.....	.....	.....	.....	.....	.....	.....
Eureka, Calif.	15,142	7	.....	.....	.....	.....	.....	.....	1	1
Evanston, Ill.	29,304	10	3	.....	1	.....	1	.....	1	.....
Everett, Mass.	40,160	10	3	.....	.....	.....	.....	.....	3	.....
Fairmount, W. Va.	16,111	.....	2	.....	.....	.....	1	.....	.....	.....
Fall River, Mass.	129,828	42	6	.....	4	.....	.....	.....	8	2
Fargo, N. Dak.	17,872	2	2	.....	.....	.....	.....	.....	.....	.....
Farrell, Pa.	[1] 10,190	.....	1	.....	.....	.....	.....	.....	.....	.....
Findlay, Ohio.	[1] 11,858	3	1	.....	.....	.....	.....	.....	.....	.....
Flint, Mich.	57,386	14	6	1	.....	.....	9	.....	.....	2
Fond du Lac, Wis.	21,486	.....	3	.....	.....	.....	.....	.....	.....	.....
Fort Scott, Kans.	10,564	3	5	.....	.....	.....	.....	.....	.....	.....
Fort Smith, Ark.	29,390	.....	1	.....	.....	.....	4	.....	.....	.....
Fort Wayne, Ind.	78,014	22	5	.....	.....	.....	2	.....	.....	.....
Fostoria, Ohio.	10,959	2	.....	.....	.....	.....	5	.....	.....	.....
Framingham, Mass.	14,149	4	.....	.....	.....	.....	.....	.....	4	.....
Freeport, Ill.	19,844	4	.....	.....	.....	.....	.....	.....	.....	.....
Fremont, Nebr.	10,080	3	.....	.....	.....	.....	.....	.....	.....	.....
Galesburg, Ill.	24,629	2	.....	.....	.....	.....	.....	.....	.....	.....
Galveston, Tex.	42,650	12	.....	.....	.....	.....	.....	.....	.....	1
Gardner, Mass.	17,534	2	.....	.....	.....	.....	.....	.....	.....	.....
Gary, Ind.	56,000	13	3	.....	.....	.....	2	.....	.....	.....
Geneva, N. Y.	13,915	8	.....	.....	.....	.....	.....	.....	.....	.....
Glens Falls, N. Y.	17,160	5	.....	.....	.....	.....	.....	.....	1	.....
Gloucester City, N. J.	11,375	.....	1	.....	.....	.....	.....	.....	.....	.....
Grand Rapids, Mich.	152,861	28	11	.....	1	.....	3	.....	.....	.....

[1] Population Apr. 15, 1910.

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

City Reports for Week Ended Sept. 25, 1920—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Great Falls, Mont.	[1]13,948	3	1							
Greely, Colo.	11,942	1								
Green Bay, Wis.	30,017				1					
Greensboro, N. C.	20,171	3								1
Greensburgh, Pa.	15,881						1			
Greenwich, Conn.	19,594	5	1							
Hackensack, N. J.	17,412	8							4	1
Hammond, Ind.	27,016	4	2				1		1	
Harrisburg, Pa.	73,276		2		1					
Hartford, Conn.	112,851	35	9				2		2	2
Haverhill, Mass.	49,180	7					1		4	
Hazelton, Pa.	28,981		1							
Hoboken, N. J.	78,324	14	1							
Holyoke, Mass.	66,503	10	1							
Hot Springs, Ark.	17,690	5	2							
Huntington, W. Va.	47,686	15	1							
Hutchinson, Kans.	21,461		1				1			
Independence, Mo.	11,964	9	5	1						
Indianapolis, Ind.	283,622	95	8		1		5		2	8
Iowa City, Iowa.	11,626		1							
Ironton, Ohio.	14,079	4					2			
Ironwood, Mich.	15,095	1			9		2			
Irvington, N. J.	16,710						3		1	
Ishpeming, Mich.	[1]12,448	2	2							1
Ithaca, N. Y.	16,017	3	1						1	
Jacksonville, Ill.	15,506	4	2							
Jamestown, N. Y.	37,431	11	7		1		1			1
Janesville, Wis.	14,411						1			
Jefferson City, Mo.	13,712	5								
Jersey City, N. J.	312,557		22		1		8		5	
Johnstown, N. Y.	10,678	6					1			
Kalamazoo, Mich.	50,408	25					4		7	3
Kankakee, Ill.	14,270	3			1					
Kansas City, Kans.	102,096		3		1		3		4	
Kansas City, Mo.	305,816	77	7		1		5		1	3
Kearny, N. J.	21,325	3					1			
Keene, N. H.	10,725	2								
Kenosha, Wis.	32,833		1		1					
Kewanee, Ill.	13,607	1								
Knoxville, Tenn.	59,112		11				3		1	1
Kokomo, Ind.	21,929	9							1	1
Lackawanna, N. Y.	16,219	5	3				3			
La Crosse, Wis.	31,833						1		1	
La Fayette, Ind.	21,481	4					1			
Lake Charles, La.	14,930	5								1
Lancaster, Ohio.	16,086	4					2			
Lancaster, Pa.	51,437		7						3	
La Salle, Ill.	12,332	0								
Laurel, Miss.	12,313						2			
Lawrence, Kans.	13,477	2					1			
Lawrence, Mass.	102,923	14	3				1		4	
Leavenworth, Kans.	[1]19,363	5					1			
Lebanon, Pa.	20,947		2						1	
Leominster, Mass.	21,365	1			1				1	
Lexington, Ky.	41,997	15					2			4
Lincoln, Nebr.	46,957	12	6				2			1
Little Rock, Ark.	58,716		2				3		1	
Lockport, N. Y.	20,028	1					2			
Logansport, Ind.	21,338	5								
Long Beach, Calif.	29,163	13	1							
Long Branch, N. J.	15,733	4								
Lorain, Ohio.	38,266		3		1		1		1	
Los Angeles, Calif.	535,495	141	76	2	18		7		45	16
Louisville, Ky.	240,808	51	8				3		9	4
Lowell, Mass.	114,366	36			13		4		8	1
Lynchburg, Va.	33,497	7	2						2	2
Lynn, Mass.	104,534	28							25	2
McKeesport, Pa.	48,289		1		1		3			
Macon, Ga.	46,099	22	4				4			
Madison, Wis.	31,315		1							

[1] Population Apr. 15, 1910.

