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ON THE COMPOSITION OF THE PRECIPITATE FROM PARTIALLY ALKALINIZED ALUM SOLUTIONS.

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In their study of floc formation, Theriault and Clark (1923) left open the question of the composition of the precipitate which is formed when alkali is added to solutions of aluminium salts. The investigation here described is a preliminary examination of this phase of the fundamental aspect of water clarification by the alum process.

The statement is often made that, when an alkali hydroxide is added to the solution of a soluble salt of aluminium, hydrated aluminium hydroxide is precipitated. Schumberger (1895) stated that when to 1 mol of aluminium sulphate, $Al_2(SO_4)_3 \cdot 18H_2O$, are added 5 mols of potassium hydroxide, a precipitate of the composition $2(Al_2O_3) \cdot SO_3 \cdot 7H_2O$ was formed as determined by analysis. Grobet (1922), by physical measurements, claimed that there was a basic salt of the following composition: $Al_2(SO_4)_3 \cdot 2Al(OH)_3$. This was formed, however, only when sodium hydroxide was added to a concentrated alum or aluminium sulphate solution. Williamson (1923) claimed that, when 2 or 4 mols of sodium hydroxide were added to 1 mol of potassium alum, $K_2SO_4Al_2(SO_4)_3 \cdot 24H_2O$, a basic salt of the approximate composition $(Al_2O_3)_5 \cdot (SO_3)_3 \cdot 15H_2O$ was formed. A slight variation in composition between the two experiments was attributed to analytical error, Various other basic salts of aluminium, formed in different ways, have been described by Kremann and Huttinger (1908), Bancroft (1922), Rose (1913, 1914), Kullgren (1904), Adolph and Pauli (1921), Denham (1908), and Hale (1914).

Three months before the article of Williamson appeared, work was begun at the Hygienic Laboratory to determine the composition of the precipitate formed at different pH values by the addition of sodium hydroxide to potassium alum. Strangely enough, a method nearly identical with that of Williamson was employed. The method was as follows: 4.740 grams of $K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24H_2O$, several times recrystallized, were dissolved in distilled water and made up to 1,500

c. c. To this solution, in a 3 liter beaker, were rapidly added 500 c. c. of a standardized solution of sodium hydroxide and the two solutions were thoroughly mixed by stirring. This was repeated with varying amounts of NaOH. The precipitates were allowed to settle for half an hour, and the pH values of the supernatant liquid were determined colorimetrically (Clark, W. M., 1922). In each case the supernatant liquid was then removed from the precipitate by centrifuging and decanting. The precipitate was again shaken up with 200 c. c. of distilled water in a glass-stoppered bottle and centrifuged. This process was continued until, after centrifuging, the wash water was found to be almost completely free from sulphate ion. At this point dispersion of the precipitate began to take place. A portion of the precipitate was then dissolved in dilute hydrochloric acid, analyzed for sulphate gravimetrically by precipitation as $BaSO_4$, and for alumina by Blum's (1916) method. In these experiments the concentration of the aluminium salt was kept constant, namely, 0.005 molar with respect to aluminium, and the experiments were done at room temperature. A second set of experiments was made, keeping the concentration of aluminium 0.02 molar. A third set was made, using 0.02 molar aluminium, the solution being kept at 100° C. The solution in the latter case was decanted as rapidly as possible through a filter and the precipitate washed with boiling water till the wash water gave no test for sulphate. It was very difficult to keep the precipitate hot, however, and results were very difficult of even approximate duplication.

Wherever possible a quantity of precipitate was analyzed, which yielded at least 0.2 gram of Al_2O_3.

The above method of preparing the samples for analysis is open to the objection that washing the precipitate by a solution (i. e. distilled water) different in composition from that in which it was formed may alter the composition of the precipitate. If (as the results of these experiments suggest) the precipitate consists of two or more components, and if these components vary markedly in solubility, the composition of the precipitate should be changed by washing with wash water of different compositions. Several experiments were made in order to test the effect upon the composition of the precipitate of varying the pH of the wash water. In each experiment one portion of the precipitate was washed by a solution brought to the same pH as that of the alum-sodium hydroxide mixture by adding a very small portion of acid or alkali to a large volume of distilled water. Upon analysis the two samples in each case were found to have very little difference. It was concluded that the use of distilled water for washing the precipitate was not objectionable from the standpoint of pH. The components of the precipitate seem to have solubilities of the same order of magnitude.

Several experiments were made in which the concentration of the sulphate radical was varied over a wide range by the addition to the alum solution of potassium sulphate or ammonium sulphate. This had practically no effect upon the composition of the precipitate formed at a definite pH. Increasing the concentration of aluminium up to 0.1 molar was likewise without effect as long as results at the same pH were compared. This indicates that if a basic sulphate is one of the components of the precipitate, its solubility is so slight that varying one of the factors determining its solubility does not change the composition of the precipitate appreciably.

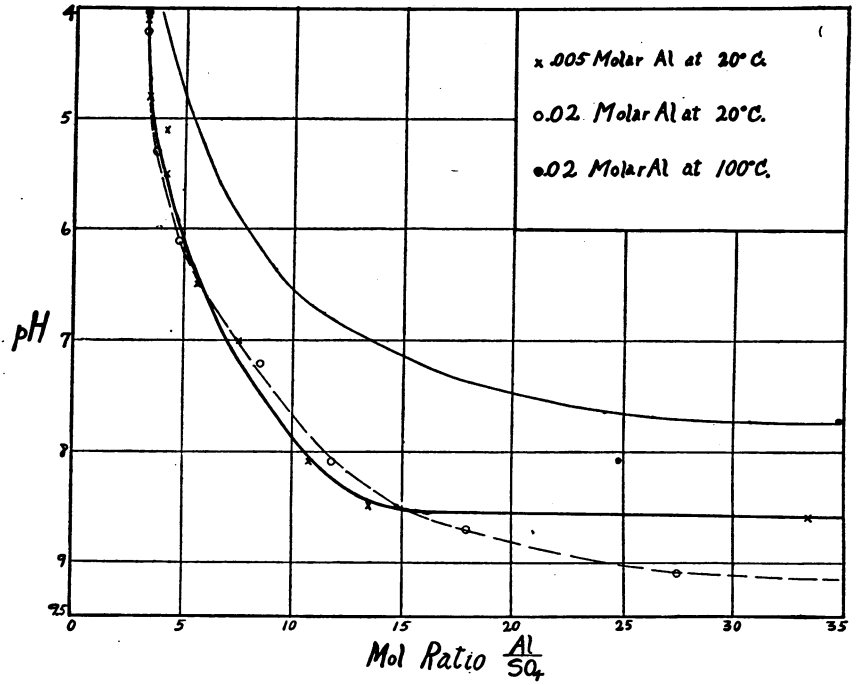

FIG. 1.

The results are given in Tables I, II, and III, and represented graphically in Figure 1, in which the mol ratio of aluminium to sulphate present in the portion of precipitate analyzed is plotted against pH. It is to be observed that between pH 4.0 and pH 5.5 the ratio of aluminium to sulphate is almost constant for the experiments performed at room temperature. At the higher pH values the proportion of sulphate becomes rapidly smaller and finally disappears completely. Below pH 4.0 no analysis could be made because the quantity of precipitate here decreases to the vanishing point.

TABLE I.—*0.005 molar Al at 20° C.*

pH.	Mols NaOH added per mol of Al.	Weight of Al_2O_3, gms.	Weight of $BaSO_4$, gms.	Ratio $\frac{Al}{SO_4}$ expressed in mols.
4.1	0.656	0.0909	0.1273	3.269
4.2	1.180	.1379	.1880	3.357
4.8	2.186	.2311	.3180	3.326
5.1	2.405	.2331	.2565	4.159
5.5	2.492	.1900	.2059	4.223
6.5	2.623	.1197	.0970	5.647
7.0	2.711	.2793	.1699	7.540
8.1	2.842	.1924	.0788	11.170
8.5	2.929	.2807	.0950	13.520
8.6	2.995	.2973	.0408	33.340
8.9	3.060	.0961	0	∞
9.6	3.279	.2312	0	∞

TABLE II.—*0.02 molar Al at 20° C.*

pH.	Mols NaOH added per mol of Al.	Weight of Al_2O_3, gms.	Weight of $BaSO_4$, gms.	Ratio $\frac{Al}{SO_4}$ expressed in mols.
4.2	1.180	0.1577	0.2176	3.317
5.3	2.405	.2918	.3633	3.623
6.1	2.538	.2558	.2449	4.781
7.2	2.711	.3928	.1854	7.470
8.1	2.793	.3954	.1546	11.710
8.7	2.929	.3154	.0807	17.890
9.1	2.995	.4825	.0807	27.370
9.4	3.060	.1884	0	∞
9.5	3.148	.2522	0	∞
9.8	3.297	.2363	0	∞

TABLE III.—*0.02 molar Al at 100° C.*

pH.	Mols NaOH per mol of Al.	Weight of Al_2O_3, gms.	Weight of $BaSO_4$, gms.	Ratio $\frac{Al}{SO_4}$ expressed in mols.
4.0	1.180	0.1392	0.1976	3.224
4.6	2.579	.1417	.1151	5.635
6.6	2.700	.2787	.1815	7.030
6.7	2.850	.2346	.0890	12.07
7.8	2.995	.1928	.0165	53.48
8.6	3.060	.1580	0	∞
9.8	3.300	.1901	0	∞

In Figure 2 the mol ratio of aluminium to sulphate in the precipitate is plotted against the mols of NaOH added per mol of aluminium. The three curves are found to coincide throughout within experimental error. Up to the addition of 2.5 mols of NaOH per mol of aluminium the precipitate remains nearly constant in composition and approximates the formula $5(Al_2O_3)\cdot 3SO_3$ stated by Williamson to exist when one or two mols of alkali per mol of aluminium are added to potassium alum. When more than 2.5 mols of alkali are added the proportion of sulphate rapidly decreases, the curve becoming asymptotic to the "three equivalents" axis. In other words, when

a quantity of sodium hydroxide equal to or greater than the amount necessary to react with the aluminium ion in solution according to the equation $Al^{+++} + 3(\overline{OH}) \rightleftarrows Al(OH)_3$ is added, the precipitate can be washed free of sulphate. It is evident from the curves that the quantity of alkali added to a definite quantity of aluminium salt is a very important factor in determining the composition of the precipitate.

In a later part of this paper it will be shown that at the point where 2.5 mols of sodium hydroxide per mol of aluminium have been

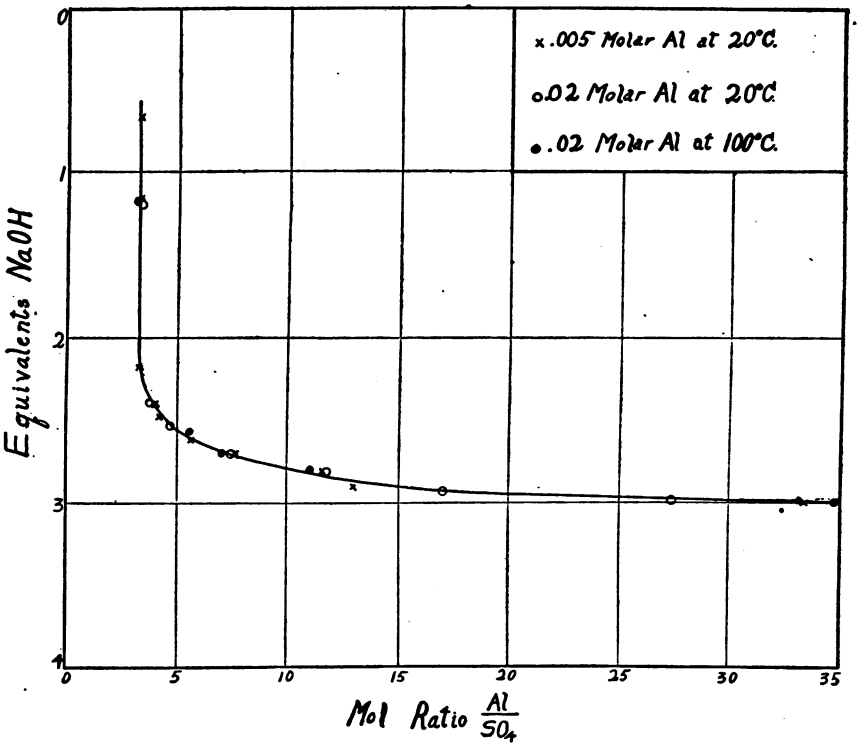

FIG. 2.

added, precipitation of aluminium is nearly complete, the composition of the precipitate remaining practically constant until this condition is reached. While the addition of a large proportion of sodium hydroxide changes the composition of the precipitate very markedly, the changes in solubility of the aluminium is almost negligible. This is a further indication that solubility of the components of the precipitate is of a similar order of magnitude. The fact, however, that the addition of further alkali at this point does materially alter the composition of the precipitate in the direction of a smaller proportion of sulphate, and that the solubility of the aluminium does

decrease, even though slightly, points to a smaller solubility for the more basic constituent.

Since the results obtained suggest that two or more components may be precipitating over the range in which less than 3 mols of NaOH per mol of Al have been added, an attempt was made to find an equation which would express mathematically the results obtained. So far these attempts have been unsuccessful. The chemical nature of the substance or substances precipitating has not yet been proved.

Since the titration curves for $AlCl_3$ and $Al_2(SO_4)_3$ as determined by Theriault and Clark are almost identical, it was assumed that chloride would be carried down similarly to sulphate in the Al precipitate. It was proposed, therefore, to run a set of experiments in which alum was replaced by $AlCl_3$. When this was tried it was found that most of the insoluble material persistently remained in colloidal suspension even after long centrifuging. Upon attempting to wash the portion precipitated, it also formed a colloidal suspension of great stability. The experiments with $AlCl_3$ were consequently given up.

The importance of the results with alum solutions in the analytical determination of aluminium is obvious. Blum's method for the gravimetric determination of aluminium as Al_2O_3 was consequently tried out upon potassium alum. When the precipitate, filtered and washed by hot 5 per cent NH_4Cl solution as described by Blum, was dissolved in dilute nitric acid and analyzed, both chloride and sulphate were found to be present in considerable quantities. Upon ignition of the precipitate for 10 minutes over a Meker burner, the chloride was completely removed, but the sulphate was only slightly reduced in quantity. Longer ignition reduced the quantity of sulphate but slowly. If the precipitate, however, after being washed is redissolved in dilute hydrochloric acid and reprecipitated by Blum's method, it is found to be free from sulphate as ordinarily determined.

Since these experiments indicated that, if chloride is carried down similarly to sulphate, it is more easily removed by ignition, the following experiments were carried out to determine the relative conduct of the chloride and sulphate: A 1-gram sample of purified $AlCl_3 \cdot 6H_2O$ was placed in a platinum crucible and heated over the Meker burner for 20 minutes. Upon analysis, the residue was found to be free from chloride. A 1-gram sample of $Al_2(SO_4)_3 \cdot 18H_2O$ was likewise heated for 20 minutes over the Meker burner. Upon analysis it was found that the sulphate content was reduced by 93.8 per cent. A second sample heated for 2 hours still contained some sulphate. A 1-gram sample of $AlCl_3 \cdot 6H_2O$ precipitated by Blum's method from 400 c. c. of solution containing dilute HCl was found after 10 minutes' ignition to contain no chloride. From these experiments it is concluded that when Blum's method for the analy-

sis of aluminium is used, care must be taken that sulphate is absent or is present only in very small quantities. If present in large quantities, a second precipitation must be made from hydrochloric acid solution in order to prevent interference by the sulphate. The reason that correct results may be obtained by precipitation from chloride solutions but not from sulphate solutions is indicated by the experiments described above.

If for varying amounts of sodium hydroxide added to a constant amount of alum the pH values be experimentally determined and plotted against equivalents of sodium hydroxide added per mol of aluminium, a curve such as curve A, the experimental curve for

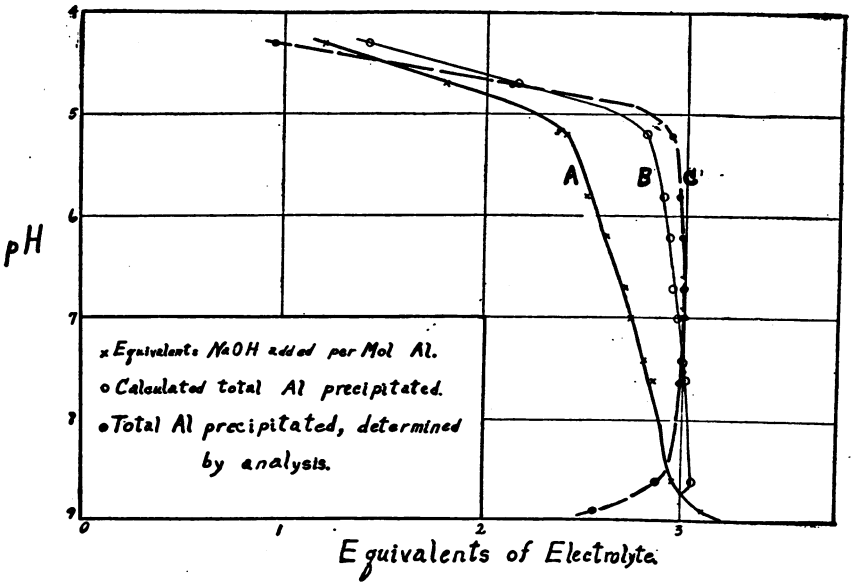

FIG. 3.