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

City Reports for Week Ended Sept. 25, 1920—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Malden, Mass	52,243	7	7				4		2	1
Manchester, Conn	15,859	2								
Manchester, N. H	79,607	28	4		1		3		2	1
Manitowoc, Wis	13,931		1				4			
Mankato, Minn	[1] 10,365	6					1			
Marinette, Wis	[1] 14,610								1	
Marion, Ind	19,923	3								
Marion, Ohio	24,129				1					
Marquette, Mich	12,555	4							1	
Marshalltown, Iowa	14,519						1			
Martinsburg, W. Va	12,984		1				1			
Mason City, Iowa	14,938	4					1			
Mattoon, Ill	12,764								2	
Medford, Mass	26,681	2	1				2		2	
Melrose, Mass	17,724	3	2				1			
Meriden, Conn	29,431						1			
Methuen, Mass	14,320	5			1					1
Middletown, N. Y	15,890		3							
Milwaukee, Wis	445,008	64	20	2	5		13		12	6
Minneapolis, Minn	373,448	69	11		2		12	1	33	8
Mishawaka, Ind	17,083	2								
Missoula, Mont	19,075	1			1				2	
Mobile, Ala	59,201	20	3							2
Monessen, Pa	23,070		1		3					
Monmouth, Ill	10,346	3	1							
Montclair, N. J	27,087	4							1	
Montgomery, Ala	44,039	10	1						2	
Morristown, N. J	13,410	3					1			
Moundsville, W. Va	11,513	3					1			
Mount Carmel, Pa	20,709		2							
Mount Vernon, N. Y	37,991	11	3				1			1
Muncie, Ind	25,653	5	1				4			1
Muscatine, Iowa	17,713	5								
Nashville, Tenn	118,136	29	6	1			2		4	2
New Bedford, Mass	121,622	33	2	2	2		1		7	2
New Britain, Conn	55,385	10	4				1			
New Brunswick, N. J	25,855		3				2			
Newburyport, Mass	15,291	5								1
New Castle, Pa	41,915		3							
New Haven, Conn	152,275	34	2				15		15	1
New London, Conn	21,199								1	
New Orleans, La	377,010	100	1		2		2		19	11
Newton, Mass	44,343	11			2		1		2	
New York, N. Y	5,737,492	1,087	132	7	17	2	41	1	[2] 357	[2] 97
Niagara Falls, N. Y	38,466	8	5	1	1		4			
Norfolk, Va	91,148		2	1	3				4	2
Norristown, Pa	31,969		2							
North Adams, Mass	[1] 22,019	6							1	
Northampton, Mass	20,006	10	1						1	
North Attleboro, Mass	11,248	1								
North Braddock, Pa	15,684		2				3			
North Little Rock, Ark	15,515	3	2							
North Tonawanda, N. Y	14,060	2								
Norwalk, Conn	27,332	7								
Norwich, Conn	21,923	2	1	1						
Norwood, Ohio	23,269	3	1							
Oakland, Calif	206,405	46	2							5
Oak Park, Ill	27,816	10	1						4	
Ogdensburg, N. Y	16,845	2								
Oil City, Pa	20,162		3		5		2			
Oklahoma City, Okla	97,588	12	9				6		2	1
Olean, N. Y	16,927	10								
Omaha, Nebr	177,777	47	23	1			3			7
Orange, N. J	33,636	6								2
Oshkosh, Wis	36,549						1			
Paducah, Ky	25,178		6							
Parkersburg, W. Va	21,050	5	1							
Parsons, Kans	15,952								1	
Pasadena, Calif	49,620	3								
Passaic, N. J	74,478	15	1		2		1			1

[1] Population Apr. 15, 1910.

[2] Pulmonary tuberculosis only.

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

City Reports for Week Ended Sept. 25, 1920—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Paterson, N. J.	140,512	2	4				1		6	
Pawtucket, R. I.	60,666	11					1			
Peekskill, N. Y.	19,034	2								
Peoria, Ill.	72,134	15	2		1		8			
Perth Amboy, N. J.	42,646	8	3				1		10	
Petersburg, Va.	25,817	8	1				1		2	1
Philadelphia, Pa.	1,735,514	383	56	4	6		52	1	79	39
Phillipsburg, N. J.	15,879	3								1
Phoenixville, Pa.	11,871				1		1			
Piqua, Ohio.	14,275	5								
Pittsburgh, Pa.	586,196		8		1		10			
Pittsfield, Mass.	39,678	9			5		1			1
Plainfield, N. J.	24,330	5	1				2			
Plattsburg, N. Y.	13,111	5								1
Plymouth, Mass.	14,001	3		1						
Pontiac, Mich.	18,006	18	5	1			3			1
Port Chester, N. Y.	16,727	3	3						1	
Port Huron, Mich.	[1] 18,863	7					2		1	1
Portland, Me.	64,720	28	1		2		2			2
Portland, Oreg.	338,399	50	6		4	1	7		2	5
Pottstown, Pa.	16,987				1					
Pottsville, Pa.	22,717		1							
Poughkeepsie, N. Y.	39,756	8	2						1	1
Providence, R. I.	259,895	52	8	2	8		1			1
Pueblo, Colo.	56,084	12	4		1					
Quincy, Ill.	36,832	9	1	1			1		1	1
Racine, Wis.	47,465		1				7		3	
Rahway, N. J.	10,361	2					2	1	1	
Raleigh, N. C.	29,274	9	5				3			
Reading, Pa.	111,607		5				1			
Redlands, Calif.	14,573	2							2	2
Reno, Nev.	15,514	2					1		1	
Richmond, Ind.	25,080	4					2			
Richmond, Va.	158,752	42	37		1		11		4	3
Riverside, Calif.	20,496	7								2
Roanoke, Va.	45,282	17	8		2				4	2
Rochester, N. Y.	261,714	68	20				6		13	2
Rockford, Ill.	56,739	15	1		1		3			
Rock Island, Ill.	29,452	5					2		3	
Rocky Mount, N. C.	12,673	4						1		
Rome, Ga.	15,607		4				2			
Rome, N. Y.	24,259				15				1	
Rutland, Vt.	15,038	2								
Sacramento, Calif.	68,984	19	4				1		1	1
St. Cloud, Minn.	12,013		2							
St. Joseph, Mo.	86,498	33	3				2			
St. Louis, Mo.	768,630	159	59	6	13		36	15	146	22
St. Paul, Minn.	252,465	45	6				3		6	5
Salem, Mass.	49,346	10	2				2		2	1
Salem, Oreg.	21,274	5								
Salt Lake City, Utah.	121,623	28			7					4
San Bernardino, Calif.	17,616	6	1							3
San Diego, Calif.	56,412	14	2						1	1
Sanford, Me.	11,217	1								
San Francisco, Calif.	471,023	119	16	3	3		11		22	6
Santa Barbara, Calif.	15,360	3							1	1
Santa Cruz, Calif.	15,150	3	5							
Saratoga Springs, N. Y.	13,839	5							2	
Sault Ste. Marie, Mich.	14,130	4					9	1		1
Savannah, Ga.	69,250	30	2	1			1			1
Schenectady, N. Y.	103,774	17	3		1		3		4	
Scranton, Pa.	149,541		1				1			
Seattle, Wash.	366,445		9		1		7			
Shamokin, Pa.	21,274		4							
Sharon, Pa.	19,156		1				5			
Sheboygan, Wis.	28,907						1			
Sioux Falls, S. Dak.	16,887	4					6			
Somerville, Mass.	88,618	18								1
South Bend, Ind.	70,967	6	1				4		1	
Southbridge, Mass.	14,465	1					1			1