0.005 molar Al, in Figure 3 is obtained. From experimental curve A and from the experimental data plotted in Figures 1 and 2 a calculation of the residual aluminium left in solution is made. For the purpose of this calculation let the assumption be made that the quantity of NaOH added, represented by any point on curve A, also represents an equivalent quantity of aluminium precipitated by a metathetical reaction. (We know this to be experimentally untrue for both small additions of NaOH, where no precipitation occurs, and for large additions, where the excess NaOH redissolves the precipitated aluminium. Neither does this assumption allow for other aspects of the equilibria.) From the data represented in Figures 1 and 2 and from the assumption just made, the quantity of sulphate present in the precipitate for a given addition of NaOH can be calculated. Let us assume that each mol of sulphate in the precipitate represents

two-thirds of a mol of aluminium precipitated in addition to that precipitated by a metathetical reaction with NaOH. If the sum of these two values be calculated for each point on curve A, a second curve may be plotted representing the total quantity of aluminium precipitated at each pH. Curve B, Figure 3, represents these values for 0.005 molar Al. Conversely, the distance of this curve from the "three equivalents" axis should represent the residual aluminium left in solution. It is obvious, of course, that this calculation can not be carried past the point representing the addition of three equivalents of NaOH. Theoretically, curve B should not cross the "three equivalents" axis.

These approximating assumptions were tested as follows: Alum solutions, 0.005 molar with respect to Al, were precipitated by varying amounts of NaOH as described in the early part of this paper. The pH was determined colorimetrically. The filtrate from 2 liters of solution, including one washing of the precipitate, was acidified with a little HCl, evaporated to small volume, and the quantity of alum in solution was determined by Blum's method. The results represent the residual aluminium left in solution. If these results be expressed in mols Al and subtracted from 0.005, the values obtained represent the quantity of aluminium precipitated. Curve C, Figure 3, represents these values. The data for Figure 3 are given in Table IV.

TABLE IV.—*0.005 molar Al.*

pH	Mols NaOH added per mol Al.	Calculated mols Al per liter precipitated by NaOH.	Calculated mols Al per liter precipitated as sulphate.	Calculated total mols Al precipitated per liter.	Grams per liter Al_2O_3 remaining in solution, by analysis.	Mols Al per liter precipitated, by analysis.
4.3	1.200	0.00200	0.00040	0.00240	0.17400	0.001590
4.7	1.800	.00300	.00060	.00360	.07390	.003551
5.2	2.400	.00400	.00067	.00467	.00605	.004832
5.8	2.500	.00417	.00064	.00481	.00325	.004937
6.2	2.600	.00433	.00054	.00487	.00205	.004960
6.7	2.700	.00450	.00039	.00489	.00035	.004993
7.0	2.723	.00454	.00036	.00490	.00050	.004990
7.4	2.800	.00466	.00033	.00499	.00085	.004984
7.6	2.850	.00475	.00028	.00503	.00100	.004980
8.6	2.950	.00491	.00016	.00507	.01095	.004785
8.9	3.100	[.00500]	.00000	[.00500]	.03680	.004279

While curves B and C in Figure 3 do not even approximately coincide, yet, over the range more acid than pH 7.0 (which is the range in which greatest approach to coincidence would be expected), there is a general similarity in the form of the curves. Recalling the crudity of the assumptions upon which curve B was constructed, this similarity may indicate that there is an approximate basis of truth in the assumptions.

Theriault and Clark (1923) left open the reason for the distinct slope of their titration curves of aluminium salts by alkalies between

the addition of two and the addition of three equivalents of alkali. In this regard they state: "It is found that by specifying ionizations other than those used in the elementary treatment given, we obtain a variety of equations which, upon the assumption of one or several components of small solubility, will reduce to a form giving essentially the same picture as that presented. Thus the equations we have given furnish a correct description of principles but tell nothing whatever of the actual components entering into the problem. This has become evident in our attempts to formulate the very distinct slopes of the experimental curves formed between the addition of two and the addition of three equivalents of alkali." The data given in this paper upon the composition of the aluminium precipitate furnish a qualitative explanation of the results obtained by Theriault and Clark. Further facts are needed, however, in order to attempt a quantitative explanation.

The greatest insolubility for an alum solution 0.005 molar with respect to Al, as experimentally determined, occurs between a pH of 6.7 and 7.0 where about 2.75 mols of NaOH per mol Al have been added. On both sides of this, however, ranging from pH of 5.4 to a pH of 8.5, is a broad zone of great insolubility. Theriault and Clark (1923) have found that best and most rapid flocculation of alum solutions occurs at a pH of 5.5. While solutions at this pH are not in the region of greatest insolubility for Al, they are in a region of great insolubility. It is interesting to note that this pH lies at the point where the precipitation of aluminium first approaches completion upon addition of NaOH, and in the region where the greatest proportion of sulphate is found in the precipitate. At this point about 2.4 mols of NaOH per mol Al have been added.

In comparing these results with determinations of residual alum found in filter effluents under commerical conditions, a certain amount of variation is observed. Buswell and Edwards (1922) have obtained a curve relating pH and residual alum which suggests that, if data were included for pH values lower than observed, the curve would pass through a minimum at pH 5.5. Baylis (1923) found a minimum of residual alum between a pH of 5.7 and a pH of 6.6. Hatfield (1923) reported a minimum of Al in the filter effluent at pH 6.1. Blum (1916), in his procedure for the analytical determination of aluminium, indicates that complete precipitation takes place between a pH of 6.5 and a pH of 7.5. There seems to be no general agreement as to the particular pH at which aluminium is most insoluble under these varying conditions. In general, however, a relatively broad zone of great insolubility is reported which, broadly speaking, covers about the same ranges of pH values.

SUMMARY.

1. A study of the composition of the precipitate formed at different pH values by the addition of sodium hydroxide to alum has been made.

2. Certain precautions to be adopted in the analytical determination of aluminium are stated, and the reasons for these precautions are given.

3. A theoretical and experimental study of the solubility of the aluminium precipitate at different pH values has been made and certain conclusions drawn therefrom. The results obtained are compared to those obtained under varying laboratory and commercial conditions by other workers.

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COLLECTION AND PRESERVATION OF BLOOD SAMPLES FOR DETERMINATION OF CARBON MONOXIDE.

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INTRODUCTION.

In investigations relating to poisoning by carbon monoxide it is often desirable to have a reliable method of collecting samples of blood from victims at the place of accident, and of shipping the samples to the laboratory without coagulation. The method should be simple and inexpensive; and it is very important to allow of no change in the amount of carbon monoxide in the samples before analysis, which might result from delays.

PLAN OF INVESTIGATION.

Two types of containers for blood were investigated, and tests were made to find a suitable preservative which would prevent coagulation. In addition, tests were carried out to determine the gaseous changes taking place in the blood when it was allowed to stand for various periods of time in contact with the preservatives, such as might result in practice during the period between collection and analysis. From these tests suitable types of container and preservative were adapted and are recommended.

METHOD OF COLLECTING SAMPLES.

The Keidel tube.[1]—This tube, devised some years ago for taking and shipping of specimens for the Wassermann test, was selected. It is a small, inexpensive article, which is easily handled, collects the sample quickly, and is conveniently shipped by mail. However, the exact design of the tubes on the market was found not to be quite suitable for our purpose, and it was necessary to make the size and type shown in Figure 1.

The desired quantity of powdered salt to be used as a preservative and anticoagulant is weighed into a clean, sterile, three-fourths by 5-inch test tube, and the tube is drawn out to a long thin tip. The tube is then evacuated to a pressure of 0.5 millimeters of mercury and sealed off, the total capacity of the finished tube or ampule being approximately 15 c. c. An ordinary 18 gauge intravenous needle with stylet guard is joined by about 2 inches of medium weight rubber tubing, with small lumen, to the shoulder at the base of the long tip of the ampule. A narrow test tube is placed over the needle and rubber hose as a cap, and protected from adhering to the rubber

[1] A sample bleeding tube for obtaining specimens for the Wassermann Reaction. By A. Keidel. Jour. Am. Med. Assoc., Chicago, Vol. 58, 1912, p. 1579.

during sterilization by a thin layer of cotton placed at the point where the tube, ampule, and cap meet. The whole is again sterilized by dry heat at 150° for 30 minutes.

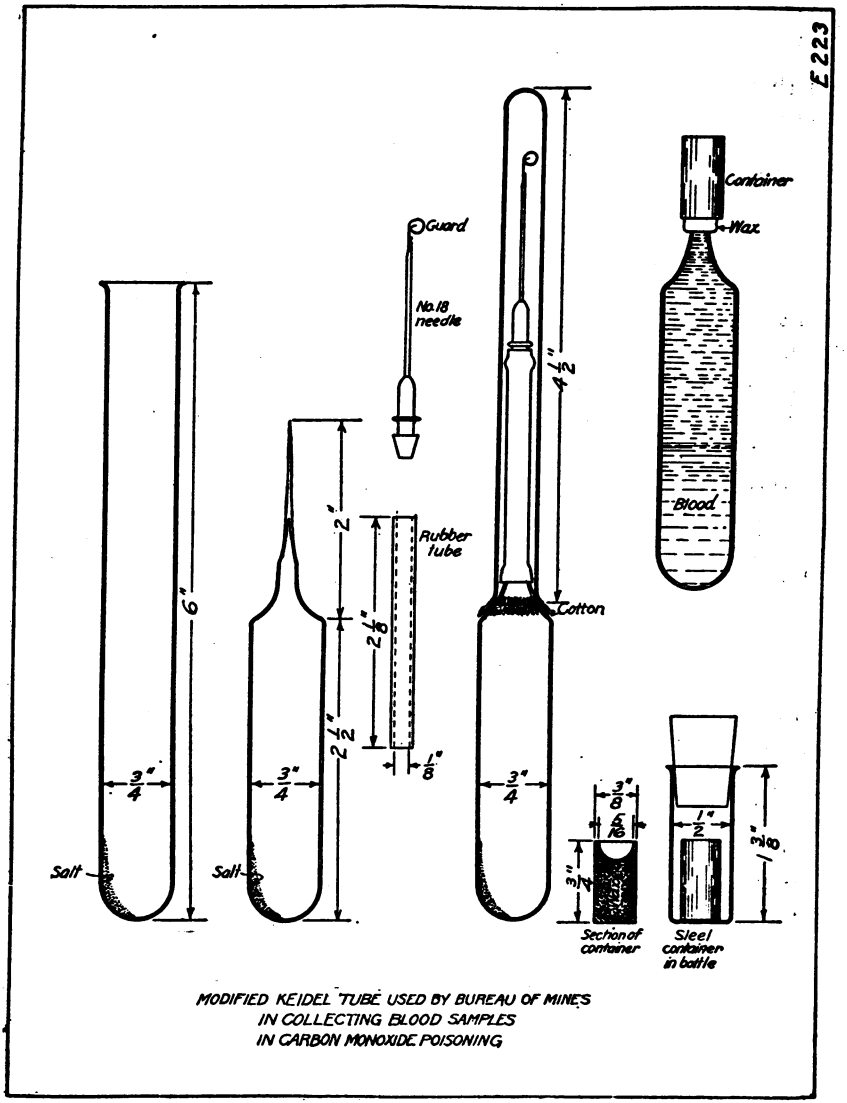

FIG. 1.

COLLECTION OF BLOOD SAMPLES.

Keidel tube method.—In collecting the sample, the cap and guard are removed, the person's arm is prepared as for taking a Wassermann sample, and the tip of the needle is inserted in the vein. The rubber tube is then taken gently in both thumbs and forefingers, and the thin neck of the ampule within is broken.

When the ampule is full of blood, or has ceased filling, the needle is removed from the arm, the needle with rubber connection is detached, and the ampule is gently rotated for 2 minutes to dissolve the preserving salts. The ampule is then sealed by forcing a small metal cap filled with wax[2] over the broken tip, the cap and wax having been previously sterilized and kept in a small cork-stoppered bottle. By using this cap an effective seal is formed, and any wax that may be forced inside the tube will not aid coagulation.

A 15-c. c. tube, or ampule, was used for the investigation described herein, because 15 c. c. of blood was needed for a duplicate analysis by the Van Slyke method used.

An 18-gauge needle was found to be most suitable, as it allowed the tube to be filled more quickly, thus decreasing the disturbance to the patient and the probability of coagulation. This larger size also aids the completeness of filling (with a good vein there should be less than one-half c. c. of air left in the tube).

Vial method.—For use where Keidel tubes might not be available, the suitability of other containers was studied. Two types of 3-dram vials were selected, the one being closed with a plain cork stopper of good grade, and the other with metal screw top lined with a thin cork gasket. The same proportions of preservatives were used, and sterilization was effected as with the Keidel tubes, the only great difference in technique being in the filling of the tubes. This was done by inserting a needle into the vein and catching the blood as it flowed from the end, the blood flowing directly into the vial. When the use of these vials proved satisfactory in 24 instances, other tubes were mailed to the laboratories of the United States Public Health Service hospitals at San Francisco, Calif., Ellis Island, N. J., and Boston, Mass. Through the cooperation of the medical officers in charge at these institutions, the vials were filled and mailed to Pittsburgh, Pa. It was generally found that the screw-capped tubes tended to leak, but with the plain cork stoppers there was no trouble of this kind. In general, the Keidel tubes are preferable, because they fill more quickly; but the plain vials with cork stoppers are excellent substitutes.

PRESERVATIVES OR ANTICOAGULANTS.

Although the prevention of clotting is aided materially by the manner in which the sample is taken, and also by the design of the container, the chief means of preventing coagulation lies in the anticoagulant used. Of these, three were tried, namely, sodium or potassium oxalate, used routinely in blood chemistry to preserve specimens for analysis; sodium citrate, employed in transfusions; and sodium fluoride.[3]

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[2] Made by melting together 90 parts beeswax and 50 parts Venice turpentine.

[3] Text-book of physiology. By W. H. Howell. Philadelphia, 1915. pp. 466–468.

Tables I and II summarize the experience with the various salts in different concentration in the tubes and in 100-c. c. bottles.

TABLE I.—*Influence of anticoagulants on beef blood in tubes.*

Preservative and container.	Number of tubes tested.	Average amount of air in tubes.	Per cent of tubes that clotted during days—				Tubes that did not clot.	
			0–5	5–10	10–15	15+	Per cent.	Days observed.
Potassium oxalate:		c. c.						
(1). Keidel tube—								
0.1 per cent by weight	6	3.4	83	17	.....	.....	0	19
0.2 per cent	41	2.4	2	0	0	0	98	357
(2) Tubes with cork stoppers, 0.2 per cent	5	2.6	0	0	0	0	100	16
(3) Tubes with screw caps, 0.2 per cent	6	2.0	0	0	0	0	100	15
Sodium fluoride (0.3 per cent):								
(1) Keidel tube	48	2.1	2	0	0	14	84	376
(2) Tubes with cork stoppers	20	2.2	4	0	2	0	94	183
(3) Tubes with screw caps	18	3.0	17	0	0	0	83	183
Sodium citrate:								
(1) Keidel tube—								
0.1 per cent	11	6.8	64	9	0	0	27	376
0.3 per cent	4	7.7	25	0	.....	.....	75	9
0.4 per cent	41	2.0	7	19	0	0	74	17
(2) Tubes with cork stoppers, 0.4 per cent	18	3.3	28	0	0	11	61	183
(3) Tubes with screw caps, 0.4 per cent	19	4.0	28	16	0	5	51	183

TABLE II.—*Influence of anticoagulates on beef blood in 100-c. c. bottles.*

Preservative.	Number of bottles.	Per cent of bottle that clotted during days—				Bottles that did not clot.	
		0–5	5–10	10–15	15+	Per cent.	Days observed.
Potassium oxalate, 0.2 per cent	36	0	0	0	0	100	219
Sodium fluoride, 0.3 per cent	50	10	2	2	4	82	186
Sodium citrate:							
0.4 per cent	25	32	4	0	0	64	219
0.6 per cent	7	0	43	0	14	43	186

From Table I it will be noted that the 0.2 per cent potassium oxalate and the 0.2 per cent sodium fluoride preservatives were the most satisfactory in preventing coagulation; and Table II shows that in one case with 0.2 per cent potassium oxalate, when 36 tubes were tested, none had clotted at the end of 219 days.

With any of the salts there is a gradual darkening of the blood on standing, but this change is more marked when the oxalate is used, in which case the sample frequently becomes almost black. Also, on standing, the cells may settle out from the plasma, but a good mixture may be obtained again by shaking.

INFLUENCE OF PRESERVATIVE ON CARBON MONOXIDE CONTENT.

To determine whether the preservative caused any change in the carbon monoxide content, when there was a delay between sampling and analysis, and also to determine the effect of the presence of air in the tubes, the following parallel experiments were performed:

Into 100-c. c. bottles were measured 0.2 gram of potassium oxalate, 0.3 gram of sodium fluoride, or 0.4 gram of sodium citrate in the form of dried salt. The bottles were fitted with cork stoppers covered with tinfoil and were sterilized with dry heat. Carbon monoxide [4] was bubbled through three absorption tubes containing beef blood, the order of their positions relative to the gas coming from the generator being changed from time to time so as to promote equal saturation. The carbon monoxide content was determined by the Van Slyke [5] method, as modified by the writers.[6] The blood was then poured into a vial, or drawn up into a vaccuum tube by breaking

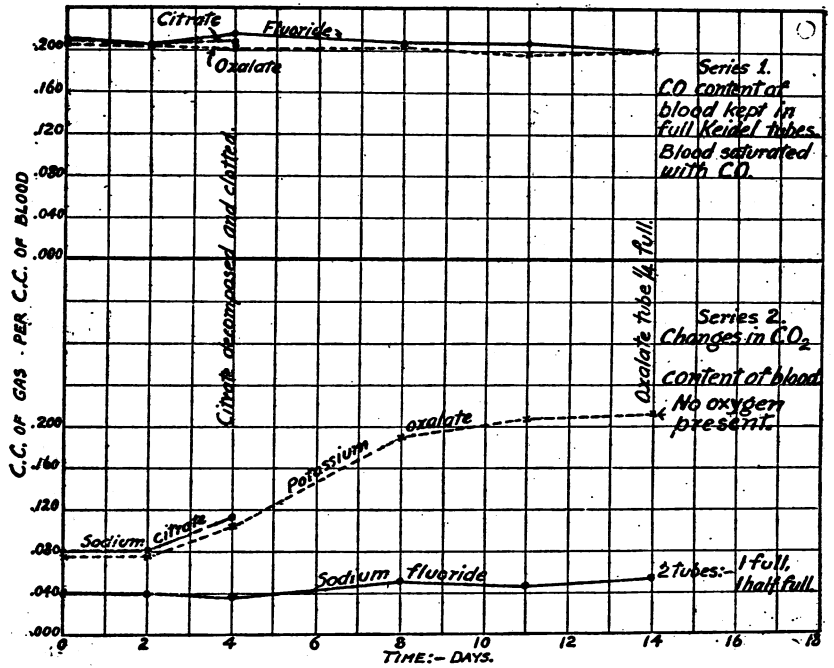

FIG. 2.—Changes taking place in blood samples kept in different preservatives in Keidel tubes.

the neck of the ampule below the surface of the liquid. The tubes were kept mostly in the darkness of a laboratory closet, thus preventing a possible loss in carbon monoxide hemoglobin from the influence of light.[7] To complete the resemblance of their treatment to that experienced by a sample sent through the mail, they were shaken daily. At intervals of two days the carbon monoxide con-

[4] Prepared by allowing formic acid to drop into concentrated sulphuric at 150°, washed through potassium hydroxide, and kept over water.

[5] The determination of carbon monoxide in blood. By D. D. Van Slyke, and H. A. Salvesen. Biol. Chem., vol. 40, Nov., 1919, pp. 103–107.

[6] Solubility of carbon monoxide in serum and plasma. By H. R. O'Brien and W. L. Parker. Jour. Biol. Chem., vol. 50, 1922, p. 289.

[7] The action of light on carbon monoxide hemoglobin. By H. Hartridge. Jour. Physiol., vol. 44, 1912, pp. 22–33.

tent of one tube of each set was determined on the Van Slyke apparatus. Unfortunately the citrate series was cut short by clotting. The curves in Figure 2 show the change which took place on standing, due to the preservative.

The tests as shown by these curves prove that there is no appreciable change in the carbon monoxide content when samples of blood are stored in the Keidel tubes over a period of two weeks, and that the three preservatives tested (sodium citrate not for full time) gave the same amounts of carbon monoxide, at least within the experimental error of analysis.

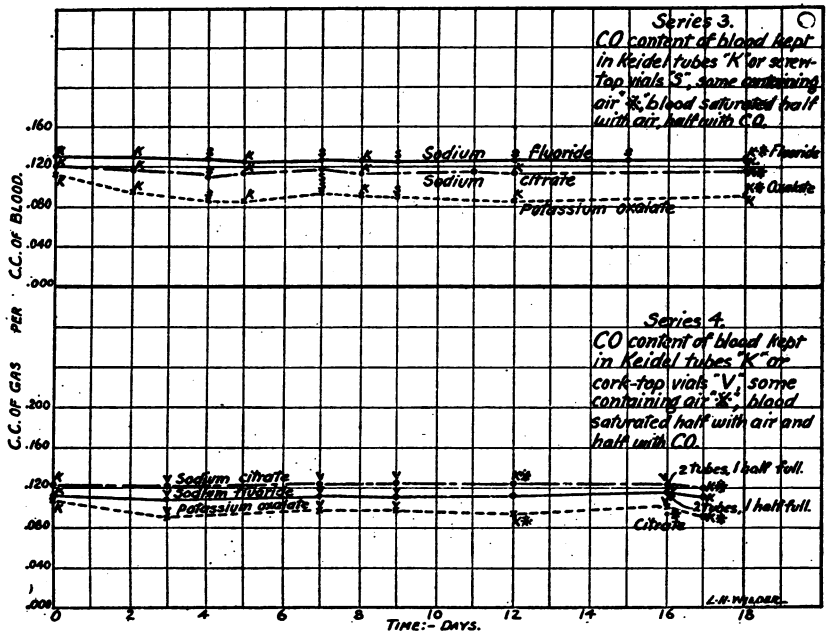

FIG. 3.—Changes taking place in blood samples kept in different preservatives in Keidel tubes and vials.

At the same time that the above tests were made, a second series of blood samples was prepared in which vials having screw-cork stoppers and plain cork stoppers, along with Keidel tubes, were used to collect the samples. In some cases the tubes were only partly filled in order to determine the effect of air on the carbon monoxide content. The results are shown in Figure 3. The curves in this figure show the carbon monoxide content in the blood to be practically constant for each of the preservatives tested, even at the end of 14 days.

When the blood is treated with sodium citrate or fluoride, neither the salt nor the standing has any appreciable effect on the carbon monoxide content, although in some instances the presence of a large proportion of air results in a slight decrease in the carbon

monoxide content. In the case of oxalated blood there was a small drop (fig. 3) in carbon monoxide, which is accentuated by the presence of air. There was always a loss of oxygen and an increase of carbon dioxide in the blood samples; this was most rapid with oxalated blood and most delayed with blood treated with fluorides.

DEFECTS IN METHOD.

Under the most favorable conditions there will, at times, be some delay in filling the tube with blood or in getting the salt well dissolved and distributed. Some clotting does take place in spite of precautions, though this has been reduced to a minimum. The manipulation of the tube calls for some skill on the part of the person taking the sample, though ordinarily but little more than is required to secure a Wassermann specimen. A long needle may be necessary for cardiac puncture on a subject who has been killed by carbon monoxide asphyxiation.

SUMMARY.

1. A modified Keidel tube method, by which 10 to 15 c. c. of blood may be collected in the field, shipped to a central laboratory, and kept with slight chances of clotting or change in carbon monoxide content has been described. If such a tube is not available, a small vial, well stoppered with a cork, will serve satisfactorily.

2. Sodium or potassium oxalate (0.2 per cent), sodium fluoride (0.3 per cent), and sodium citrate (0.4 to 0.8 per cent) inhibit coagulation, the last-named being the least efficient. Oxalate causes some change in the blood, with a slight altering of the carbon monoxide content. The fluoride is recommended because it is not open to these objections.

3. No change in the amount of carbon monoxide in the blood has been detected from standing when 0.3 per cent sodium fluoride is used.

Acknowledgments.—The writers wish to express their appreciation to A. C. Fieldner, Superintendent of the Pittsburgh Experiment Station of the Bureau of Mines, Department of the Interior, who supervised the work; to Dr. J. C. Burt, who placed the facilities of the State clinic at our disposal in gathering specimens of human blood; and to W. H. Parker, junior chemist at the Pittsburgh Experiment Station, for performing a major part of the analytical work.

AUTOMOBILE COST IN RURAL HEALTH WORK.

Report on Operation of Automobiles in Cooperative Rural Health Work in Virginia.

By H. McG. ROBERTSON, Surgeon, United States Public Health Service, in charge of cooperative rural health work in Virginia.

A complete and accurate record regarding the cost of operating small 22½ horsepower automobiles in county health work in Virginia is given in this report. It is thought that the figures might be of interest to officers of State departments of health and of other organizations engaged in rural health work, particularly as it is believed that the conditions under which these cars were operated in Virginia were such as to make possible a fairly accurate estimate of the general average cost of this type of motor transportation in county health work.

Accurate monthly financial statements are made out for each county in which cooperative rural health work is being done. All bills presented monthly to the State board of health by the sanitary officer of each county are used in making up these financial statements. These bills are paid by check and are on file in the Division of Cooperative Rural Sanitation of the Virginia State Board of Health. Mention is made of these facts in order to show the sources of the figures pertaining to the operating costs as given in the accompanying tables.

It will be noted that the three and a half years considered are divided into two periods. The first, from May 1, 1919, to June 30, 1921, comprises those months during which the cost of nearly all supplies was abnormally high. It was also the experimental period in this rural sanitary work—experimental as regards both methods and the men who operated the cars.

The second period begins with July 1, 1921, the time when prices of supplies began to decline. By this time, too, the county sanitary-officer problem had become somewhat stabilized, as is shown by the fact that 7 of the 11 sanitary officers engaged in rural health work in Virginia at the time of this report were so employed prior to July 1, 1921. The other 4, serving principally in new counties, have proved themselves efficient car operators as well as sanitary officers. Thus there are several factors that must be considered in accounting for the decline in operating costs seen when the two periods are compared.

It will be noted that the average monthly cost of operation for the first period is $46.06, and that for the second period it is $35.94, a decline of $10.13 per month. When the full three and a half years—357¾ car-operating months—are taken together, the average monthly cost is $41.69. (It is probable that for any new county health project of the type in effect in Virginia this last figure, $41.69, would be the safest to consider or adopt.) This $41.69 operating expense plus the $25 per month charged as rental for a replacement

fund makes the total average monthly cost of motor transportation for a Virginia county $66.69, or $800.28 per year.

Attention is invited to the very low cost of operation given for Smyth County. This should not be taken at its face value, for reference to the monthly mileage will show it to be low. This low cost was due principally to the fact that the expenses covered only the first seven months of the life of the car, and that the monthly mileage is only a little more than half the average, the work of the officer being confined in large part to town, village, and school sanitation during this period.

Attention is also called to the excessively high cost of operation of the automobile in Richmond County. The various items of expense speak for themselves, but no explanation can be offered other than the personal equation or a defective car. It is mentioned only in order to give some idea as to what is possible in car expenses.

An effort has been made to make the average costs more nearly correct by determining the exact time during which each car was in operation. This time was not always the same as the number of months in which sanitary work was conducted in a county. For various reasons it often happened that a county was without a car for several weeks, and these periods have been deducted wherever it was possible.

In regard to the roads over which the cars were operated, it may be said that they were of all types. There were the rough, rocky roads of the mountain counties, the rough-surface, macadamized roads of the valley, the sand-clay roads of certain sections, and the all-sand or all-clay roads that are often found in the State of Virginia.

Little can be said in common of the operators of these cars. Thirty men have been employed in the rural health work of this State. Eleven men are so employed at the time of this report, and it can be said of them that they are all reasonably careful and efficient operators. It is evident, however, that in the past some operators have been inexperienced or reckless, or both, else some of the high repair costs are difficult to explain.

As a solution of the problem of transportation for the sanitary officer, each county is given a touring car at the beginning of work. Twenty-five dollars per month is charged against the county budget of $2,500 per year as an automobile purchasing fund for replacements. Thirty-four automobiles were purchased between May 1, 1919, and March 1, 1923. Of these, 10 are in use, at the time of this report, 2 have been transferred to other departments of the State board of health and 22 have been sold. Of the 22 sold, 14 were sold at a profit to the automobile fund and 8 were sold at a loss; that is, in the case of the 14 former, the accrued rental from the $25 per month plus the amount allowed for the old car in a trade was more than the original cost of the car. The profit on these 14 cars was

$960.94, and the loss on 8 cars was $1,031.53, making a net loss on 22 cars of $70.59. None of the 10 cars in use at the time of this report is as much as a year old, and all are in good condition. This shows that the $25 per month rental charged is almost exactly correct, as the $70.59 loss over a period of 357¾ months would be at the rate of $0.197 per month. The maximum loss on any of the cars was $191.87. This was a car used in one of the roughest mountain sections of Virginia. The minimum loss was $16.01. The maximum profit on any one of the 14 cars was $207.77, and the minimum profit was $10.93. In case of the maximum loss given above, the car was sold for replacement at the end of 8 months' use, while that car which made the largest profit for the automobile fund was in use for 26⅓ months. It is seen that the longer the car can be used, the greater the possibility of a profit to the automobile fund, unless the upkeep becomes unduly high. The length of time that a car can be used depends, of course, upon the roads, the driver, and, to some extent, the car itself. It is obvious that for any car more expensive than the small car used, a proportionately higher rental will be necessary to take care of replacements unless the higher-priced car lasts longer.

Table I, giving itemized cost by months for Wythe County, shows the manner in which the total figures were obtained in preparing Table II. Table II was necessary for the preparation of Table IV, which shows the average monthly costs of the various items necessary for the upkeep of cars, the average cost per month, and the percentage of cost of the different items. Several other items of interest have been included in this table as a matter of record and explanation.

TABLE I.—*Wythe County.*

[Car new May 14, 1921; used entire time.]

Date.	Gallons of gasoline.	Cost of gasoline.	Cost of oil and grease.	Cost of tires and tubes.	Cost of repairs.	Garage rent.	Remarks.
1921.							
May 17–31	26½	$7.95	$0.25	$2.75	$4.65	$2.50	Mr. W.
June	57	16.82	1.63	.....	1.50	3.00	Mr. W. June 11, 1921.
July	48	13.44	.75	.....	.....	1.50	Mr. St. C. July 10, 1922.
August	98	25.55	1.50	.....	8.81	3.00	
September	49½	12.38	1.00	35.59	1.15	3.00	
October	56	14.00	13.33	33.08	3.50	3.00	
November	40	10.65	.60	4.30	1.85	3.00	
December	37	11.10	.25	.....	13.25	3.00	
1922.							
January	37½	10.70	.25	.....	19.31	3.00	
February	46	12.88	.25	3.75	6.40	3.00	
March	54	15.21	.25	13.75	11.35	3.00	
April	53	15.34	.70	36.53	3.25	1.00	
May	63	20.17	1.05	.....	10.19	4.00	
June	88	28.27	2.95	.....	5.45	8.00	
July	88	28.16	.40	26.30	1.35	3.00	
August	73	22.18	.....	1.90	1.25	3.00	
September	61	18.30	1.00	17.74	7.60	3.00	
October	50	14.90	2.30	1.90	4.80	3.00	
Nov. 1–10	8	2.08	.60	.....	.....	1.00	
Total	1,033½	300.08	29.06	177.59	105.66	57.00	

Total expenditures	$669.39
Total number of operating months	17⅞
Average monthly cost of car	$37.54

TABLE II.—*Operating cost of automobiles in Virginia rural health work.*

MAY, 1919, TO JUNE 30, 1921.

Name of county.	Number of months in operation.	Total cost of operation.	Total number of gallons of gasoline used.	Total number of miles covered.	Total cost of gasoline.	Total cost of grease and oil.	Total cost of tires and tubes.	Total cost of repairs.	Total garage rent.	Average number miles per month.	Average cost per mile.	Average cost per month for gasoline.	Average cost per month for grease and oil.	Average cost per month for tires and tubes.	Average cost per month for repairs.	Average cost per month for garage.	Average monthly cost of operating automobile.	Condition of automobile.	Condition of roads.
Alleghany	6	$355.10	336	5,376	$104.37	$14.45	$81.14	$121.66	$33.48	896	$0.066	$17.40	$2.41	$13.52	$20.40	$5.58	$59.30	New	Rough, mountain.
Bath	21½	994.90	1,188½	19,016	402.63	71.03	174.90	335.31	11.00	884.5	.052	18.73	3.31	8.14	15.50	.51	46.27	New to old	Do.
Charlotte	8½	248.35	402	6,432	129.67	18.20	24.63	71.85	4.00	774.7	.039	12.57	1.74	9.78	14.74	.48	29.81	New	Fair; sand, clay.
Chesterfield	24	1,100.32	1,713½	27,416	511.73	81.36	222.78	275.95	8.50	1,142.3	.040	21.33	3.39	9.28	11.50	.35	45.97	Old and new	Do.
Greensville	22	603.25	1,072½	17,160	343.36	39.15	76.80	135.94	8.00	780	.035	15.61	1.78	3.49	6.18	.36	27.42	New to old	Good; sand, clay.
Henry	7	416.55	527½	8,440	171.82	26.99	80.15	137.59	.....	1,203	.049	24.55	3.83	11.45	19.66	.....	59.51	New, old, new	Fair, mountain.
Lunenburg	23	999.55	1,184	18,944	380.47	52.73	237.30	296.05	33.00	823.2	.052	16.54	2.29	10.32	12.87	1.43	43.46	New to old	Fair; sand, clay.
Mecklenburg	12	418.75	628	10,048	200.78	17.80	128.87	66.05	10.25	837.3	.041	16.73	1.48	10.32	5.50	.88	33.77	.....do	Do.
Northumberland	10½	731.28	852	13,644	298.11	31.31	168.83	232.53	.50	1,260	.054	27.53	2.89	15.59	21.47	.05	68.99	New	Poor, sandy.
Orange	23½	1,076.92	1,015	16,240	309.65	35.45	341.25	348.59	42.00	683.3	.066	13.04	1.49	14.37	14.68	1.77	45.34	New to old	Fair, clay.
Richmond	12	831.79	920	14,720	317.70	53.21	134.37	325.51	1.00	1,225	.056	26.48	4.43	11.20	27.13	.08	69.31	Old	Poor, sandy.
Roanoke	15	767.44	785	12,460	257.03	43.75	97.38	281.28	88.00	830.6	.061	17.14	2.92	6.49	18.85	5.87	51.16	New to old	Fair, hills.
Rockbridge	6	349.60	300	4,800	92.79	9.00	79.32	116.99	51.50	800	.072	15.47	1.50	13.22	19.50	8.58	58.27	New	Fair, mountain.
Warren	11½	461.24	526	8,416	155.06	20.05	139.81	116.32	30.00	721.7	.054	13.29	1.72	11.99	9.98	2.57	39.56	Old	Fair, valley.
14 counties	203 1/12	9,355.04	11,450	[1]183,112	3,675.17	514.51	1,982.53	2,861.62	321.23	901.7	.051	18.10	2.53	9.76	14.10	1.58	46.06	.....	

JULY 1, 1921, TO DECEMBER 31, 1922.