[1] Population Apr. 15, 1910.

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

City Reports for Week Ended Sept. 25, 1920—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Spartanburg, S. C.	21,985	5	4	.....	.....	.....	1	.....	1	1
Spokane, Wash.	157,656	.....	2	.....	.....	.....	11	.....	.....	.....
Springfield, Ill.	62,623	22	.....	.....	1	.....	2	.....	1	.....
Springfield, Mass.	108,668	20	1	.....	1	.....	5	.....	4	4
Springfield, Ohio.	52,296	18	2	.....	1	.....	2	.....	2	1
Steelton, Pa.	15,759	.....	.....	.....	.....	.....	.....	.....	1	.....
Steubenville, Ohio.	28,259	10	2	.....	1	.....	.....	.....	.....	.....
Stillwater, Minn.	[1] 10,198	1	.....	.....	.....	.....	.....	.....	.....	.....
Stockton, Calif.	36,209	7	1	.....	.....	.....	1	.....	.....	1
Sunbury, Pa.	16,661	.....	3	.....	.....	.....	1	.....	.....	.....
Superior, Wis.	47,167	10	.....	.....	2	.....	9	.....	.....	2
Syracuse, N. Y.	158,569	45	8	1	1	.....	11	.....	3	1
Tacoma, Wash.	117,446	.....	4	.....	.....	.....	1	.....	.....	.....
Taunton, Mass.	36,610	7	.....	.....	.....	.....	2	.....	.....	.....
Terre Haute, Ind.	67,361	9	.....	.....	.....	.....	.....	.....	1	.....
Toledo, Ohio.	202,010	47	13	.....	.....	.....	6	.....	4	4
Topeka, Kans.	49,538	7	1	.....	6	.....	10	.....	.....	.....
Traverse City, Mich.	14,090	2	.....	.....	.....	.....	1	.....	.....	.....
Trenton, N. J.	113,974	26	6	.....	.....	.....	.....	.....	3	1
Trinidad, Colo.	14,413	.....	2	.....	6	.....	1	.....	.....	.....
Troy, N. Y.	78,094	16	1	.....	2	.....	.....	.....	8	.....
Uniontown, Pa.	21,600	.....	1	.....	1	.....	.....	.....	.....	.....
Vallejo, Calif.	13,903	3	.....	.....	.....	.....	.....	.....	.....	.....
Vancouver, Wash.	13,805	.....	.....	.....	.....	.....	4	.....	.....	.....
Waco, Tex.	34,015	11	1	.....	.....	.....	.....	.....	.....	.....
Wakefield, Mass.	12,947	1	.....	.....	.....	.....	1	.....	.....	.....
Waltham, Mass.	31,011	3	.....	.....	9	.....	.....	.....	1	.....
Warren, Pa.	15,063	.....	.....	.....	.....	.....	1	.....	1	.....
Washington, D. C.	369,282	90	10	.....	4	.....	8	1	23	9
Washington, Pa.	22,076	.....	1	.....	10	.....	.....	.....	.....	.....
Waterbury, Conn.	89,201	24	.....	.....	.....	.....	2	.....	5	1
Watertown, Mass.	15,188	4	.....	.....	.....	.....	.....	.....	.....	.....
Watertown, N. Y.	30,404	.....	2	.....	.....	.....	1	.....	.....	.....
Wausau, Wis.	19,666	1	.....	.....	.....	.....	.....	.....	.....	.....
West Chester, Pa.	13,403	.....	1	.....	.....	.....	1	.....	.....	.....
Westfield, Mass.	18,769	5	.....	.....	.....	.....	.....	.....	1	.....
West Hoboken, N. J.	44,386	2	2	.....	.....	.....	2	.....	1	.....
West New York, N. J.	19,613	2	1	.....	1	.....	1	.....	.....	.....
Wheeling, W. Va.	43,657	17	3	.....	.....	.....	3	.....	.....	.....
White Plains, N. Y.	23,331	4	.....	.....	.....	.....	.....	.....	.....	.....
Wichita, Kans.	73,597	14	4	.....	1	.....	4	.....	7	.....
Wilkes-Barre, Pa.	78,334	.....	6	.....	.....	.....	8	.....	2	.....
Wilkinsburg, Pa.	23,899	.....	.....	.....	.....	.....	1	.....	.....	.....
Williamsport, Pa.	34,123	.....	1	.....	.....	.....	7	.....	.....	.....
Wilmington, Del.	95,369	28	3	.....	.....	.....	6	.....	3	3
Winston-Salem, N. C.	33,136	11	1	.....	.....	.....	.....	.....	1	.....
Winthrop, Mass.	13,105	2	.....	.....	.....	.....	2	.....	.....	1
Woburn, Mass.	16,076	0	.....	.....	.....	.....	.....	.....	.....	.....
Worcester, Mass.	166,106	51	5	.....	.....	.....	7	.....	13	5
Yonkers, N. Y.	103,066	20	1	.....	.....	.....	1	.....	1	3
York, Pa.	52,770	.....	4	.....	1	.....	.....	.....	1	.....
Youngstown, Ohio.	112,282	37	.....	1	.....	.....	.....	.....	3	1
Zanesville, Ohio.	31,320	7	.....	.....	.....	.....	1	.....	1	.....