Carroll	13	$614.97	744½	11,912	$225.13	$35.99	$168.78	$162.32	$21.75	916.3	$0.051	$17.32	$2.77	$12.98	$12.48	$1.67	$47.31	New	Rough, mountain.
Charlotte	18	603.38	981½	15,704	265.22	38.68	80.87	218.61	.....	872.4	.038	14.73	2.15	4.49	12.15	.....	33.52	.....do	Fair; sand, clay.
Chesterfield	18	600.76	1,280	20,480	328.43	26.00	83.35	162.98	.....	1,137.7	.029	18.25	1.44	4.63	9.05	.....	33.37	Old to new	Do.
Grayson	6½	278.72	423	6,768	142.95	13.06	49.13	67.83	5.75	1,016	.041	21.61	1.98	7.44	10.18	.85	41.85	New to old	Good; sand, clay.
Greensville	18	587.23	940½	15,048	245.09	46.30	77.40	203.44	15.00	836	.039	13.61	2.57	4.30	11.30	.83	32.63	New	Rough, mountain.
Henry	18½	586.26	1,093	17,488	284.87	28.77	145.90	122.22	4.50	945.3	.033	15.40	1.55	7.89	6.61	.25	31.68	New, old, new	Fair, mountain.
Prince Edward	7½	214.25	349	5,584	98.35	13.38	48.00	38.77	15.75	728.9	.038	12.84	1.76	6.32	5.10	2.07	27.97	New	Fair, clay.
Pulaski	13	489.09	747	11,952	222.15	28.75	81.57	99.12	57.50	919.4	.041	17.08	2.21	6.27	7.63	4.42	37.62	New to old	Fair, hills.
Roanoke	16½	761.23	995	15,920	277.70	50.80	90.94	291.79	50.00	955.5	.048	16.67	3.05	5.46	17.51	3.00	45.69	.....do	Do.
Smyth	7½	153.91	254	4,064	71.37	13.65	36.84	16.65	15.40	530.5	.037	9.58	1.78	4.81	2.17	2.01	20.09	New	Do.
Wythe	17½	669.39	1,033½	16,536	300.08	29.06	177.59	105.66	57.00	927.4	.041	16.67	1.61	9.87	5.87	3.17	37.54	New to old	Do.
11 counties	154½	5,559.19	8,841	[1]141,456	2,461.34	324.44	1,040.37	1,489.39	242.65	914.6	.039	15.91	2.10	6.73	9.63	1.57	35.94	.....	

[1] Average, 16 miles to a gallon.

TABLE III.—*Average cost per mile per item.*

Item.	First period.	Second period.	Both periods combined.
Gasoline	$0.0200	$0.0173	$0.0190
Repairs	.0156	.0105	.0134
Tires and tubes	.0108	.0073	.0093
Grease and oil	.0029	.0023	.0026
Garage	.0017	.0016	.0017
Average total cost per mile	.051	.039	.046

TABLE IV.—*Average monthly costs and other items in the operation of automobiles in county sanitary work in Virginia.*

Item.	First period, May 1, 1919, to June 30, 1921.[1]	Second period, July 1, 1921, to Dec. 31, 1922.[2]	Combined periods, May 1, 1919, to Dec. 31, 1922.[3]
Average cost per item:			
Gasoline per month	$18.16	$15.91	$17.16
Repairs per month	14.10	9.63	12.17
Tires and tubes per month	9.76	6.73	8.45
Grease and oil per month	2.53	2.10	2.35
Garage rent per month	1.58	1.57	1.57
Average cost per month	46.06	35.94	41.69
Average cost per mile	.051	.039	.046
Average gallons gas per month	56.4	57	56.7
Average miles per month	901.7	914.6	907.2
Percentage of cost:			
Gasoline	39.3	44.3	41.4
Repairs	30.6	26.8	29.2
Tires and tubes	21.3	18.8	20.1
Grease and oils	5.4	5.8	5.6
Garage rent	3.4	4.3	3.7

[1] 203⅓ operating months; 14 counties.
[2] 154⅔ operating months; 11 counties.
[3] 357¾ operating months; 26 counties; 35 touring cars; 30 different operators; all types of Virginia roads.

SANITATION OF TOURIST CAMPS.

With constantly improving roads and the ever increasing use of the automobile in tourist travel, the problem of the intercommunity and also the interstate spread of disease, particularly from insanitary conditions in tourist camps, is one that is occupying the attention of health authorities all over the United States.

The Legislature of the State of Minnesota, in 1923, conferred broad general powers upon the State board of health with a view toward correcting present unsatisfactory and dangerous conditions, but failed to appropriate funds for this purpose.

The regulations adopted under authority of section 4640, General Statutes, 1913, as amended by chapter 227, laws of 1923, have the force of law. Chapter 227 grants power to regulate tourists' camps by adding a new paragraph to section 4640, which paragraph reads as follows:

The general sanitation of tourists' camps, summer hotels, and resorts in respect to water supplies, disposal of sewage, garbage, and other wastes, and the prevention and control of communicable diseases, and to that end may prescribe the respective duties of county and local health officers, and all county and local boards of health shall make such investigations and reports and obey such directions as the State board may require or give, and under supervision of the State board shall enforce such regulations.

The following regulations have been made by the State board of health in accordance with the authority granted:

230. Every person, organization, or municipality establishing or having control of a tourist camp shall provide such camp with an adequate water supply, toilet facilities, refuse disposal, camp site, as follows:

Water supply.—Every tourist camp shall be provided with an adequate supply of water of good sanitary quality from a source which will meet the requirements of the Minnesota State Board of Health as to sanitary location, construction, and operation. The water supply may be used from a municipal system provided such a system has been installed and is operated in such a manner as to meet with the requirements of this board. If a supply from an approved municipal source is not available, a supply shall be obtained from a well or spring or other source which must be located, constructed, and operated in accordance with the requirements of this board for a safe water supply. A water supply shall be easily obtainable from a faucet on the municipal system or from a well, spring, or other source, as above described, at a point not more than 400 feet from the portion of the tourist camp actually used by the tourists for camping purposes.

Toilets.—Water-flush toilets shall be provided wherever a municipal sewerage system is available or where conditions are such that a sewage-disposal plant or cesspool can be operated and water under pressure is available for the operation of water-flush toilets. Privies may be used where no municipal sewerage system is available or where the conditions are such that a sewage-disposal plant or cesspool can not be operated satisfactorily or where water under pressure is not available. These privies should be of the pit type and fly tight. All toilets and privies must be well ventilated and lighted and provided with some means of artificial lighting at night. These toilets and privies shall be maintained in a clean and sanitary condition. The contents of the privy vaults shall be sprinkled with dry earth, chlorinated lime, or lime at least twice each week during the period when the privies are in use. Toilets and privies shall be supplied with toilet paper at all times. Separate toilets shall be provided for men and women. The location of all toilets shall be plainly indicated by suitable signs. The toilets shall be located at a distance not more than 400 feet from the sleeping quarters.

Refuse disposal.—Suitable galvanized-iron garbage cans with covers shall be provided at convenient points for the disposal of garbage and refuse. The contents of these cans shall be removed daily, and the material disposed of in a suitable manner so as not to create a nuisance or provide a breeding place for flies. The cans shall be thoroughly washed.

Camp site.—Every tourist camp must be located on a site that is well drained and shall be selected with regard to its healthfulness.

Owing to failure of the legislature to provide funds, the State board of health has circularized the local health authorities of Minnesota in the following language:

It is necessary * * * that local boards of health pay special attention to tourist camp sanitation. When camps are located within the corporate limits of cities or villages in which organized boards of health exist, this duty may be discharged by the local health officer. If camps are not located within city or village limits, then

either the township board of health would be concerned or the county board of health in case the territory where the camp is located is not organized as a township. Town boards are not in a position to handle this problem satisfactorily, except, perhaps, in the larger cities. The best plan would be for the county health officer to assume responsibility for sanitation of all tourist camps in the county. This new duty would necessitate a special arrangement with the county board of health, which has "jurisdition over all unorganized towns * * * and * * * such other powers and duties in reference to the public health as the State board shall, by its published regulations, prescribe."

THE DEMAND AMONG SANITARIANS AND PRACTICING PHYSICIANS FOR SUPPLEMENTAL ACADEMIC TRAINING.

In 1920 the Public Health Service conducted a venereal disease institute extending over a period of two weeks of intensive study. The following year 16 general public health institutes were held at various geographical centers, in cooperation with State departments of health. At the venereal disease institute there was an attendance of fully three times the number expected, and a large number were present at the general institutes.

These experiences have led the Public Health Service, at the suggestion of the Advisory Committee on the Education of Sanitarians, to send a circular letter of inquiry to members of the staffs of health departments, to public health nurses, and to practicing physicians in various parts of the country to determine what their interest might be in one or more institutes covering a period of six to eight weeks. Letters were mailed to approximately 3,500 employees of health departments, to about 6,000 public health nurses, and to the members of State medical societies in five States (approximately 9,500 practicing physicians). They were asked to express their opinions regarding (1) the need for supplemental academic training, (2) the season of the year at which they considered it would be wisest to hold public health institutes, (3) whether it would be more desirable, in their opinion, to have several institutes at various medical centers or one at Washington, and, finally, whether they could probably attend, would endeavor to attend, or wished additional information.

The accompanying table gives a summary of replies received to August 1, 1923. It will be observed that there were over 6,000 replies to 20,571 letters, and that of this number 5,746 express a belief that there exists a need for the type of public health institute proposed.

It is especially interesting to note that approximately 1,000 employees of health departments, 1,000 nurses, and 2,000 physicians, a total of over 4,000, say "I could probably attend an institute if it is not held too far from my home." The 1,970 physicians so expressing themselves represent the responses from only five States. Maine, Virginia, Ohio, Colorado, and Washington were chosen both because

they are well separated geographically and because mailing lists were easily available. It will be observed that a majority recommend the summer season in preference to other seasons of the year.

The deans of medical schools and leaders in the medical profession generally will doubtless be interested—and perhaps some will be surprised—to learn that there is so marked an interest in preventive medicine on the part of practicing physicians as the responses of the physicians of five States indicate.

Announcement will be made later of plans for public health summer schools to meet the demand for supplemental academic training revealed by this inquiry.

Tabulation of replies from employees of health departments, nurses, and certain physicians to an inquiry regarding the advisability of establishing one or more public health institutes.

	Employees of health departments.	Nurses.	Physicians (5 States only).	Miscellaneous.	Total.
Number of letters sent out, minus those undelivered, etc.	3,677	6,380	9,514	.....	20,571
Total number of cards returned	1,534	1,422	3,017	150	6,123
Believe need exists	1,439	1,376	2,789	142	5,746
Believe no need	20	3	99	.....	122
No answer to this question	75	43	129	8	255
Favor medical centers	1,323	1,294	2,468	139	5,224
Favor Washington, D. C.	205	149	508	13	875
No answer	57	34	104	6	203
Season preferred—					
Summer	688	851	1,469	60	3,008
Fall	272	150	602	16	1,040
Winter	146	85	184	8	423
Spring	294	147	353	14	808
Miscellaneous answers	18	21	75	2	116
No answer	224	236	484	55	999
Attendance—					
Could probably attend	1,156	1,024	1,970	72	4,222
Would endeavor to attend	1,116	1,013	1,946	81	4,156
Further information wanted	1,233	809	2,250	114	4,416
No answer	73	92	291	26	482

Summary by sections of the country.

	Could probably attend.	Prefer summer.		Could probably attend.	Prefer summer.
Northeastern States:			North Central States:		
Employees of health departments	224		Employees of health departments	428	
Nurses	404		Nurses	389	
Physicians (two States only)	494		Physicians (one State only)	906	
Miscellaneous	31		Miscellaneous	29	
Total	1,153	787	Total	1,752	1,342
Southern States:			Western States:		
Employees of health departments	284		Employees of health departments	220	
Nurses	102		Nurses	129	
Physicians (no physicians circularized)	30		Physicians (two States only)	540	
Miscellaneous	3		Miscellaneous	9	
Total	419	244	Total	898	635
			Grand total	4,222	3,008

DEATHS DURING WEEK ENDED AUGUST 18, 1923.

Summary of information received by telegraph from industrial insurance companies for week ending August 18, 1923, and corresponding week of 1922. (From the Weekly Health Index, August 21, 1923, issued by the Bureau of the Census, Department of Commerce.)

	Week ended Aug. 21, 1923.	Corresponding week, 1922.
Policies in force	54,688,492	49,817,308
Number of death claims	8,848	7,425
Death claims per 1,000 policies in force, annual rate	8.4	7.8

Deaths from all causes in certain large cities of the United States during the week ended August 18, 1923, infant mortality, annual death rate, and comparison with corresponding week of 1922. (From the Weekly Health Index, August 21, 1923, issued by the Bureau of the Census, Department of Commerce.)

City.	Week ended Aug. 18, 1923.		Annual death rate per 1,000, corresponding week, 1922.	Deaths under 1 year.		Infant mortality rate, week ended Aug. 18, 1923.[3]
	Total deaths.	Death rate.[1]		Week ended Aug. 18, 1923.	Corresponding week, 1922.	
Total	6,004	11.0	10.6	974	864	.....
Akron, Ohio	22	5.5	4.0	4	3	47
Albany, N. Y.[2]	26	11.6	12.6	3	1	66
Atlanta, Ga	64	15.0	20.6	10	3	.....
Baltimore, Md.[2]	193	13.0	12.2	28	33	82
Birmingham, Ala	61	16.2	10.4	10	7	.....
Bridgeport, Conn	28	10.2	10.2	6	1	83
Buffalo, N. Y.	100	9.7	10.8	18	21	75
Cambridge, Mass	29	13.6	8.0	7	3	125
Camden, N. J.[2]	28	11.8	11.1	5	6	83
Chicago, Ill	537	9.7	9.4	92	103	83
Cincinnati, Ohio	103	13.2	13.3	14	7	92
Cleveland, Ohio[2]	184	10.8	8.4	26	24	71
Columbus, Ohio	57	11.4	13.0	8	7	83
Dallas, Tex	44	12.9	10.6	9	8	.....
Dayton, Ohio	39	12.3	8.7	4	5	66
Denver, Colo	68	13.0	13.3	9	9	.....
Des Moines, Iowa	28	10.4	.....	3	.....	.....
Detroit, Mich	216	11.3	9.9	45	40	90
Duluth, Minn	21	10.3	.....	2	.....	46
Erie, Pa	21	9.7	9.0	7	1	142
Fall River, Mass.[2]	40	17.2	16.4	10	8	142
Flint, Mich	34	15.0	.....	16	.....	318
Fort Worth, Tex	23	8.3	8.6	2	2	.....
Grand Rapids, Mich	26	9.3	9.1	4	3	63
Houston, Tex	33	11.1	10.1	4	4	.....
Indianapolis, Ind	79	12.0	11.7	10	10	77
Jacksonville, Fla	37	19.3	11.2	6	3	.....
Jersey City, N. J	65	11.0	12.6	7	19	47
Kansas City, Mo	76	11.3	11.1	16	10	.....
Los Angeles, Calif	157	12.3	12.7	11	24	41
Louisville, Ky	75	15.2	11.0	13	1	140
Lowell, Mass	35	15.9	11.4	8	9	139
Lynn, Mass	18	9.1	.....	3	.....	79
Memphis, Tenn	73	22.4	18.0	15	6	.....
Milwaukee, Wis	75	8.1	7.4	13	7	65
Minneapolis, Minn	71	9.0	11.2	8	8	43
Nashville, Tenn.[2]	40	17.2	14.7	1	6	.....
New Bedford, Mass	32	12.8	11.9	9	7	141
New Haven, Conn	28	8.4	15.6	9	9	117
New Orleans, La	117	15.1	17.4	17	10	.....
New York, N. Y.	1,058	9.3	9.3	169	177	68
Bronx Borough	127	7.9	7.0	13	11	46
Brooklyn Borough	356	8.6	8.6	54	65	57
Manhattan Borough	457	10.5	10.7	91	82	88
Queens Borough	85	8.3	8.5	6	11	32
Richmond Borough	33	13.5	13.8	5	8	91
Newark, N. J	89	10.6	9.5	17	12	80

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1922. Cities left blank are not in the registration area for births.
[3] Deaths for week ended Friday, Aug. 17, 1923.

Deaths from all causes in certain large cities of the United States during the week ended August 18, 1923, infant mortality, annual death rate, and comparison with corresponding week of 1922. (From the Weekly Health Index, August 21, 1923, issued by the Bureau of the Census, Department of Commerce)—Continued.

City.	Week ended Aug. 18, 1923.		Annual death rate per 1,000, corresponding week, 1922.	Deaths under 1 year.		Infant mortality rate, week ended Aug. 18, 1923.
	Total deaths.	Death rate.		Week ended Aug. 18, 1923.	Corresponding week, 1922.	
Norfolk, Va.	26	8.5	12.5	5	3	88
Oakland, Calif.	52	11.3	9.4	5	8	64
Omaha, Nebr.	52	13.3	10.9	6	6	65
Paterson, N. J.	17	6.4	10.2	4	4	64
Philadelphia, Pa.	418	11.3	10.7	56	71	73
Pittsburgh, Pa.	142	12.1	12.2	30	29	104
Portland, Oreg.	41	7.8	9.5	5	3	51
Providence, R. I.	58	12.5	10.4	12	8	98
Richmond, Va.	44	12.7	10.8	11	8	135
Rochester, N. Y.	53	8.7	10.0	7	14	55
St. Louis, Mo.	208	13.5	10.7	26	9	.....
St. Paul, Minn.	42	9.1	9.8	4	8	37
Salt Lake City, Utah [3]	23	9.5	7.2	1	0	16
San Antonio, Tex.	53	15.0	13.8	12	8	.....
San Francisco, Calif.	121	11.7	13.6	12	9	72
Seattle, Wash.	53	8.8	8.9	8	1	71
Spokane, Wash.	18	9.0	9.0	2	4	44
Springfield, Mass.	27	9.8	11.2	5	2	71
Syracuse, N. Y.	48	13.6	10.4	14	8	182
Tacoma, Wash.	9	4.6	.....	1	.....	25
Toledo, Ohio.	61	11.9	14.0	13	7	131
Trenton, N. J.	32	18.1	14.6	18	5	220
Utica, N. Y.	31	15.6	.....	5	.....	106
Washington, D. C.	118	14.1	12.8	13	12	74
Wilmington, Del.	29	12.8	14.4	11	2	224
Worcester, Mass.	33	9.6	12.7	5	10	57
Yonkers, N. Y.	25	12.1	11.4	4	6	87
Youngstown, Ohio.	20	7.9	5.1	6	2	81

[3] Deaths for week ended Friday, Aug. 17, 1923.

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.

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

Reports for Week Ended Aug. 25, 1923.

ALABAMA.

	Cases.
Cerebrospinal meningitis	2
Chicken pox	7
Dengue	1
Diphtheria	41
Dysentery	22
Influenza	7
Malaria	317
Measles	86
Mumps	1
Ophthalmia neonatorum	2
Pellagra	7
Pneumonia	11
Scarlet fever	9
Smallpox	2
Tuberculosis	37
Typhoid fever	91
Whooping cough	27

ARIZONA.

Chicken pox	1
Diphtheria	2
Trachoma	1
Tuberculosis	11

ARKANSAS.

Cerebrospinal meningitis	2
Chicken pox	12
Diphtheria	4
Hookworm disease	3
Influenza	8
Malaria	305
Measles	13
Mumps	4
Ophthalmia neonatorum	1
Pellagra	15
Poliomyelitis	1
Scarlet fever	2
Smallpox	1
Trachoma	2
Tuberculosis	16
Typhoid fever	43
Whooping cough	62

CALIFORNIA.

	Cases.
Diphtheria	116
Influenza	5
Jaundice (epidemic)	1
Lethargic encephalitis	2
Measles	153
Poliomyelitis:	
Los Angeles	1
Redlands	1
San Fernando	1
Rabies—Fresno County	1
Scarlet fever	39
Smallpox	16
Typhoid fever	22

COLORADO.

(Exclusive of Denver.)

Chicken pox	1
Diphtheria	9
Impetigo contagiosa	1
Measles	9
Mumps	1
Poliomyelitis	1
Scarlet fever	8
Tuberculosis	164
Typhoid fever	12
Whooping cough	3

CONNECTICUT.

Cerebrospinal meningitis	1
Chicken pox	2
Conjunctivitis (infectious)	1
Diphtheria	31
Dysentery (bacillary)	2
German measles	3
Influenza	1
Lethargic encephalitis	2
Measles	13
Mumps	1
Paratyphoid fever	2
Pneumonia (lobar)	3
Poliomyelitis	4
Scarlet fever	19

CONNECTICUT—continued.

	Cases.
Tuberculosis (all forms)	37
Typhoid fever	12
Whooping cough	52

FLORIDA.

Diphtheria	6
Influenza	1
Malaria	17
Poliomyelitis	1
Scarlet fever	2
Smallpox	1
Typhoid fever	3

GEORGIA.

Diphtheria	12
Dysentery (amebic)	2
Hookworm disease	15
Influenza	1
Malaria	87
Measles	41
Pellagra	1
Pneumonia	5
Scarlet fever	1
Smallpox	3
Tetanus	1
Tuberculosis (all forms)	15
Typhoid fever	42
Whooping cough	6

ILLINOIS.

Cerebrospinal meningitis:	
Cook County	1
Edwards County	1
St. Clair County	1
Diphtheria:	
Cook County	77
Scattering	24
Influenza	1
Lethargic encephalitis (Cook County)	4
Pneumonia	54
Poliomyelitis:	
Cook County	7
Fayette County	1
Ford County	1
Lake County	1
Mason County	1
Scarlet fever:	
Cook County	19
Scattering	28
Smallpox	4
Typhoid fever:	
Cook County	5
Scattering	35
Whooping cough	142

INDIANA

Diphtheria	20
Influenza	1
Measles	20
Scarlet fever	9
Smallpox	7
Tuberculosis	16
Typhoid fever	21

IOWA.

Diphtheria	16
Poliomyelitis	10
Scarlet fever	14
Smallpox	8
Typhoid fever	7

KANSAS.

	Cases.
Cerebrospinal meningitis	2
Chicken pox	1
Diphtheria	23
Lethargic encephalitis	1
Malaria	6
Measles	21
Mumps	3
Pneumonia	2
Poliomyelitis	13
Scarlet fever	37
Smallpox	6
Tuberculosis	47
Typhoid fever	47
Whooping cough	26

LOUISIANA.

Diphtheria	26
Malaria	20
Measles	2
Scarlet fever	1
Smallpox	2
Tuberculosis	19
Typhoid fever	32
Whooping cough	13

MAINE.

Chicken pox	4
Diphtheria	3
German measles	1
Measles	14
Pneumonia	3
Scarlet fever	16
Smallpox	3
Tuberculosis	16
Typhoid fever	5
Whooping cough	10

MARYLAND.

Chicken pox	3
Diphtheria	23
Dysentery	14
Malaria	6
Measles	24
Mumps	7
Ophthalmia neonatorum	1
Pneumonia (all forms)	18
Scarlet fever	26
Tetanus	1
Tuberculosis	38
Typhoid fever	85
Vincent's angina	2
Whooping cough	44

MASSACHUSETTS.

Cerebrospinal meningitis	3
Chicken pox	17
Conjunctivitis (suppurative)	16
Diphtheria	124
German measles	4
Influenza	3
Lethargic encephalitis	2
Malaria	1
Measles	32
Mumps	23
Ophthalmia neonatorum	20
Pellagra	1
Pneumonia (lobar)	24
Poliomyelitis	4

MASSACHUSETTS—continued.

	Cases.
Scarlet fever	56
Septic sore throat	1
Tetanus	2
Trachoma	1
Tuberculosis (all forms)	106
Typhoid fever	12
Whooping cough	64

MICHIGAN.

Diphtheria	104
Measles	44
Pneumonia	12
Scarlet fever	64
Smallpox	4
Tuberculosis	35
Typhoid fever	26
Whooping cough	115

MINNESOTA.

Diphtheria	63
Influenza	1
Measles	15
Poliomyelitis	6
Scarlet fever	87
Smallpox	7
Tuberculosis	70
Typhoid fever	6
Whooping cough	3

MISSISSIPPI.

Diphtheria	26
Scarlet fever	2
Typhoid fever	34

MISSOURI.

Cerebrospinal meningitis	1
Chicken pox	5
Diphtheria	50
Influenza	1
Measles	21
Mumps	5
Poliomyelitis	5
Rabies	4
Scarlet fever	50
Smallpox	2
Tetanus	2
Trachoma	3
Tuberculosis	88
Typhoid fever	30
Whooping cough	214

MONTANA.

Diphtheria	9
Poliomyelitis:	
Boone	1
Missoula	1
Scarlet fever	4

NEW JERSEY.

Cerebrospinal meningitis	2
Chicken pox	7
Diphtheria	51
Influenza	2
Measles	25
Paratyphoid fever	1
Pneumonia	24
Poliomyelitis	6
Scarlet fever	16
Typhoid fever	31
Whooping cough	60

NEW MEXICO.

	Cases.
Conjunctivitis	1
Diphtheria	9
Influenza	1
Measles	7
Mumps	1
Pneumonia	1
Scarlet fever	3
Septic sore throat	1
Tuberculosis	8
Typhoid fever	5
Whooping cough	2

NEW YORK.

(Exclusive of New York City.)

Cerebrospinal meningitis	2
Diphtheria	67
Influenza	2
Lethargic encephalitis	3
Measles	162
Pneumonia	47
Poliomyelitis	15
Scarlet fever	54
Smallpox	3
Typhoid fever	64
Whooping cough	191

NORTH CAROLINA.

Cerebrospinal meningitis	1
Chicken pox	6
Diphtheria	82
Measles	132
Poliomyelitis	2
Scarlet fever	43
Septic sore throat	1
Smallpox	18
Typhoid fever	64
Whooping cough	190

NORTH DAKOTA.

Anthrax	1
Diphtheria	6
Measles	2
Scarlet fever	12
Trachoma	1
Typhoid fever	1
Whooping cough	4

OREGON.

Chicken pox	3
Diphtheria	7
Measles	4
Mumps	2
Pneumonia	1
Scarlet fever	17
Smallpox	5
Tuberculosis	10
Typhoid fever	7
Whooping cough	2

SOUTH DAKOTA.

Anthrax	1
Diphtheria	6
Measles	2
Scarlet fever	12
Trachoma	1
Typhoid fever	1
Whooping cough	4

TEXAS.

	Cases.
Chicken pox	1
Diphtheria	15
Dysentery	2
Influenza	4
Measles	1
Mumps	5
Paratyphoid fever	2
Pneumonia	4
Scarlet fever	4
Smallpox	1
Tuberculosis	16
Typhoid fever	14
Whooping cough	31

VERMONT.

Chicken pox	18
Diphtheria	4
Measles	20
Mumps	1
Poliomyelitis	1
Scarlet fever	17
Smallpox	2
Typhoid fever	1
Whooping cough	34

VIRGINIA.

Poliomyelitis:	
Arlington County	1
Caroline County	2
Shenandoah County	1

WASHINGTON.

Cerebrospinal meningitis	1
Chicken pox	10
Diphtheria	13
Measles	11
Mumps	2
Poliomyelitis	1
Scarlet fever	11
Smallpox	6
Tuberculosis	3

WASHINGTON—continued.

	Cases.
Typhoid fever:	
Everett	19
Scattering	5
Whooping cough	31

WEST VIRGINIA.

Diphtheria	8
Scarlet fever	11
Typhoid fever	20

WISCONSIN.

Milwaukee:	
Chicken pox	6
Diphtheria	8
Measles	1
Pneumonia	1
Poliomyelitis	2
Scarlet fever	10
Tuberculosis	17
Whooping cough	36
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	5
Diphtheria	44
Influenza	8
Measles	35
Pneumonia	1
Poliomyelitis	1
Scarlet fever	48
Smallpox	8
Tuberculosis	19
Typhoid fever	8
Whooping cough	77

WYOMING.

Measles	13
Pneumonia	1
Rocky Mountain spotted fever	1
Scarlet fever	1
Typhoid fever	5
Whooping cough	2

Reports for Week Ended Aug. 18, 1923.

DISTRICT OF COLUMBIA.

	Cases.
Measles	2
Scarlet fever	1
Tuberculosis	22
Typhoid fever	8
Whooping cough	12

NEBRASKA.

Chicken pox	1
Diphtheria	23
Influenza	1
Measles	7
Mumps	2
Poliomyelitis:	
Burt County	1
Omaha	9
Scarlet fever	6
Septic sore throat	1

NEBRASKA—continued.

	Cases.
Smallpox	1
Tuberculosis	1
Typhoid fever	7
Whooping cough	17

NORTH DAKOTA.

Chicken pox	2
Diphtheria	5
German measles	1
Measles	23
Pneumonia	1
Scarlet fever	5
Smallpox	11
Tuberculosis	1
Typhoid fever	4
Whooping cough	9

SUMMARY OF CASES REPORTED MONTHLY BY STATES.

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

State.	Cerebrospinal meningitis.	Diphtheria.	Influenza.	Malaria.	Measles.	Pellagra.	Poliomyelitis.	Scarlet fever.	Smallpox.	Typhoid fever.
June, 1923.										
Maine	1	32	0	.....	906	.....	.....	98	10	33
July, 1923.										
Arkansas	3	9	17	1,053	328	152	2	7	31	169
Illinois	8	392	28	11	1,420	1	11	241	39	99
Indiana	.....	64	8	.....	498	.....	1	75	97	35
Louisiana	2	44	2	118	138	32	3	2	13	102
Maryland	2	86	6	44	695	.....	1	114	.....	114
Massachusetts	11	486	3	3	1,035	5	8	441	2	58
Minnesota	2	205	3	.....	327	.....	4	367	80	31
New York	7	959	17	16	4,866	.....	127	685	56	181
North Dakota	.....	10	.....	.....	144	.....	.....	26	12	3
Pennsylvania	11	707	.....	3	1,615	1	5	424	22	180
South Carolina	.....	99	.....	32	62	1	.....	3	7	48
Washington	.....	77	.....	.....	177	.....	1	75	67	33
West Virginia	9	55	18	.....	436	.....	7	89	8	140

Cases of Certain Communicable Diseases Reported for the Month of June, 1923, by State Health Officers.

State.	Number of cases reported.								
	Chicken pox.	Diphtheria.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Tuberculosis.	Typhoid fever.	Whooping cough.
Alabama	.....	28	1,680	.....	26	45	162	206	.....
Arizona	22	17	56	5	64	4	[1] 265	11	9
Arkansas	30	18	537	37	7	37	41	30	141
California	617	581	3,712	85	517	93	615	75	463
Colorado	80	169	1,090	64	77	1	460	21	162
Connecticut	238	136	556	80	230	3	149	9	262
Delaware	12	16	71	.....	33	.....	16	4	22
District of Columbia	81	19	429	.....	56	.....	.....	13	82
Florida	15	18	378	5	4	18	104	54	75
Georgia [2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Idaho	1	2	3	.....	2	4	1	.....	7
Illinois	889	532	6,320	681	475	128	1,349	68	892
Indiana	.....	129	3,895	.....	199	236	147	33	.....
Iowa	32	61	407	10	166	103	15	(3)	82
Kansas	114	90	1,698	128	108	33	235	35	402
Kentucky [2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisiana	5	42	628	8	5	20	152	110	459
Maine [5]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland	294	110	2,068	116	329	1	257	51	524
Massachusetts	699	613	2,985	729	1,057	.....	651	44	708
Michigan	637	462	10,219	268	928	106	524	49	867
Minnesota	202	169	1,272	.....	432	88	273	29	77
Mississippi	146	30	1,668	61	7	13	259	173	1,481
Missouri [2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montana	32	12	101	.....	60	25	60	2	21
Nebraska	11	41	51	47	35	9	3	3	96
Nevada [4]	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire [4]	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Jersey	749	345	2,442	.....	345	1	444	65	428
New Mexico	3	83	154	8	22	1	38	8	13
New York	2,166	1,099	12,246	1,192	1,539	15	1,841	126	1,241
North Carolina	198	73	5,457	.....	60	239	.....	148	1,673
North Dakota	32	26	161	.....	52	33	25	1	41
Ohio	770	413	4,424	97	914	197	573	80	1,026
Oklahoma [5]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oregon	80	54	27	14	52	73	42	13	43
Pennsylvania	1,399	835	6,261	404	799	33	563	144	1,378
Rhode Island	14	55	167	7	35	.....	48	2	26
South Carolina	21	75	145	3	8	26	21	101	69

[1] Many old cases reported at hospitals at Tucson and Prescott.
[2] Reports received weekly.
[3] Not notifiable.
[4] Reports received annually.
[5] Reports not received at time of going to press.

Cases of Certain Communicable Diseases Reported for the Month of June, 1923, by State Health Officers—Continued.

State.	Number of cases reported.								
	Chicken pox.	Diphtheria.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Tuberculosis.	Typhoid fever.	Whooping cough.
South Dakota	41	32	496	.....	79	2	21	5	16
Tennessee [4]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas [2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah [4]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vermont	63	16	924	84	37	6	54	4	119
Virginia	242	81	4,632	.....	52	33	301	152	.....
Washington	208	88	352	80	112	113	238	26	373
West Virginia	69	80	2,009	.....	57	38	82	97	187
Wisconsin	306	169	4,096	.....	873	102	180	10	301
Wyoming	5	1	97	2	8	1	1	1	7

[2] Reports received weekly. [4] Reports received annually.

Reported Cases per 1,000 Population (Annual Basis) for the Month of June, 1923.

State.	Case rates per 1,000 population.								
	Chicken pox.	Diphtheria.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Tuberculosis.	Typhoid fever.	Whooping cough.
Alabama	.....	0.14	8.43	.....	0.13	0.23	0.81	1.03	.....
Arizona	0.70	.54	1.79	0.16	2.04	.13	[1] 8.46	.35	0.29
Arkansas	.20	.12	3.60	.25	.05	.25	.27	.20	.94
California	1.97	1.86	11.87	.27	1.65	.30	1.97	.24	1.48
Colorado	.98	2.08	13.39	.79	.95	.01	5.65	.26	1.99
Connecticut	1.96	1.12	4.58	.66	1.90	.02	1.23	.07	2.16
Delaware	.63	.84	3.75	.....	1.74	.....	.84	.21	1.16
District of Columbia	2.07	.49	10.97	.....	1.43	.....	.....	.33	2.10
Florida	.17	.21	4.40	.06	.05	.21	1.21	.63	.87
Georgia [2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Idaho	.03	.05	.08	.....	.05	.10	.03	.....	.18
Illinois	1.59	.95	11.32	1.22	.85	.23	2.42	.12	1.60
Indiana	.....	.52	15.73	.....	.80	.95	.59	.13	.....
Iowa	.16	.30	2.01	.05	.82	.51	.07	[3]	.40
Kansas	.77	.61	11.49	.87	.73	.22	1.59	.24	2.72
Kentucky [2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisiana	.03	.28	4.13	.05	.03	.13	1.00	.72	3.02
Maine [4]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland	2.38	.89	16.71	.94	2.66	.01	2.08	.41	4.24
Massachusetts	2.11	1.85	9.02	2.20	3.19	.....	1.97	.13	2.14
Michigan	1.95	1.41	31.26	.82	2.84	.32	1.60	.15	2.65
Minnesota	.98	.82	6.19	.....	2.10	.43	1.33	.14	.37
Mississippi	.99	.20	11.35	.42	.05	.09	1.76	1.18	10.08
Missouri [2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montana	.64	.24	2.01	.....	1.19	.50	1.19	.04	.42
Nebraska	.10	.37	.47	.43	.32	.08	.03	.03	.88
Nevada [5]	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire [5]	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Jersey	2.70	1.24	8.79	.....	1.24	.00	1.60	.23	1.54
New Mexico	.10	2.71	5.03	.26	.72	.03	1.24	.26	.42
New York	2.43	1.23	13.74	1.34	1.73	.02	2.07	.14	1.39
North Carolina	.90	.33	24.72	.....	.27	1.08	.....	.67	7.58
North Dakota	.58	.47	2.91	.....	.94	.60	.45	.02	.74
Ohio	1.53	.82	8.80	.19	1.82	.39	1.14	.16	2.04
Oklahoma [4]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oregon	1.18	.80	.40	.21	.77	1.08	.62	.19	.64
Pennsylvania	1.87	1.12	8.37	.54	1.07	.04	.75	.19	1.84
Rhode Island	.27	1.07	3.24	.14	.68	.....	.93	.04	.50
South Carolina	.15	.52	1.01	.02	.06	.18	.15	.70	.48
South Dakota	.76	.59	9.21	.....	1.47	.04	.39	.09	.30
Tennessee [5]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas [2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah [5]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vermont	2.18	.55	32.01	2.91	1.28	.21	1.87	.14	4.12
Virginia	1.23	.41	23.50	.....	.26	.17	1.53	.77	.....
Washington	1.76	.75	2.99	.68	.95	.96	2.02	.22	3.16
West Virginia	.54	.63	15.76	.....	.45	.30	.64	.76	1.47
Wisconsin	1.36	.75	18.19	.....	3.88	.45	.80	.04	1.34
Wyoming	.29	.06	5.57	.11	.46	.06	.06	.06	.40

[1] Many old cases reported at hospitals at Tucson and Prescott.
[2] Reports received weekly.
[3] Not notifiable.
[4] Reports not received at time of going to press.
[5] Reports received annually.