[1] Population Apr. 15, 1910.

FOREIGN AND INSULAR.

AZORES.

Plague.

Plague was reported present in the Azores Islands, October 7, 1920, with 14 cases and 6 fatalities.

JAMAICA.

Infectious Disease Reported Present.[1]

During the week ended September 11, 1920, 375 cases of alastrim were notified in the island of Jamaica, and during the week ended September 18, 1920, 496 cases. During the first-named period there were reported 45 cases of chicken pox in the island, and during the second period under report, 14 cases.

Under date of September 23, 1920, the epidemic of alastrim or Kaffir pox reported present in the island of Jamaica since August 20 was stated to be declining in Kingston, but the infection was said to be spreading in outlying districts of the island. It was stated that mortality from the disease was extremely low, that vaccination did not give complete immunity, and that it "took" in some patients just recovered from severe attacks of alastrim; also that the disease closely resembled smallpox, was very painful, and caused strong, though temporary, disfigurement. The period of incubation was stated to be 14 days.

UNION OF SOUTH AFRICA.

Influenza—Durban—July, 1920.

Influenza was reported present, with some fatalities, during the month of July, 1920, at Durban, Union of South Africa.

[1] Public Health Reports, Sept. 3, 1920, p. 2132, and Sept. 24, 1920, p. 2298.

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

Reports Received During Week Ended Oct. 15, 1920.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Antung	Aug. 9-15	1	1	
Changsha	Aug. 22-28	42	7	Aug. 15-21: Present.
Chungking	Aug. 15-Sept. 4	.....	816	Present in surrounding country.
Hongkong	Aug. 8-14	1	1	
Shanghai	Aug. 23-29	.....	3	In Chinese population.
Chosen (Korea):				
Chemulpo	Sept. 3-9	3	3	
Fusan	.....do	3	.....	
Mokpo	.....do	2	2	
Seoul	.....do	77	64	
India:				
Bombay	Aug. 8-14	3	1	
Calcutta	Aug. 15-21	14	14	
Indo-China:				
Saigon	Aug. 2-8	1	1	
Java:				
West Java	.....	.....	.....	Aug. 6-12, 1920: Cases, 1.
Batavia	Aug. 6-12	1	.....	

PLAGUE.

Azores:				
St. Michaels	.....	.....	.....	Oct. 4, 1920: 5 suspect cases isolated vicinity of Ponta Delgada. On Oct. 7, 1920, 14 cases with 6 fatalities reported.
China:				
Hongkong	Aug. 8-21	4	4	
Egypt	.....	.....	.....	Jan. 1-Aug. 26, 1920: Cases, 402; deaths, 339.
Provinces—				
Garbieh	Aug. 19	2	2	
Greece:				
Athens	Oct. 8	1	.....	
Saloniki	.....do	1	.....	
India	.....	.....	.....	Aug. 8-14, 1920: Cases, 1,581; deaths, 1,145.
Bombay	Aug. 8-14	18	11	
Karachi	Aug. 15-21	1	1	
Madras Presidency	Aug. 22-28	394	245	
Indo-China:				
Saigon	Aug. 2-8	3	2	Of these, 1 case at Cholon.
Java:				
East Java—				
Surabaya	July 22-Aug. 4	4	4	

SMALLPOX.

Bolivia:				
La Paz	Aug. 1-31	3	1	
Canada:				
New Brunswick—				
Counties—				
Carleton	Sept. 19-25	1	.....	
Gloucester	.....do	2	.....	
Saskatchewan—				
Moose Jaw	.....do	1	.....	
Saskatoon	.....do	2	.....	
China:				
Chungking	Aug. 15-28	.....	.....	Present.
Foochow	.....do	.....	.....	Do.
Nanking	.....do	.....	.....	Do.
Egypt:				
Cairo	July 2-8	1	.....	
Port Said	.....do	1	.....	
Great Britain:				
Glasgow	Sept. 12-18	71	1	
India:				
Bombay	Aug. 8-14	5	1	
Calcutta	Aug. 15-21	1	1	
Madras	Aug. 22-28	4	2	

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

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

Reports Received During Week Ended Oct. 15, 1920—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Italy:				
Catania	Sept. 6-12	31		In Province.
Messina	Aug. 29-Sept. 4	10	2	Do.
Palermo	Aug. 27-Sept. 9	63	16	
Java:				
West Java				Aug. 6-19, 1920: Cases, 38; deaths, 7.
Batavia	Aug. 6-19	2	1	
Russia:				
Riga	Aug. 1-7	1		Province of Latvia.
Spain:				
Barcelona	Aug. 26-Sept. 8		2	
Syria:				
Aleppo	Aug. 29-Sept. 4			Present in city and in Armenian orphanage.
Tunis:				
Tunis	Sept. 6-19	15	3	
Union of South Africa:				
Johannesburg	July 1-31	15		
On vessel:				
S. S. Henry R. Mallory	Oct. 2	1		At Habana from Spanish ports. Vessel left Vigo, Spain, Sept. 19.

TYPHUS FEVER.

Chile:				
Concepcion	Aug. 17-23		3	
Valparaiso	July 18-Sept. 24		32	
Greece:				
Saloniki	Aug. 23-29	14	1	Russian refugees.
Turkey:				
Constantinople	Sept. 5-11	1		

YELLOW FEVER.

Salvador	Sept. 12-18	1		

Reports Received from June 26 to Oct. 8, 1920.

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks
Brazil:				
Rio de Janeiro	June 27-July 3		1	
China:				
Amoy	June 20-Aug. 14		12	
Canton	July 1-31	1	1	
Chungking	May 16-24		1,319	
Do	June 6-Aug. 14		4,241	
Foochow	July 11-24			Present.
Hankow	July 4-17	12	5	
Harbin				Year 1919: Cases, 603. On Eastern Chinese R. R. line. At other stations, same line, 190 cases.
Shanghai	Aug. 2-22	1	3	
Chosen (Korea)				Sept. 8, 1920: Cases, 13,000; deaths, 5,000 (estimated).
Chemulpo	Aug. 1-Sept. 8	3		
Chinnampo	Aug. 1-26	34	23	
Fusan	Aug. 1-Sept. 2	659	273	Corrected from 280 by later report.
Gensan	Aug. 27-Sept. 2	1		
Mokpo	Aug. 1-Sept. 2	24	13	
Seoul	Aug. 1-Sept. 2	810	495	

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

Reports Received from June 26 to Oct. 8, 1920—Continued.