CITY REPORTS FOR WEEK ENDED AUGUST 11, 1923.

ANTHRAX.

City.	Cases.	Deaths.
Florida:		
Tampa	1	.....

CEREBROSPINAL MENINGITIS.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding week of the years 1915 to 1922, inclusive. In instances in which data for the full eight years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Aug. 11, 1923.		City.	Median for previous years.	Week ended Aug. 11, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
California:				New York:			
Los Angeles	0	1	.....	Buffalo	0	.....	2
Pasadena	0	.....	1	New York	4	3	1
Georgia:				North Carolina:			
Atlanta	0	1	1	Wilmington	0	1	1
Savannah	0	1	1	Tennessee:			
Illinois:				Memphis	0	1	.....
Chicago	1	1	1	Texas:			
Maryland:				El Paso	0	.....	1
Baltimore	0	1	.....	Utah:			
Massachusetts:				Salt Lake City	0	.....	1
Boston	1	1	.....	Virginia:			
Michigan:				Norfolk	0	2	.....
Hamtramck	0	.....	1	West Virginia:			
New Jersey:				Huntington	0	.....	1
Newark	0	1	1				

DENGUE.

City.	Cases.	Deaths.
Texas:		
Galveston	1	.....

DIPHTHERIA.

See p. 2033; also Current State summaries, p. 2022, and Monthly summaries by States, p. 2026.

INFLUENZA.

City.	Cases.		Deaths, week ended Aug. 11, 1923.	City.	Cases.		Deaths, week ended Aug. 11, 1923.
	Week ended Aug. 12, 1922.	Week ended Aug. 11, 1923.			Week ended Aug. 12, 1922.	Week ended Aug. 11, 1923.	
California:				New Jersey:			
Long Beach	0	0	1	Newark	1	2	.....
Los Angeles	3	2	.....	New York:			
Connecticut:				New York	5	4	1
New London	0	1	.....	Ohio:			
District of Columbia:				Cincinnati	0	.....	1
Washington	.....	2	1	Pennsylvania:			
Georgia:				Pittsburgh	0	0	1
Atlanta	0	2	.....	South Dakota:			
Illinois:				Sioux Falls	0	2	0
Chicago	4	1	.....	Texas:			
Peoria	0	0	1	San Antonio	0	5	.....
Springfield	0	1	1	West Virginia:			
Indiana:				Charleston	0	4	.....
Indianapolis	0	0	1				
Massachusetts:							
Brookline	0	1	.....				
Springfield	0	1	.....				

CITY REPORTS FOR WEEK ENDED AUGUST 11, 1923—Continued.

MALARIA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Alabama:			Massachusetts:		
Birmingham	20		Boston	1	
Dothan	10		Missouri:		
Montgomery	2		St. Louis	1	
Arkansas:			New Jersey:		
Little Rock	2		Newark	1	
California:			New York:		
Bakersfield		1	Newburgh	1	
Los Angeles	1		New York	1	
Sacramento		1	Ohio:		
Florida:			Cincinnati	2	
Tampa	4		Tennessee:		
Georgia:			Memphis	25	
Atlanta	1		Nashville	1	
Brunswick	8		Texas:		
Macon	4		Dallas	1	2
Rome	3		Houston		1
Maryland:					
Baltimore	2				

MEASLES.

See p. 2033; also Current State summaries, p. 2022, and Monthly summaries by States, p. 2026.

PELLAGRA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Alabama:			Massachusetts:		
Birmingham	1		Lowell	1	1
Montgomery		1	North Carolina:		
California:			Raleigh		1
Los Angeles		1	South Carolina:		
Georgia:			Columbia		2
Atlanta		2	Virginia:		
			Charlottesville		1

PNEUMONIA (ALL FORMS).

Alabama:			Indiana—Continued.		
Birmingham	2	3	Indianapolis		4
Dothan	1		Michigan City		1
Mobile		1	Kansas:		
Arkansas:			Fort Scott		1
Little Rock	1		Kansas City	1	
California:			Topeka	4	1
Long Beach		2	Wichita		2
Los Angeles	27	9	Kentucky:		
Oakland		1	Covington		2
Riverside		1	Lexington		2
Sacramento		1	Louisiana:		
San Francisco	13	6	New Orleans	7	6
Santa Ana		1	Maryland:		
Stockton		1	Baltimore		8
Connecticut:			Massachusetts:		
Hartford	2	1	Arlington	2	1
New Haven		4	Beverly		1
District of Columbia:			Boston		8
Washington		12	Cambridge		2
Georgia:			Chelsea		2
Atlanta	7	7	Clinton	1	
Brunswick		1	Everett	1	
Illinois:			Holyoke		1
Alton	1		Lawrence		1
Aurora		1	Lowell		1
Bloomington		1	Lynn		1
Chicago	74	21	New Bedford	2	
Peoria		1	Newton		2
Quincy		1	Pittsfield		1
Rockford		1	Waltham	1	
Springfield		2	Worcester		3
Indiana:			Michigan:		
Bloomington		1	Alpena	1	
East Chicago		1	Ann Arbor	1	
Fort Wayne		1	Flint		3
Gary		2	Grand Rapids		1

CITY REPORTS FOR WEEK ENDED AUGUST 11, 1923—Continued.

PNEUMONIA (ALL FORMS)—Continued.

City.	Cases.	Deaths.
Michigan—Continued.		
Hamtramck		2
Highland Park	2	
Muskegon		1
Pontiac		1
Minnesota:		
Duluth	2	
St. Paul		6
Missouri:		
Cape Girardeau		1
St. Joseph		1
Springfield		3
Montana:		
Missoula		1
Nebraska:		
Lincoln		1
Omaha		4
New Hampshire:		
Manchester		1
Nashua		1
New Jersey:		
Asbury Park	1	
Atlantic City		2
Englewood		1
Harrison	1	
Morristown		2
Newark	11	5
Orange		1
Paterson	2	
New York:		
Albany	4	
Buffalo	5	1
Elmira	2	1
Lackawanna	1	
New York	73	64
Rochester	7	1
Schenectady	2	1
Syracuse	3	2
Watertown		1
North Carolina:		
Greensboro		2
Ohio:		
Bucyrus		1
Canton		1
Cincinnati	19	8
Cleveland	13	10
Ohio—Continued.		
Dayton	1	
East Cleveland	1	
Hamilton		1
Springfield		2
Toledo		2
Youngstown		2
Oklahoma:		
Oklahoma		2
Oregon:		
Portland		3
Pennsylvania:		
Philadelphia		21
Pittsburgh		18
Rhode Island:		
Newport		1
South Carolina:		
Columbia		2
South Dakota:		
Sioux Falls		1
Tennessee:		
Memphis		3
Nashville		2
Texas:		
Beaumont		1
Dallas		1
Galveston		1
Houston		1
San Antonio		1
Waco		1
Utah:		
Provo		1
Salt Lake City		4
Virginia:		
Alexandria		1
Norfolk		2
Petersburg		1
Richmond		3
West Virginia:		
Charleston		1
Huntington		1
Wheeling		1
Wisconsin:		
Kenosha		1
Superior	1	

POLIOMYELITIS (INFANTILE PARALYSIS).

The column headed "Median for previous years" gives the median number of cases reported during the corresponding week of the years 1915 to 1922, inclusive. In instances in which data for the full eight years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Aug. 11, 1923.	
		Cases.	Deaths.
Alabama:			
Birmingham	0	1	
California:			
Los Angeles	0	1	
Illinois:			
Chicago	5	2	
Iowa:			
Council Bluffs	0	1	
Kansas:			
Topeka	0	7	
Massachusetts:			
Boston	2	1	
Newton	0	1	1
Michigan:			
Ann Arbor	0	1	0
Missouri:			
St. Louis	0	2	
Nebraska:			
Lincoln	0	1	
Omaha	0	4	1
New Jersey:			
Bayonne	0	1	
Orange	0	1	1
New York:			
Albany	0	1	
Mount Vernon	0	2	
New York	5	21	2
Newburgh	0	1	
Syracuse	0	3	
North Carolina:			
Greensboro		1	
Ohio:			
Cleveland	2	1	
Oklahoma:			
Tulsa	0	1	
Pennsylvania:			
Wilkes-Barre	0	1	
Rhode Island:			
Providence	0	1	
Vermont:			
Burlington	0	1	

CITY REPORTS FOR WEEK ENDED AUGUST 11, 1923—Continued.

RABIES IN ANIMALS.

City.	Cases.	City.	Cases.
California:		Tennessee:	
Long Beach	2	Memphis	1
Los Angeles	11	Texas:	
Pasadena	1	Dallas	1

RABIES IN MAN.

City.	Cases.	Deaths.
Montana:		
Billings	1	1

SCARLET FEVER.

See p. 2033; also Current State summaries, p. 2022, and Monthly summaries by States p. 2026.

SMALLPOX.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding week of the years 1915 to 1922, inclusive. In instances in which data for the full eight years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Aug. 11, 1923.		City.	Median for previous years.	Week ended Aug. 11, 1923.	
		Cases.	Deaths.			Cases.	Deaths
California:				North Carolina:			
Long Beach	0	2	1	Winston-Salem	0	3	.....
Los Angeles	0	11	.....	Ohio:			
Georgia:				Cleveland	0	8	.....
Atlanta	2	17	.....	Findlay	0	1	.....
Illinois:				Toledo	1	2	.....
Chicago	0	2	.....	Oklahoma:			
Rock Island	0	3	.....	Tulsa	0	1	.....
Indiana:				Oregon:			
Gary	0	3	.....	Portland	2	3	.....
Huntington	0	1	.....	Pennsylvania:			
Indianapolis	0	1	.....	Chester	0	1	.....
Muncie	0	3	.....	Texas:			
Michigan:				Fort Worth	0	1	.....
Holland	0	2	.....	Vermont:			
Jackson	0	2	.....	Burlington	0	1	.....
Minnesota:				Washington:			
Duluth	0	2	.....	Seattle	1	1	.....
Hibbing	0	1	.....	Spokane	1	2	.....
Minneapolis	3	3	.....	Tacoma	0	1	.....
St. Paul	2	1	.....	Vancouver	0	1	.....
Winona	0	1	.....	Wisconsin:			
Montana:				Milwaukee	1	3	.....
Anaconda	0	1	.....				
New York:							
Buffalo	0	3	.....				
Niagara Falls	0	7	.....				

TETANUS.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
California:			Kentucky:		
Los Angeles	1	1	Owensboro	1	.....
Connecticut:			Ohio:		
New Haven	.....	1	Cleveland	.....	1
Georgia:			Pennsylvania:		
Brunswick	1	.....	Philadelphia	1	1
Illinois:			South Carolina:		
Chicago	1	.....	Charleston	.....	1
Kansas:					
Hutchinson	1	.....			

CITY REPORTS FOR WEEK ENDED AUGUST 11, 1923—Continued.

TUBERCULOSIS.

See p. 2033; also Current State summaries, p. 2022.

TYPHOID FEVER.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding week of the years 1915 to 1922, inclusive. In instances in which data for the full eight years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Aug. 11, 1923.	
		Cases.	Deaths.
Alabama:			
Birmingham	8	8	.....
Dothan	0	2	0
Montgomery	1	7	.....
Tuscaloosa	0	3	.....
Arkansas:			
Little Rock	0	1	.....
North Little Rock	1	1	.....
California:			
Los Angeles	5	2	.....
Pasadena	0	.....	1
Sacramento	1	1	1
Santa Cruz	0	1	1
Connecticut:			
Bridgeport	0	5	.....
Greenwich	0	1	0
Hartford	1	1	.....
Manchester	0	1	.....
New Haven	1	1	.....
District of Columbia:			
Washington	7	2	1
Florida:			
Tampa	1	1	1
Georgia:			
Albany	2	.....	1
Atlanta	2	3	3
Brunswick	0	1	.....
Macon	2	2	.....
Rome	1	3	.....
Illinoi :			
Champaign	0	1	.....
Chicago	8	11	1
Decatur	0	2	.....
Elgin	0	1	.....
Galesburg	0	2	.....
Peoria	0	3	.....
Indiana:			
Bloomington	0	1	.....
Logansport	0	1	.....
Kansas:			
Coffeyville	1	3	.....
Hutchinson	1	1	.....
Kansas City	2	1	.....
Parsons	0	4	.....
Topeka	1	2	.....
Wichita	3	4	3
Kentucky:			
Covington	0	1	1
Owensboro	2	2	.....
Louisiana:			
New Orleans	5	11	.....
Maine:			
Bangor	0	1	.....
Maryland:			
Baltimore	12	11	.....
Massachusetts:			
Boston	4	4	.....
Cambridge	1	1	.....
Haverhill	0	1	1
Lynn	1	1	.....
Somerville	0	1	.....
Springfield	2	1	.....
Waltham	0	1	.....
Worcester	1	.....	1
Michigan:			
Grand Rapids	1	1	.....
Highland Park	0	2	.....
Jackson	0	1	0
Saginaw	0	3	0
Minnesota:			
St. Paul	1	1	1
Virginia	0	4	.....
Missouri:			
St. Louis	10	7	.....
Nebraska:			
Lincoln	0	2	.....
Omaha	0	.....	1
Nevada:			
Reno	0	1	.....
New Jersey:			
Jersey City	1	3	.....
Long Branch	0	1	.....
Newark	1	1	1
Trenton	0	2	.....
New York:			
Albany	1	1	.....
Amsterdam	.....	1	.....
Cohoes	0	1	.....
Elmira	0	2	.....
Glens Falls	0	1	1
New York	35	35	1
Rochester	1	1	.....
North Carolina:			
Greensboro	0	6	.....
Raleigh	1	1	0
Wilmington	2	1	.....
Winston-Salem	2	5	.....
North Dakota:			
Fargo	0	1	.....
Ohio:			
Canton	1	1	0
Cincinnati	2	2	.....
Cleveland	8	6	1
New Philadelphia	0	1	.....
Springfield	0	2	1
Steubenville	0	1	.....
Toledo	3	4	2
Oklahoma:			
Oklahoma	4	1	.....
Tulsa	5	7	.....
Pennsylvania:			
Berwick	0	1	.....
Chester	0	1	.....
Easton	0	1	0
Erie	0	2	0
Homestead	0	1	.....
Johnstown	0	1	.....
New Castle	0	1	.....
Philadelphia	16	7	.....
Pittsburgh	5	.....	1
Sharon	0	1	.....
Uniontown	0	2	.....
West Chester	0	1	.....
Wilkes-Barre	0	1	.....
Williamsport	0	1	.....
Rhode Island:			
Providence	1	2	.....
South Carolina:			
Columbia	2	2	.....
Tennessee:			
Memphis	6	13	1
Nashville	12	4	.....
Texas:			
Amarillo	.....	2	.....
Dallas	4	2	.....
El Paso	0	1	2
Fort Worth	2	3	.....

CITY REPORTS FOR WEEK ENDED AUGUST 11, 1923—Continued.

TYPHOID FEVER—Continued.

City.	Median for previous years.	Week ended Aug. 11, 1922.	
		Cases.	Deaths.
Texas—Continued.			
Houston	0	3	.....
San Antonio	.....	2	2
Utah:			
Salt Lake City	1	3	.....
Virginia:			
Charlottesville	1	3	.....
Lynchburg	1	1	.....
Norfolk	4	3	.....
Petersburg	2	2	.....
Richmond	5	3	.....
Roanoke	2	3	.....
Washington:			
Everett	0	6	.....
Seattle	1	1	.....
West Virginia:			
Charleston	3	4	.....
Clarksburg	0	2	.....
Parkersburg	0	1	.....
Wheeling	1	1	.....
Wisconsin:			
Green Bay	0	1	.....

TYPHUS FEVER.

City.	Cases.	Deaths.
California:		
Los Angeles	2	.....