CHOLERA—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Greece:				
Patras	July 26–Aug. 1			Present in surrounding country.
Zante	Aug. 2–8			Present.
India				Apr. 11–May 22, 1920: Deaths, 7,549. May 30–June 26, 1920: Deaths, 3,710. June 27–July 10, 1920: Deaths, 1,711.
Bombay	May 2–June 26	85	36	
Do	June 27–Aug. 7	81	56	
Calcutta	May 2–June 24	439	423	
Do	July 18–Aug. 7	124	119	
Madras	May 2–June 26	20	13	
Do	July 11–Aug. 14	8	1	
Rangoon	June 27–July 4	21	16	
Indo-China:				
Saigon	Apr. 26–June 13	130	94	Report for May 9 not received.
Do	July 26–Aug. 1	4	1	
Japan:				
Kobe	June 14–27	36	24	Kobe, June 6–13, 34 cases. Moji, June 6–12, 10 cases. Kochi, June 6–12, 1 case. Hiroshima, June 6–12, 6 cases.
Do	June 28–Aug. 30	375	193	
Nagasaki	June 21–27	7		
Do	June 28–July 18	34	13	
Osaka	do			
Taiwan Island	May 22–June 20	60	33	
Do	July 11–Aug. 20	645	62	
Java:				
West Java—				
Batavia	Apr. 30–June 3	6	2	June 4–17: Present.
Do	June 25–July 15	2		
Philippine Islands:				
Manila	May 9–June 26	5	1	May 9–June 26, 1920: Cases, 16; deaths, 12. June 27–July 17, 1920: Cases, 63; deaths, 31. July 25–31: Cases, 57; deaths, 48.
Do	June 27–July 10	3		
Provinces—				
Albay	May 9–15	2	1	
Batangas	June 27–July 3	1		
Bohol	do	1	1	
Cagayan	May 9–June 26	11	19	
Do	June 27–July 10	35	9	
Iloilo	June 27–July 17	3		
Isabela	July 11–31	13	14	
Laguna	July 4–10	8		
Misamis	July 11–17	4	2	
Nueva Viscaya	July 25–31	49	42	
Pangasinan	July 4–17	6	4	
Russia				Reported prevalent in southern Russia, June 4, 1920.
Sebastopol (district)	June 20			Reported increasing.
Simferopol				Jan.–June, 1920: Cases, 1,262; deaths, 584. South Russia, Government of Taurido.
Vilna	Sept. 28	40		Province of Lithuania.
Siam:				
Bangkok	Apr. 25–June 26	542	343	
Do	June 26–July 31	39	16	
Straits Settlements:				
Singapore	July 18–Aug. 7	16	14	
Turkey:				
Amassia	Dec. 24	1		Asiatic Turkey.
Kaiseri	Dec. 22	1		Do.
Karassi	Jan. 3	1		Do.
Mamuret-ul-Aziz	Dec. 31	1	1	Do.
Panderma	Dec.–Jan	16	6	
Rodosto	Dec. 29	1		European Turkey.
Smyrna	Dec. 22	3	2	Asiatic Turkey.
On vessel:				
S. S. Keketticut	Aug. 2	1		U. S. S.; at Shanghai.

PLAGUE.

Brazil:				
Bahia	Apr. 25–May 22	10	10	
Do	June 27–Aug. 21	8	4	
Pernambuco	May 3–9	1	1	
Do	June 28–Aug. 15	22	16	
Porto Alegre	June 27–Aug. 21		2	

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

Reports Received from June 26 to Oct. 8, 1920—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
British East Africa				Apr. 1-30, 1920: Cases,22; deaths, 9.
Kisumu	Apr. 25-June 26	14	12	
Do	July 11-Aug. 14	4	4	Present Aug. 8-14, 1920.
Mombasa	Apr. 25-June 26	104	39	
Do	June 27-July 31	68	34	
Nairobi	Apr. 25-June 10	14	8	
Ceylon:				
Colombo	May 25-June 12	7	2	
Do	June 27-Aug. 7	10	10	
Chile				Mar. 1-May 31, 1920: Cases, 15; deaths, 2. Plague reported in Departments of Tacna and Tarata.
Antofagasta	May 17-June 20	5		Mar. 1-May 31, 1920: Cases, 7; deaths, 1.
Do	July 5-11	1		
Iquique	Mar. 1-May 31	8	1	
China:				
Amoy	June 20-Aug. 14		6	
Hongkong	Apr. 4-June 26	90	70	
Do	June 27-Aug. 7	22	19	
Equador:				
Guayaquil	Aug. 16-30	4		
Egypt				Jan. 1-Aug. 12, 1920: Cases, 407; deaths, 237.
Cities—				
Alexandria	June 18-Aug. 12	10	7	
Port Said	Aug. 2-16	2		
Suez	May 13-June 8	12	6	3 cases pneumonic.
Do	July 3-Aug. 4	4	3	
Provinces—				
Assiout	May 15-June 5	7	4	
Do	July 2-14	6		
Beni-Souef	July 7-10	2	1	
Fayoum	June 5	1		
Garbieh	....do	1		
Do	July 1-12	14	10	
Keneh	May 18	1		
Mariut	May 18-June 8	19	22	
Do	July 3-9	1	2	
Minieh	May 15	2	1	Septicemic.
Do	July 13	1		
Fiume	Sept. 21	4	2	
Great Britain:				
Liverpool	June 20-26	1	1	
Greece:				
Athens	Aug. 19-25	2	2	
Dante	July 22	2		
Kavalla	July 5-Aug. 21	3		
Nauplia	Aug. 21	2		Approximately 20 cases Sept. 9.
Piræus	June 29-Sept. 20	12	1	
Saloniki	Sept. 25	2		
Zante				Do.
India				Apr. 18-June 26, 1920: Cases, 12,476; deaths, 9,961. June 27-Aug. 7, 1920: Cases, 5,359; deaths, 4,074.
Bombay	Apr. 18-June 26	152	124	
Do	June 27-Aug. 7	25	22	
Calcutta	May 2-June 12	26	19	
Karachi	May 9-Aug. 14	65	58	
Madras Presidency	....do	4,253	3,172	
Rangoon	Apr. 25-June 26	120		
Do	June 27-Aug. 7	157	136	
Indo-China:				
Saigon	May 10-June 13	9	2	
Do	July 26-Aug. 1	1	1	
Italy:				
Catania	June 22-July 3	3	2	
Java:				
East Java				Apr. 23-May 5, 1920: Cases, 7; deaths, 7. Apr. 15-June 16, 1920: Cases, 8; deaths, 8, Surabaya Residency.
West Java—				
Batavia	Aug. 2-8	5	5	
Mesopotamia:				
Bagdad	June 1-30	6	3	
Mexico:				
Tampico	July 26-Sept. 27	4	3	
Vera Cruz	June 14-20	11	1	May 29-July 24, 1920: Cases, 49; deaths, 29. Corrected statement: From outbreak in May to July 20, 1920—cases, 58; deaths, 36.
Do	July 18-24	2	2	