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Alabama:										
Birmingham	178,806	41	.....	.....	15	.....	1	.....	13	2
Dothan	10,034	3	1	.....	2	.....	.....	.....	.....	.....
Mobile	60,777	16	1	.....	.....	1	.....	.....	.....	2
Montgomery	43,464	8	3	1	.....	.....	1	.....	.....	.....
Tuscaloosa	11,996	.....	1	.....	.....	.....	.....	.....	1	.....
Arkansas:										
Little Rock	65,142	.....	1	.....	2	.....	.....	.....	1	.....
California:										
Alameda	28,806	4	1	.....	.....	.....	.....	.....	1	.....
Bakersfield	18,638	7	.....	.....	.....	.....	2	.....	.....	3
Glendale	13,536	9	.....	.....	.....	.....	.....	.....	1	1
Long Beach	55,593	17	2	.....	1	.....	2	.....	.....	1
Los Angeles	576,673	163	45	.....	28	.....	14	.....	30	17
Oakland	216,261	43	6	.....	4	.....	1	.....	.....	2
Pasadena	45,354	9	.....	.....	.....	.....	.....	.....	1	1
Richmond	16,843	.....	.....	.....	5	.....	1	.....	.....	.....
Riverside	19,341	7	.....	.....	1	.....	3	.....	.....	.....
Sacramento	65,908	11	1	.....	1	.....	1	.....	1	1
San Bernardino	18,721	7	.....	.....	.....	.....	.....	.....	.....	1
San Diego	74,683	23	.....	.....	2	.....	1	.....	4	5
San Francisco	506,676	116	29	4	53	.....	6	.....	23	11
Santa Ana	15,485	4	.....	.....	.....	.....	1	.....	.....	.....
Santa Cruz	10,917	4	.....	.....	.....	.....	.....	.....	.....	.....
Stockton	40,296	4	2	.....	.....	.....	1	.....	.....	.....
Colorado:										
Pueblo	43,050	12	5	1	.....	.....	2	.....	1	1
Trinidad	10,906	1	.....	.....	1	.....	.....	.....	.....	.....
Connecticut:										
Bridgeport	143,555	25	4	.....	3	.....	1	.....	6	3
Greenwich (town)	22,123	.....	1	.....	.....	.....	.....	.....	.....	.....
Hartford	138,036	18	3	.....	.....	.....	1	.....	3	2
Manchester (town)	18,370	3	2	.....	.....	.....	.....	.....	.....	.....
New Haven	162,537	34	3	.....	.....	.....	.....	.....	3	1
New London	25,688	6	.....	.....	.....	.....	.....	.....	1	1
District of Columbia:										
Washington	437,571	131	1	1	.....	.....	2	.....	24	11

CITY REPORTS FOR WEEK ENDED AUGUST 11, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Florida:										
St. Petersburg	14,237	3								
Tampa	51,608	21								1
Georgia:										
Albany	11,555								1	
Atlanta	200,616	80	3		5		2		7	4
Brunswick	14,413	7								1
Macon	52,995								5	
Savannah	83,252	32			2				2	6
Idaho:										
Boise	21,393	7								
Illinois:										
Alton	24,682	5							2	
Aurora	36,397	10							2	1
Bloomington	28,725	5							2	
Centralia	12,491	3								
Chicago	2,701,705	492	51	4	19	1	22	2	190	47
Cicero	44,995	8	1				1			
Decatur	43,818	7	2							1
East St. Louis	66,767	16	1						1	
Elgin	27,454	2	1	1	2		1			
Evanston	37,234	6								
Freeport	19,669	2			1		2		2	
Galesburg	23,834	7					2			
La Salle	13,050	1								
Mattoon	13,552								1	
Peoria	76,121	20	1	1						1
Quincy	35,978	10							1	
Rock Island	35,177	2	1		4					
Rockford	65,651	13			1					
Springfield	59,183	14								
Indiana:										
Anderson	29,767	5								
Bloomington	11,595	5								
Crawfordsville	10,139	2			2		2			
East Chicago	35,967	13							2	
Elwood	10,790	1								
Fort Wayne	86,549	21	5							
Frankfort	11,585	2								
Gary	55,378	16								
Hammond	36,004	8					1			
Huntington	14,000	3								
Indianapolis	314,194	87	3	1	7		1		22	14
Kokomo	30,067	13								
La Fayette	22,486	9					1			
Logansport	21,626	6								
Michigan City	19,457	7								
Muncie	36,524	8	1		2		1			1
Newcastle	14,458	6								1
Iowa:										
Burlington	24,057	5	1							
Council Bluffs	36,162	5					4			
Muscatine	16,068	7								
Sioux City	71,227		1		2		1			
Kansas:										
Atchison	12,630		4							
Coffeyville	13,452	3								
Fort Scott	10,693	8	1		1					
Hutchinson	23,298						1			
Kansas City	101,177				2				7	
Lawrence	12,456	2								1
Topeka	50,022	21			2					
Wichita	72,217	31			5		1			
Kentucky:										
Covington	57,121	15			5				3	
Henderson	12,169	3								
Lexington	41,534	14	1		2					2
Louisiana:										
New Orleans	387,219	130	9		1		3		19	9
Maine:										
Auburn	16,985	2					1			
Bangor	25,978						1		1	
Bath	14,731	1								
Lewiston	31,791	13	3				1		1	1
Sanford (town)	10,691	1								

CITY REPORTS FOR WEEK ENDED AUGUST 11, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Maryland:										
Baltimore	733,826	180	18	2	20	.....	19	1	18	14
Cumberland	29,837	9	.....	.....	.....	.....	.....	.....	.....	.....
Frederick	11,066	6	.....	.....	.....	.....	.....	.....	.....	.....
Massachusetts.										
Adams (town)	12,067	2	.....	.....	.....	.....	2	.....	.....	.....
Amesbury (town)	10,036	2	.....	.....	.....	.....	.....	.....	.....	.....
Arlington (town)	18,665	5	1	.....	.....	.....	.....	.....	.....	.....
Attleboro	19,731	5	.....	.....	.....	.....	.....	.....	.....	.....
Beverly	22,561	10	.....	.....	1	.....	.....	.....	1	.....
Boston	748,060	150	39	1	28	.....	23	1	23	17
Braintree (town)	10,580	1	.....	.....	.....	.....	.....	.....	.....	1
Brockton	66,254	16	2	1	3	.....	.....	.....	2	.....
Brookline	37,748	.....	2	.....	.....	.....	.....	.....	.....	.....
Cambridge	109,694	26	5	.....	3	.....	2	.....	3	2
Chelsea	43,184	15	.....	.....	.....	.....	2	.....	.....	1
Chicopee	36,214	8	2	1	.....	.....	.....	.....	.....	.....
Clinton	12,979	5	.....	.....	.....	.....	.....	.....	.....	1
Danvers	11,108	.....	.....	.....	.....	.....	1	.....	.....	.....
Dedham	10,792	2	.....	.....	.....	.....	.....	.....	.....	1
Easthampton	11,261	1	.....	.....	.....	.....	.....	.....	1	1
Everett	40,120	9	6	.....	.....	.....	.....	.....	.....	.....
Fall River	120,485	28	3	.....	1	.....	4	.....	5	3
Framington	17,033	4	.....	.....	1	.....	.....	.....	.....	.....
Gardner	16,971	3	1	.....	2	.....	.....	.....	.....	.....
Greenfield	15,462	2	.....	.....	.....	.....	.....	.....	.....	.....
Haverhill	53,884	9	1	.....	2	.....	.....	.....	.....	.....
Holyoke	60,203	12	3	.....	.....	.....	.....	.....	1	1
Lawrence	94,270	14	3	1	.....	.....	.....	.....	2	2
Leominster	19,744	5	.....	.....	2	.....	1	.....	2	.....
Lowell	112,759	24	1	.....	1	.....	3	.....	6	1
Lynn	99,148	19	1	.....	.....	.....	.....	.....	1	3
Malden	49,103	7	1	.....	.....	.....	.....	.....	1	2
Medford	39,038	7	5	.....	.....	.....	2	.....	2	1
Melrose	18,204	5	.....	.....	1	.....	3	.....	.....	.....
Methuen	15,189	4	.....	.....	.....	.....	.....	.....	.....	.....
Milford	13,471	4	.....	.....	.....	.....	.....	.....	1	1
New Bedford	121,217	20	3	.....	.....	.....	.....	.....	12	3
Newburyport	15,618	3	1	.....	.....	.....	.....	.....	1	.....
Newton	46,054	10	.....	.....	2	.....	1	.....	1	.....
North Adams	22,282	6	1	.....	.....	.....	.....	.....	.....	.....
Northampton	21,951	6	.....	.....	.....	.....	3	.....	2	1
Pittsfield	41,763	8	.....	.....	.....	.....	.....	.....	.....	.....
Plymouth	13,045	1	.....	.....	.....	.....	.....	.....	.....	.....
Quincy	47,876	6	1	.....	1	.....	.....	.....	4	1
Somerville	93,091	16	1	.....	.....	.....	2	.....	2	2
Southbridge	14,245	2	1	.....	.....	.....	.....	.....	.....	.....
Springfield	129,614	23	1	.....	1	.....	1	.....	3	.....
Taunton	37,137	9	.....	.....	.....	.....	.....	.....	.....	1
Wakefield	13,025	1	.....	.....	.....	.....	.....	.....	1	.....
Waltham	30,915	11	2	.....	.....	.....	.....	.....	1	.....
Watertown	21,457	.....	.....	.....	3	.....	.....	.....	3	.....
Webster	13,258	1	.....	.....	.....	.....	.....	.....	.....	.....
West Springfield	13,443	3	.....	.....	.....	.....	.....	.....	.....	.....
Westfield	18,604	4	.....	.....	.....	.....	.....	.....	1	1
Weymouth	15,057	5	.....	.....	.....	.....	.....	.....	.....	.....
Winthrop	15,455	2	1	.....	.....	.....	.....	.....	.....	.....
Woburn	16,574	2	.....	.....	.....	.....	.....	.....	.....	.....
Worcester	179,754	28	3	.....	.....	.....	2	.....	1	4
Michigan:										
Alpena	11,101	.....	.....	.....	1	.....	.....	.....	.....	.....
Ann Arbor	19,516	16	.....	.....	1	.....	1	.....	.....	.....
Battle Creek	36,164	3	.....	.....	.....	.....	2	.....	.....	.....
Flint	91,599	24	7	.....	15	.....	1	.....	3	1
Grand Rapids	137,634	22	1	.....	8	.....	.....	.....	3	2
Hamtramck	48,615	13	3	1	1	.....	.....	.....	.....	.....
Highland Park	46,499	20	.....	.....	1	.....	2	.....	.....	.....
Holland	12,183	.....	1	.....	.....	.....	.....	.....	.....	.....
Jackson	48,374	9	.....	.....	1	.....	2	.....	.....	1
Kalamazoo	48,487	16	6	.....	6	.....	.....	.....	.....	1
Marquette	12,718	1	.....	.....	.....	.....	3	.....	.....	.....
Muskegon	36,570	7	1	.....	2	.....	.....	.....	.....	.....
Pontiac	34,273	17	.....	.....	.....	.....	8	.....	.....	1
Port Huron	25,944	7	.....	.....	.....	.....	.....	.....	.....	2
Saginaw	61,903	6	1	.....	9	.....	1	.....	.....	.....

CITY REPORTS FOR WEEK ENDED AUGUST 11, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Minnesota:										
Duluth	98,917	16	.....	.....	.....	.....	4	.....	6	.....
Hibbing	15,089	.....	2	.....	.....	.....	.....	.....	.....	.....
Minneapolis	380,582	70	5	.....	1	.....	9	.....	12	2
Rochester	13,722	15	1	.....	.....	.....	.....	.....	.....	1
St. Cloud	15,873	.....	.....	.....	.....	.....	1	.....	.....	.....
St. Paul	234,698	45	13	.....	1	.....	12	.....	15	1
Missouri:										
Cape Girardeau	10,252	5	.....	.....	.....	.....	.....	.....	.....	.....
Independence	11,626	.....	.....	.....	1	.....	.....	.....	.....	.....
St. Joseph	77,939	36	.....	.....	.....	.....	.....	.....	.....	.....
St. Louis	772,897	171	17	.....	3	.....	6	.....	26	12
Springfield	39,631	14	.....	.....	.....	.....	.....	.....	.....	.....
Montana:										
Anaconda	11,668	2	.....	.....	3	1	.....	.....	.....	.....
Billings	15,100	4	.....	.....	1	.....	.....	.....	.....	.....
Great Falls	24,121	7	.....	.....	.....	.....	1	.....	1	.....
Helena	12,037	2	.....	.....	1	.....	.....	.....	.....	.....
Missoula	12,668	6	.....	.....	.....	.....	.....	.....	.....	.....
Nebraska:										
Lincoln	54,948	10	1	.....	.....	.....	.....	.....	1	.....
Omaha	191,601	56	7	2	.....	.....	.....	.....	.....	.....
Nevada:										
Reno	12,016	3	.....	.....	.....	.....	.....	.....	1	1
New Hampshire:										
Concord	22,167	8	.....	.....	1	.....	1	.....	.....	1
Dover	13,029	1	.....	.....	.....	.....	.....	.....	.....	1
Keene	11,210	1	1	.....	6	.....	.....	.....	.....	.....
Manchester	78,384	12	.....	.....	.....	.....	1	.....	.....	.....
Nashua	28,379	5	.....	.....	3	.....	.....	.....	.....	.....
New Jersey:										
Asbury Park	12,400	1	.....	.....	.....	.....	.....	.....	.....	.....
Atlantic City	50,707	19	1	.....	.....	.....	.....	.....	1	1
Bayonne	76,754	.....	.....	.....	.....	.....	1	.....	1	.....
Bloomfield	22,019	2	.....	.....	.....	.....	.....	.....	.....	.....
Clifton	26,470	3	1	.....	.....	.....	.....	.....	.....	1
East Orange	50,710	6	.....	.....	1	.....	1	.....	.....	.....
Englewood	11,627	3	.....	.....	.....	.....	.....	.....	1	.....
Hackensack	17,667	5	.....	.....	.....	.....	.....	.....	.....	.....
Harrison	15,721	.....	1	.....	.....	.....	1	.....	.....	.....
Hoboken	68,166	11	.....	.....	.....	.....	2	.....	.....	.....
Jersey City	298,103	.....	.....	.....	4	.....	8	.....	7	.....
Kearny	26,724	2	2	.....	.....	.....	.....	.....	1	1
Long Branch	13,521	3	.....	.....	1	.....	.....	.....	.....	.....
Morristown	12,548	5	.....	.....	.....	.....	.....	.....	.....	.....
Newark	414,524	97	5	.....	6	.....	.....	.....	16	7
Orange	33,268	8	.....	.....	.....	.....	1	.....	1	.....
Passaic	63,841	22	3	1	1	.....	1	.....	.....	.....
Paterson	135,875	.....	5	.....	15	.....	.....	.....	5	.....
Perth Amboy	41,707	5	.....	.....	.....	.....	.....	.....	.....	.....
Plainfield	27,700	12	.....	.....	.....	.....	.....	.....	1	.....
Summit	10,174	1	.....	.....	1	.....	.....	.....	.....	.....
Trenton	119,289	16	6	.....	.....	.....	.....	.....	1	1
West Hoboken	40,074	4	.....	.....	.....	.....	.....	.....	.....	.....
West New York	29,926	2	1	.....	.....	.....	.....	.....	.....	.....
West Orange	15,573	3	.....	.....	.....	.....	.....	.....	.....	.....
New York:										
Albany	113,344	.....	.....	.....	5	.....	2	.....	.....	.....
Amsterdam	33,524	6	.....	.....	2	.....	.....	.....	1	1
Auburn	36,192	8	.....	.....	.....	.....	1	.....	.....	.....
Buffalo	506,775	103	10	1	3	.....	5	.....	15	11
Cohoes	22,987	4	.....	.....	.....	.....	.....	.....	.....	.....
Elmira	45,393	11	.....	.....	1	.....	.....	.....	.....	.....
Geneva	14,648	5	.....	.....	.....	.....	.....	.....	.....	.....
Glenns Falls	16,638	8	.....	.....	.....	.....	.....	.....	2	.....
Hornell	15,025	2	.....	.....	1	.....	.....	.....	.....	.....
Hudson	11,745	.....	.....	.....	.....	.....	.....	.....	2	.....
Ithaca	17,004	1	.....	.....	.....	.....	.....	.....	.....	.....
Lackawanna	17,918	3	.....	.....	.....	.....	.....	.....	.....	1
Lockport	21,308	6	.....	.....	.....	.....	1	.....	.....	.....
Middletown	18,420	.....	.....	.....	.....	.....	1	.....	.....	.....
New York	5,620,048	1,085	93	3	51	2	23	.....	[1] 252	[1] 77
Newburgh	30,366	9	1	.....	.....	.....	.....	.....	.....	1

[1] Pulmonary only.