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

Reports Received from June 26 to Oct. 8, 1920—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Peru				Mar. 1–31, 1920: Cases, 46; deaths, 29. Apr. 1–30, 1920: Cases, 36; deaths, 13. In coastal departments.
Callao	Mar. 1–31	6	3	
Do	Apr. 1–30	9	4	
Lima (city)	Mar. 1–31	5	3	
Do	Apr. 1–30	4	4	
Lima (country)	Mar. 1–31	1	1	
Do	Apr. 1–30	1		
Mollendo	Mar. 1–31	13	9	
Paita	do	5	2	
Do	Apr. 1–30	2		
Salaverry	Mar. 1–31	4	3	
Do	Apr. 1–30	1		
San Pedro	do	6	1	
Trujillo	May 31–June 29	3	2	
Russia:				
Batum	Sept. 28			Prevalent.
Siam:				
Bangkok	Apr. 25–June 5	8	5	
Do	June 28–July 17	5	2	
Straits Settlements:				
Singapore	Apr. 25–June 19	14	13	
Do	July 11–Aug. 7	3	3	
Syria:				
Beirut	June 30			Present.
Turkey:				
Constantinople	July 25–Aug. 21	7	6	
Uruguay:				
Montevideo	June 1–30	1	1	

SMALLPOX.

Algeria:				
Departments—				
Algiers	May 11–Aug. 31	51		City of Algiers, Apr. 1–30, 1920: One case. July 1–Aug. 31, 1920: Cases, 4; deaths, 2.
Constantine	June 1–Aug. 31	18		
Oran	May 11–Aug. 31	168		
Austria				May 30–June 26, 1920: Cases, 27.
Vienna	May 30–June 26	1		
Azores:				
Ponta Delgada	July 17–Aug. 20	7		
St. Michaels	Aug. 21–27	1		From Madeira.
Bolivia:				
La Paz	May 2–31	6	8	
Brazil:				
Bahia	Apr. 25–June 26	5	5	
Do	June 27–Aug. 21	20	2	
Pernambuco	Mar. 29–June 27	114	3	
Do	June 30–Aug. 15	112	2	
Rio de Janeiro	Apr. 11–June 26	431	6	
Do	June 27–Aug. 7	37	6	
Santos	Mar. 24–28	1		
Sao Paulo	June 21–27		1	
Do	June 27–July 4		1	
British East Africa				Mar. 1–31, 1920: Cases, 107; Apr. 1–30, 1920: Cases, 69. Reported by native inspectors.
Mombasa	May 2–22	2	1	
Do	July 11–17	3		
Nairobi	May 23–June 26	11	1	
Do	Aug. 1–7	4		
Bulgaria:				
Sofia	July 11–17	1		
Canada:				
Alberta—				
Calgary	June 3–9	1		
Do	July 4–Aug. 7	5		
British Columbia—				
Vancouver	May 16–Aug. 28	4		
Manitoba—				
Winnipeg	May 29–June 5	3		
Do	Aug. 8–21	2		

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

Reports Received from June 26 to Oct. 8, 1920—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Canada—Continued.				
New Brunswick—				
Bonaventure and Gaspe Counties.	Aug. 1-31	1		
Gloucester County	May 31-June 26	5		
Campbelltown	July 1-31	7		
Queens County	July 4-Aug. 21	7		
Nova Scotia—				
Halifax	do	2		
Sydney	May 31-June 26	2		
Ontario—				
Cornwall	June 25-30	2		
Fort William	July 25-Aug. 14	2		
Hamilton	June 13-Aug. 25	7		
Kingston	May 31-June 19	4		
North Bay	June 23-29	1		
Do	July 11-Sept. 11	6		
Ottawa	June 6-26	32		
Do	June 27-Sept. 25	55		
Peterborough	Apr. 18-July 31	33	1	
Port Arthur	July 11-17	2		
Prescott	do	1		
Do	Aug. 1-14			Present at Cardinal and Brockville.
Toronto	June 6-19	13		
Do	June 26-Sept. 25	26		
Windsor	Aug. 22-Sept. 11	5		
Prince Edward Island—				
Charlotte Town	Aug. 12-18	1		
Quebec—				
Montreal	June 13-19	1		
Do	July 4-Aug. 7	4		
Quebec	June 27-Aug. 28	6		
Saskatchewan—				
Moosejaw	June 26-30	6		
Do	July 25-Sept. 18	2		
Regina	June 26-30	1		
Saskatoon	Sept. 5-11	1		
Ceylon:				
Colombo	May 9-June 5	2		
Chile:				
Antofagasta	May 17-23			1 case in interior.
China:				
Amoy	May 2-Aug. 7	4	12	
Antung	May 9-June 13	3	3	
Do	June 21-27	1		
Chungking	May 2-June 9			Present.
Do	July 11-Aug. 14			Do.
Foochow	May 9-29			Do.
Do	July 25-Aug. 14			Do.
Hankow	June 20-26	2		
Harbin				Year, 1919: Cases, 79. On Eastern Chinese R. R. line. At other stations, 109 cases.
Hongkong	Apr. 4-June 26	19	15	
Do	June 27-July 17	2	2	
Mukden	July 19-Aug. 21			Present.
Nanking	May 9-June 5			Do.
Do	July 4-Aug. 7			Do.
Tientsin	May 25-31	2		
Do	June 13-19	2		
Tsinanfu	May 9-15	1		
Chosen (Korea):				
Chemulpo	Mar. 1-June 30	69	40	
Fusan	do	24	6	
Seoul	do	358	86	
Colombia:				
Barranquilla	May 16-July 3			Epidemic.
Santa Marta	May 31-Sept. 18			Present.
Cuba:				
Antilla	Aug. 24-Sept. 13	2		
Habana	July 4	1		From steamship Frank Hennis from Jamaica. Arrived Santiago June 30, 1920.
Matanzas	Aug. 15-21	1	1	In vicinity, at Aguacate, Aug. 1-7, 1920: Cases, 12.
Cyprus				August, 1919: Cases, 242; deaths, 54.

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

Reports Received from June 26 to Oct. 8, 1920—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Czechoslovakia:				
Moravia	Feb. 1–28	68		
Danzig	June 20–July 17	9	2	
Egypt:				
Alexandria	May 14–June 29	53	19	
Do	June 25–Aug. 26	11	3	
Cairo	Apr. 2–June 24	62	23	
Port Said	....do	22	8	
France:				
Brest	May 15–21	1		
Cette	June 24–30		1	
Nice	June 1–30		1	
Paris	May 1–10	3		
Germany				Feb. 22–June 12, 1920: Cases, 720.
Great Britain:				
Edinburgh	Aug. 29–Sept. 4	7	1	
Glasgow	May 25–June 26	136	22	
Do	July 4–Sept. 11	89	42	
Liverpool	July 18–24	1		
London	June 13–July 19	14		
Manchester	Aug. 22–28	5		
Greece:				
Saloniki	May 31–June 27	4	1	
Do	July 25–Aug. 15	1	1	
Haiti:				
Port au Prince	Sept. 22	5		
India				Apr. 11–May 22, 1920: Deaths, 7,743. May 30–June 26, 1920: Deaths, 3,864.
Bombay	Apr. 26–June 26	103	45	May 9–15, 1920: Cases, 26; deaths, 11.
Do	June 27–Aug. 7	40	8	
Calcutta	May 2–June 12	101	93	
Do	July 18–24	7	7	
Karachi	May 9–June 26	15	12	
Do	June 27–July 10	7	4	
Madras	May 9–June 26	27	15	
Do	June 27–Aug. 21	29	7	
Rangoon	Apr. 25–June 26	35	14	
Do	June 27–Aug. 7	20	5	
Indo-China:				
Saigon	May 10–16	7	2	
Do	June 7–13	5	1	
Italy:				
Catania	July 12–Aug. 29	27		Aug. 9–15, 1920: 30 cases in vicinity.
Genoa	May 17–23	12		In Province.
Do	June 14–27	20		
Do	June 28–July 4	3		
Messina	May 10–June 27	7	1	Province, May 10–June 27: Cases, 168; deaths, 27.
Do	June 28–July 11	1	1	Province: Cases, 9; deaths, 3.
Milan	Mar. 1–May 31	30	5	
Naples	May 23–June 20	7	3	
Palermo	May 11–Aug. 5	47	3	
Turin	June 23–July 4	1		
Jamaica:				
Kingston	July 22			Present.
Japan:				
Kobe	May 9–June 27	10	5	
Do	June 28–July 18	7	2	
Taiwan Island	May 1–June 20	40	11	
Do	June 21–July 20	14	8	
Tokyo	Apr. 21–May 10	5	4	
Java:				
West Java				Apr. 16–June 24, 1920: Cases, 56; deaths, 10. June 25–July 28, 1920: Cases, 12; deaths, 1.
Batavia	Apr. 16–June 17	94	26	
Do	July 9–29	4	1	
Jugo-Slavia				Feb. 1–June 23, 1920: Cases, 2,519; deaths, 561.
Madeira:				
Funchal	June 20–26		2	
Do	July 18–24			Present.
Malta	May 1–June 30		3	
Manchuria:				
Mukden	May 2–8			Do.

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

Reports Received from June 26 to Oct. 8, 1920—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Mesopotamia:				
Bagdad	July 1-31	1		
Mexico:				
Ciudad Juarez	Aug. 2-8	1		
Guadalajara	May 1-31	1		
Do	July 1-31	3		
Laredo	July 30	2		
Mazatlan	May 19-25		1	
Salina Cruz	June 1-30	5	3	
Do	Aug. 1-31	1	1	
San Luis Potosi	May 31-June 6		1	
Do	June 28-Sept. 19		8	
Tampico	July 1-31		5	
Newfoundland:				
Broad Cove	Sept. 4-10	1		
Ladle Cove	Sept. 11-17	6		
St. Johns	June 5-11	3		Reported at 2 other localities.
Shoal Harbor	July 10-16	7		July 3-16: Present at 4 localities.
Poland				Jan. 1-31, 1920: Cases, 1,895; deaths, 301.
Minsk District	Jan. 1-31	1,052	228	
Porto Rico:				
Caguas	Aug. 9-15	1		
Portugal:				
Lisbon	May 16-June 28		8	
Do	June 27-Aug. 14		11	
Russia:				
Riga				May, 1920: Cases, 5. June, 1920: Cases, 7.
Vladivostok	Jan. 1-June 30	252	78	
Do	July 1-31	2		
Spain:				
Barcelona	May 19-June 12		4	
Do	June 18-Aug. 18		14	
Corunna	July 16-29		1	
Orense, Province	Sept. 6			Present.
Valencia	May 23-June 26	15	3	
Do	July 4-Sept. 4	9	3	
Vigo	May 31-June 26		4	
Do	July 18-Sept. 4		6	
Switzerland:				
Geneva	May 9-15	7		
Tunis:				
Tunis	May 25-June 27	6	5	
Do	June 28-Sept. 7	23	7	
Turkey:				
Constantinople	May 16-June 19	7		
Do	June 20-Aug. 28	12		
Union of South Africa:				
Johannesburg	May 1-31	23		

TYPHUS FEVER.

Algeria:				
Departments—				
Algiers	May 11-Aug. 31	44		
Constantine	May 21-Aug. 31	20		
Oran	May 11-Aug. 31	352		
Austria				Feb. 15-June 26, 1920: Cases, 67.
Vienna	Feb. 15-June 26	65		
Bolivia:				
La Paz	May 2-31		5	
Brazil:				
Ceara	Apr. 25-June 12		4	
Do	July 11-24		2	
Bulgaria:				
Sofia	June 20-25	2		
Chile				Mar. 1-June 30, 1920: Cases, 1,338; deaths, 244.
Antofagasta	July 5-11			Present.
Caleta Coloso	May 10-16		2	
Concepcion	Mar. 8-June 28	31	39	
Do	June 29-July 12	37	5	
Coquimbo	Aug. 8-15	1		
Santiago	Mar. 1-June 30	470	86	
Valparaiso	May 2-July 17		50	

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

Reports Received from June 26 to Oct. 8, 1920—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Antung	July 12–Aug. 8	7		Report week ended July 31, 1920, not received.
Eastern Chinese Railway	Aug. 9–15	4		At stations on line.
Harbin				On Eastern Chinese Railroad Line. Year 1919: Cases, 301. At other stations on line, 789 cases.
Chosen:				
Chemulpo	June 1–30	3		
Seoul	Mar. 1–Apr. 30	4	1	
Czechoslovakia				Feb. 1–28, 1920: Cases, 88; deaths, 7
Leipnik	Feb. 22–28	1		Quarantine station.
Danzig	June 20–26	1		Feb. 27–Mar. 27, 1920: Cases, 16.
Do	July 25–31	1	1	
Egypt:				
Alexandria	May 7–June 24	338	86	
Do	June 25–Sept. 2	141	61	
Cairo	Apr. 2–June 24	867	370	
Port Said	Apr. 9–June 24	112	53	
Germany				Feb. 22–Mar. 27, 1920: Cases, 23. Among troops, 4; among persons from Poland, 8. Mar. 28–June 26, 1920: Cases, 96.
Great Britain:				
Dublin	May 23–June 19	3	1	
Dundee	July 4–10	1		
Glasgow	May 30–June 5		1	
Queenstown	Aug. 1–7	1		
Greece:				
Athens	June 27–July 21		5	
Drama	July 12–18	1		
Patras	June 29–July 4		1	
Piræus	June 29–July 5		1	
Saloniki	Apr. 12–27	384	42	
Do	June 28–Aug. 22	110	37	
Guatemala:				
Guatemala City	Aug. 9–15		1	
Hungary				Jan. 19–May 29, 1920: Cases, 50.
Budapest	Jan. 10–May 23	27		
Italy:				
Catania	July 10–17	3		
Trieste	May 16–22	5		
Do	June 13–Aug. 28	106	9	
Japan:				
Kobe	Aug. 17–23	7		
Nagasaki	May 25–30	1		
Do	June 21–27	1		
Jugo-Slavia				Feb. 1–June 23, 1920: Cases, 691; deaths, 92.
Java:				
East Java—				
Surabaya	June 10–16	1		
West Java—				
Batavia	May 28–June 30	5	1	
Mexico:				
Chihuahua	May 31–June 6		1	
Nogales	Aug. 9–14	2		
San Luis Potosi	June 8–July 8			Present.
Do	July 2–Aug. 15		2	Sept. 19: Present.
Poland				Jan. 1–Mar. 31, 1920: Cases, 87,910; deaths, 19,733.
Warsaw				Jan. 1–Feb. 29, 1920: Cases, 911; deaths, 117.
Serbia				Mar. 14–Apr. 10, 1920: Cases, 181; deaths, 23.
Portugal:				
Oporto	Apr. 4–June 24	15	6	
Do	Aug. 1–14	3		
Russia:				
Riga	June 25–July 1	20		
Simferopol				Jan.–June, 1920: Cases, 3,955; deaths, 500.
Vilna	Sept. 28	35		
Vladivostok	May 1–21	22	2	Jan. 1–Apr. 30, 1920: Cases, 1,264; deaths, 144.
Do	July 1–31	16	2	

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

Reports Received from June 26 to Oct. 8, 1920—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Spain:				
Barcelona	July 9–15		1	
Madrid	June 1–30		1	
Switzerland:				
Geneva	June 28–July 4	1		
Tunis:				
Tunis	May 24–June 27	36	18	
Do	July 6–Aug. 31	1	1	
Turkey:				
Constantinople	May 16–June 12	27		
Do	June 19–July 19	15		
Venezuela:				
Maracaibo	July 21–27		1	

YELLOW FEVER.

Brazil:				
Bahia	May 23–June 19	1		
Colombia:				
Buenaventura	June 3	1	1	
Guatemala:				
Los Amates	Aug. 5–Sept. 1	10	3	Aug. 17: Present at several localities Aug. 5–23, 1920: Cases, 8; deaths, 6.
Quirigua	Aug. 9–15			Present.
Virginia	Sept. 10	1		Station on railway from Puerto Barrios to Guatemala City, 45 miles from Puerto Barrios.
Mexico:				
Progreso	July 30	1		
Do	Aug. 4–18	4	2	July 30–Aug. 18, 1920: Cases, 5; deaths, 3.
Puerto Mexico	Aug. 24–27	1	1	Case arrived Aug. 23 on s. s. Melchor Ocampo, from Progreso. Previously reported, P. H. R., Sept. 10, 1920.
Tampico	Sept. 17	1		Stated to have arrived from Tuxpam.
Do	Sept. 21–27	2	1	
Tuxpam	Sept. 1		2	Aug. 26–Sept. 1, 1920: Cases, 5; deaths, 5.
Vera Cruz	June 22		2	
Do	July 19–Sept. 18	52	28	
Do	Sept. 26	1	1	In Dr. Hedrick, U. S. Public Health Service.
Yucatan (State)—				
Hocoba	Sept. 8	8		In interior.
Hunucma	do	1	1	Do.
Sotuta	do	1	1	Do.
Peru				Mar. 1–31, 1920: Cases, 128; Apr. 1–20, 1920: Cases, 64.
Callao	Apr. 1–30	1		At quarantine station. From s. s. Huallaga.
Catacaos	Mar. 1–31	14		
Do	Apr. 1–30	2		
La Huaca	Mar. 1–31	9		
Do	Apr. 1–30	5		
Morropon	do	37		
Munuella	Mar. 1–31	12		
Paita	do	81		
Do	Apr. 1–30	14		
Piura	Mar. 1–31	1		
Do	Apr. 1–30	4		
Salitral	Mar. 1–31	2		
Sullana	do	9		
Do	Apr. 1–30	1		
Salvador:				
Armenia	June 20–26	1	1	
San Salvador	Aug. 1–21	6	2	Fatal cases were in Europeans.
Sonsonate	May 22–June 24	49	17	
On vessels:				
S. S. Haraldshaug	Sept. 28	1		At Pensacola, Fla. From Puerto Barrios, Tampico, and Vera Cruz.
S. S. Soestdijk	Sept. 11	1	1	At Quarantine, La.