CITY REPORTS FOR WEEK ENDED AUGUST 11, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
New York—Continued.										
Niagara Falls	50,760	10			4		1		2	1
North Tonawanda	15,482	4			2		4			
Olean	20,506	7	1		1		2			
Peekskill	15,868						1			
Rochester	295,750	53	1		1	2	4		39	5
Saratoga Springs	13,181	5								
Schenectady	88,723	16	3		5				2	1
Syracuse	171,717	43	2		4	4	4		7	3
Watertown	31,285	8			5					
White Plains	21,031	1					1			
North Carolina:										
Durham	21,719	8	1						1	3
Greensboro	43,525	9			1					
Raleigh	24,418	10	2				1			1
Rocky Mount	12,742	3								
Salisbury	13,884	2								
Wilmington	33,372	13	1		1					2
Winston-Salem	48,395	15	3	1	26		3		1	1
North Dakota:										
Fargo	21,961	4					2			
Grand Forks	14,010						3			
Ohio:										
Akron	208,435	19	4		1		4		2	
Ashtabula	22,082	5								
Barberton	18,811	3								1
Bucyrus	10,425	2	1							1
Cambridge	13,104	2							1	
Canton	87,091	12	2		1					
Chillicothe	15,831	5								
Cincinnati	401,247	123	4	2	8		2		22	7
Cleveland	796,841	139	14		12		16	1	37	11
Dayton	152,559	32	1				1		1	
East Cleveland	27,292	1					1			1
Findlay	17,021	3							1	
Fremont	12,468	4								
Hamilton	39,675	13								
Lancaster	14,706	6					1			
Lima	41,326				2					
Lorain	37,295		1				3		2	
Mansfield	27,824	4								1
Middletown	23,594	3								
New Philadelphia	10,718						2			
Newark	26,718	8								1
Niles	13,080	1								
Norwood	24,966	2								
Piqua	15,044	2								
Salem	10,305				1					
Sandusky	22,897	3					1			
Springfield	60,840	17	1		3		1		1	
Steubenville	28,508	11							2	
Toledo	243,164	64	7	1			3		4	3
Youngstown	132,358	20	9	1	7	1			1	2
Zanesville	29,569	9								
Oklahoma:										
Oklahoma	91,295	25		1			2			
Tulsa	72,075						1			
Oregon:										
Portland	258,288	39	3	1			3		2	1
Pennsylvania:										
Allentown	73,502		5							
Altoona	60,331		4							
Berwick	12,181						1			
Bethlehem	50,358		5		1					
Bradford	15,525				1					
Bristol	10,273		1							
Canonsburg	10,632						1			
Carlisle	10,916				1					
Charleroi	11,516		1							
Chester	58,030		1							
Duquesne	19,011		1				1			
Easton	33,813				1					
Erie	93,372		3		7		1		18	
Farrell	15,586		5				3			

CITY REPORTS FOR WEEK ENDED AUGUST 11, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Pennsylvania—Continued.										
Harrisburg	75,917				5					
Johnstown	67,327		7		4		2			
Lancaster	53,150		1		1		2			
Lebanon	24,643		15				1			
McKee's Rocks	16,713		2				1			
Oil City	21,274		1							
Philadelphia	1,823,779	358	23	4	4		12		43	33
Pittsburgh	58,343	137	25	2	9		15	1		9
Plymouth	16,500		1						1	
Pottsville	21,876				5		1			
Reading	107,784				2		1			
Scranton	137,783		1				1			
Sharon	21,747		3							
Steelton	13,428		1				1			
Swissvale	10,908		2				1			
Uniontown	15,692		1							
Washington	21,480		3		3					
West Chester	11,717				1					
Wilkes-Barre	73,833				1					
Williamsport	36,198				1					
Woodlawn	12,495		1							
York	47,512						1			
Rhode Island:										
Cranston	29,407	4	1							
Newport	30,255	6								1
Pawtucket	64,248	6		1						
Providence	237,595	46	2	2						4
South Carolina:										
Charleston	67,957	24								2
Columbia	37,524	21			5		1			1
South Dakota:										
Sioux Falls	25,202	4			1		1			1
Tennessee:										
Memphis	162,351	7	3		7		6		23	3
Nashville	118,342	41	1		1				5	3
Texas:										
Beaumont	40,422	14	1							1
Corpus Christi	10,522	3								
Dallas	158,976	45	4	1	2		3		2	2
El Paso	77,560	62			1		1		4	7
Fort Worth	106,482	24	2		3		1		3	3
Galveston	44,255	14			1		1			1
Houston	138,276	42	2	1	1		1			6
San Angelo	10,050	14								1
San Antonio	161,379	40							8	9
Waco	38,500	13	1							1
Utah:										
Provo	10,303	6	2		1					
Salt Lake City	118,110	23	2		2		1			3
Vermont:										
Burlington	22,779	11								1
Virginia:										
Alexandria	18,060	7								
Charlottesville	10,688	1								
Danville	21,539	8	1							2
Lynchburg	30,070	4	1						2	1
Norfolk	115,777		3						4	1
Petersburg	31,012	10							1	2
Richmond	171,667	53	2		10	2	2		3	5
Roanoke	50,842	15	1		2					2
Washington:										
Bellingham	25,585		1		1				1	
Everett	27,644								1	
Seattle	315,312		3		2		3			
Spokane	104,437		4		10		3			
Tacoma	96,965						7			
Walla Walla	15,503						2			
West Virginia:										
Bluefield	15,282	3	1							
Charleston	39,608	15	1		1				2	1
Clarksburg	27,869	10			3					
Huntington	50,177	27					1			1
Parkersburg	20,050	5		1						
Wheeling	56,208	11	1		1		1			1

CITY REPORTS FOR WEEK ENDED AUGUST 11, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Wisconsin:										
Appleton	19,561	1	.....	.....	.....	.....	.....	.....	.....	.....
Ashland	11,334	1	1	.....	1	.....	2	.....	.....	.....
Beloit	21,284	7	.....	.....	.....	.....	1	.....	.....	.....
Eau Claire	20,906	.....	.....	.....	4	.....	.....	.....	.....	.....
Fond du Lac	23,427	5	.....	.....	.....	.....	.....	.....	.....	.....
Green Bay	31,017	.....	.....	.....	.....	.....	1	1	.....	.....
Janesville	18,293	4	.....	.....	1	.....	.....	.....	.....	.....
Kenosha	40,472	11	.....	.....	.....	.....	1	.....	.....	.....
Madison	38,378	2	.....	.....	5	.....	.....	.....	1	.....
Manitowoc	17,563	.....	.....	.....	1	.....	.....	.....	.....	.....
Milwaukee	457,147	75	13	2	.....	.....	10	.....	4	.....
Oshkosh	33,162	9	1	.....	.....	.....	.....	.....	.....	1
Racine	58,593	13	1	1	.....	.....	.....	.....	2	1
Sheboygan	30,955	16	8	1	.....	.....	.....	.....	.....	.....
Superior	39,671	8	.....	.....	.....	.....	2	.....	.....	.....
Wausau	18,661	.....	6	.....	1	.....	.....	.....	1	.....

FOREIGN AND INSULAR.

ALGERIA.

Smallpox—Tuberculosis—Typhus Fever—Algiers—June, 1923.

During the month of June, 1923, 9 cases of smallpox, 87 cases of tuberculosis, all forms, with 87 deaths, and 25 cases of typhus fever with 5 deaths, were reported at Algiers, Algeria. Population, census of March, 1923, 206,595.

BRAZIL.

Yellow Fever—Bahia.

Yellow fever has been reported at Bahia as follows: Week ended June 30, 1923—four cases; week ended July 7, 1923—two deaths.

CUBA.

Communicable Diseases.

Communicable diseases have been reported in Cuba as follows:

Habana.

Disease.	July 21-31, 1923.		Remaining under treatment July 31, 1923.
	New cases.	Deaths.	
Chicken pox	.....	.....	1
Diphtheria	5	.....	4
Leprosy	.....	.....	[1] 12
Malaria	52	1	[2] 66
Measles	3	.....	4
Paratyphoid fever	2	.....	7
Scarlet fever	3	.....	3
Typhoid fever	28	3	[3] 64

[1] From abroad, 1. [2] From the interior, 33. [3] From the interior, 32.

Disease.	Aug. 1-10, 1923.		Remaining under treatment Aug. 10, 1923
	New cases.	Deaths.	
Diphtheria	1	.....	3
Leprosy	.....	.....	[1] 12
Malaria	68	2	[2] 53
Measles	2	.....	2
Paratyphoid fever	.....	.....	7
Scarlet fever	1	.....	1
Typhoid fever	16	2	[3] 63

[1] From abroad, 1. [2] From the interior, 34. [3] From the interior, 34.

Provinces.

June 21-30, 1923.

Province.	Chicken pox.	Diphtheria.	Infantile paralysis.	Malaria.	Measles.	Paratyphoid fever.	Scarlet fever.	Typhoid fever.
Camaguey				11		1		3
Habana	6	3		44	6	7	1	25
Matanzas				1	1	6		8
Oriente	14	1		183				31
Pinar del Rio		1				1		6
Santa Clara		2	1	1		7		13
Total	20	7	1	240	7	22	1	86

ECUADOR.

Plague—Plague-Infected Rats—July 16-31, 1923.

During the period July 16 to 31, 1923, three cases of plague with three deaths were reported at Santa Ana (Manabi), Ecuador. During the same period, out of 4,800 rats examined at Guayaquil, 11 were found plague infected.

EGYPT.

Status of Plague.

During the week ended July 22, 1923, 21 cases of plague were reported in Egypt, of which 2 occurred in Alexandria, 5 at Port Said, and 1 case at Suez. The remaining 13 cases were distributed in eight districts. The total number of cases notified from January 1 to July 22, 1923, was 1,211, against 380 cases notified during the corresponding period of the preceding year. From January 1 to July 26, 1923, 1,241 cases and 619 deaths were reported.

FRANCE.

Birth Rates and Death Rates, 1911-1922.

The following birth rates and death rates for the civilian population of France for the years 1911-1922 are taken from the Statistiques Générales de la France. Stillbirths were not included in computing these rates.

Year.[1]	Birth rate per 10,000 population.	Death rate per 10,000 population.	Year.[1]	Birth rate per 10,000 population.	Death rate per 10,000 population.
1911	187	196	1917	119	202
1912	189	175	1918	133	246
1913	188	177	1919	130	190
1914	197	207	1920	213	172
1915	132	210	1921	207	177
1916	108	198	1922	194	176

[1] The figures for the years 1911-1913 are for the 87 Departments of France prior to the war; 1914-1918 for the 77 Departments not invaded during the war; and 1919-1922 for the 90 Departments of France, including the 3 Departments of Alsace-Lorraine.

HAWAII.

Plague-infected Rat—Honokaa.

A rat trapped at the Honokaa Sugar Plantation, Honokaa, Hawaii, July 20, 1923, was reported, August 6, 1923, found plague infected.

IRAQ (MESOPOTAMIA).

Cholera—Bassorah.

Under date of August 21, 1923, cholera was reported present at Bassorah, Iraq (Mesopotamia). The port was stated to have been declared infected since August 6, 1923.

LATVIA.

Communicable Diseases—May, 1923.

Communicable diseases have been reported in the Republic of Latvia, as follows:

Disease.	Cases.	Remarks.
Chicken pox	14	
Diphtheria	70	
Malaria	8	
Measles	29	
Scarlet fever	167	
Smallpox	5	
Typhoid fever	63	
Typhus fever	90	Paratyphus, cases, 4.
Whooping cough	58	

Dysentery—Leprosy—Rabies—May, 1923.

During the month of May, 1923, four cases of dysentery, seven cases of leprosy, and four cases of rabies were reported in the Republic of Latvia.

POLAND.

Communicable Diseases—April 29–May 12, 1923.

During the period April 29 to May 12, 1923, communicable diseases were reported in Poland as follows:

April 29–May 5, 1923.

Disease.	Cases.	Deaths.	Districts showing greatest number of deaths.
Cerebrospinal meningitis	12	6	Warsaw.
Diphtheria	66	6	Silesia.
Measles	13	3	Kielce.
Scarlet fever	185	11	Stanislawow.
Smallpox	1	1	Lodz.
Tuberculosis	148	237	Do.
Typhoid fever	166	12	Do.
Typhus fever	330	26	Tarnopol.
Typhus fever, recurrent	153	.....	
Whooping cough	47	7	Krakow.

May 6–12, 1923.

Cerebrospinal meningitis	7	5	Silesia.
Diphtheria	57	3	Bialystok.
Measles	403	4	Lublin.
Scarlet fever	161	22	Tarnopol.
Smallpox	14	3	Lwow.
Tuberculosis	128	212	Do.
Typhoid fever	173	17	Lodz.
Typhus fever	390	35	Lwow.
Typhus fever, recurrent	35	1	Lublin.
Whooping cough	45	10	Stanislawow.

Dysentery—April 29–May 12, 1923.

During the period April 29 to May 12, 1923, 20 cases of dysentery with 5 deaths were reported in Poland. The greatest mortality was reported in the districts of Warsaw and Wilno.

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

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

Reports Received During Week Ended August 31, 1923.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India				June 10–16, 1923: Cases, 3,284; deaths, 2,279.
Calcutta	June 24–30	82	58	
Rangoon	July 1–7	2	2	
Iraq (Mesopotamia):				
Bassorah	Aug. 21	.....	.....	Present. Port declared infected since Aug. 6.

PLAGUE.

Ceylon:				
Colombo	June 24–30	3	2	
Do	July 1–7	8	8	Plague rats, 2.
China:				
Amoy	July 1–14	.....	3	
Foochow	July 8–14	.....	.....	Reported as endemic.
Hongkong	June 24–30	12	12	
Do	July 1–7	7	4	
Nanking	July 8–21	.....	.....	Present.

[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 August 31, 1923—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Ecuador:				
Guayaquil				July 16–31, 1923: Rats examined, 4,800; found infected, 11.
Santa Ana (Manabi)	July 16–31	3	3	
Egypt				Jan. 1–July 26, 1923: Cases, 1,241; deaths, 619. July 16–22, 1923: Cases, 21, of which 8 urban, 13 occurring in 8 districts.
City—				
Alexandria	July 16–22	2		
Port Said	do	5		
Suez	do	1		
Hawaii:				
Honokaa				July 20, 1923: One plague rat.
India				June 10–16, 1923: Cases, 329; deaths, 236.
Karachi	July 8–14	18	15	
Madras Presidency	do	38	20	
Rangoon	July 1–7	34	26	
Java:				
East Java—				
Soerabaya	June 17–23	1	1	
Palestine:				
Jaffa	July 10–16	2		
Syria:				
Beirut	June 11–20	1		

SMALLPOX.

Algeria:				
Algiers	June 1–30	9		
Arabia:				
Aden	July 15–21	2	1	
Bolivia:				
La Paz	June 1–30	1	1	
Brazil:				
Pernambuco	July 1–7	8		
Rio de Janeiro	July 15–28	8		
British East Africa:				
Kenya—				
Tanganyika	June 3–9	1		Territory.
Canada:				
British Columbia—				
Victoria	Aug. 5–11	1		
Chile:				
Valparaiso	July 1–14		12	
China:				
Amoy	do			Present.
Chungking	July 1–7			Endemic.
Foochow	July 8–14			Do.
Hongkong	June 1–30	33	29	
Do	July 1–7	6	11	
Manchuria—				
Dairen	July 2–8	1		
Harbin	do	1		
Nanking	July 1–7			Present.
Chosen (Korea):				
Fusan	June 1–30	3		
Seoul	do	9	4	
Ecuador:				
Alausi	July 16–31	3		
Egypt:				
Cairo	Apr. 23–May 6	5	1	
Hungary:				
Budapest	July 15–21	6		
India:				
Calcutta	July 1–7	4	4	
Karachi	July 8–14	1	1	
Madras	July 8–14	10	5	
Rangoon	July 8–14	12	6	
Java:				
East Java—				
Soerabaya	June 17–30	15	3	
West Java—				
Batavia	June 30–July 7	1		Province.
Latvia				May 1–31, 1923: Cases, 5.
Mexico:				
Guadalajara	Aug. 5–11		1	
Mexico City	July 1–21	48		Including municipalities in Federal district.

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

Reports Received During Week Ended August 31, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Persia:				
Teheran	May 15–June 14		2	
Poland				Apr. 29–May 12, 1923: Cases, 15; deaths, 4.
Portugal:				
Lisbon	July 8–28	16	2	
Switzerland:				
Basel	July 8–14	1		
Berne	July 8–28	9		
Lucerne				July 1–31, 1923: Cases, 14.
Zurich	July 15–21	1		
Syria:				
Aleppo	July 15–21	6		
Turkey:				
Constantinople	July 4–10		2	
Union of South Africa:				
Cape Province	June 10–16			Outbreaks.
Yugoslavia:				
Croatia—				
Zagreb	June 24–30	1		

TYPHUS FEVER.

Algeria:				
Algiers	June 1–30	25	5	
Bolivia:				
La Paz	June 1–30	4		
Chile:				
Valparaiso	July 1–21		14	
China:				
Antung	July 16–22	1		
Egypt:				
Alexandria	July 16–29	3	1	
Cairo	Apr. 23–May 6	9	2	
Latvia	May 1–31	90		Paratyphus, 4 cases.
Mexico:				
Guadalajara	June 1–30	1		
Mexico City	July 1–21	27		Including municipalities in Federal district.
Persia:				
Teheran	June 1–14		2	
Poland				Apr. 29–May 12, 1913: Cases, 720; deaths, 61. Recurrent typhus: Cases, 188; deaths, 1.
Rumania:				
Kishineff District	June 1–30	13		
Syria:				
Aleppo	July 15–21	3	1	
Union of South Africa:				
Cape Province	June 10–16			Outbreaks.
Orange Free State	....do			Do.
Transvaal—				
Johannesburg	June 1–30	3	1	

YELLOW FEVER.

Brazil:				
Bahia	June 24–30	4		
Do	July 1–7		2	

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

Reports Received from June 30 to August 24, 1923.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India				Apr. 15–June 9, 1923: Cases, 12,161; deaths, 10,486.
Bombay	June 3–30	34	23	
Calcutta	May 6–June 23	289	242	
Madras	June 3–30	2		
Do	July 1–7	1		
Rangoon	May 13–June 30	18	15	
Indo-China				Oct. 1–31, 1922: Cases, 92; deaths, 53. Preceding month: Cases: 24; deaths, 14. October, 1921: Cases, 100; deaths, 61.
City—				
Saigon	May 20–June 9	11	10	
Province—				
Annam	Oct. 1–31	68	39	Preceding month: Cases, 2; deaths, 1.
Cambodge	do	2	1	Preceding month: Cases, 3.
Cochin-China	do	21	13	Preceding month: Cases, 19, deaths, 13.
Tonkin	do	1		Preceding month: No cases.
Philippine Islands:				
City—				
Manila	June 10–16	2	1	Death in foreign case from Chingkang, China.
Province—				
Bulacan	May 17–23	1		
Capiz	May 27–June 2	1	1	
Cebu	Apr. 8–21	1	1	
Cotobato	Apr. 8–14	1	1	
Laguna	May 6–June 9	2	1	
Mountain	Mar. 25–31	1	1	
Pangasinan	June 24–30	2	2	
Russia (Soviet)				Jan. 1–May 15, 1923: Cases, 10.
Siam:				
Bangkok	May 13–June 23	9	10	

PLAGUE.

Australia:				
Sydney	June 30	1	1	
Azores:				
St. Michael Island	May 6–26	12	5	In one locality.
British East Africa:				
Kenya—				
Kisumu	June 10–16	2	1	
Tanganyika	May 6–June 2	3	3	Territory.
Uganda	Apr. 1–30	7	5	
Canary Islands:				
Las Palmas	June 7	1		
Ceylon:				
Colombo	May 6–June 23	15	17	Plague rats, 36.
China:				
Amoy	May 13–June 25		10	
Foochow	May 27–June 23			Present.
Hongkong	Apr. 29–June 23	51	28	
Manchuria—				
Yakoshih	May 31	1	1	Station on Eastern Chinese Railway. Occurring in tarabagan (marmot) hunter. Bubonic.
Nanking	June 17–30			Rodent plague present.
Do	July 1–7			Do.
Ecuador:				
Guayaquil				May 16–June 30, 1923: Rats examined, 13,800; found infected, 39. July 1–15, 1923: Rats examined, 4,500; found infected, 4.
Do	July 1–15	2	2	
Egypt				Jan. 1–June 21, 1923; Cases, 1,051; deaths, 548. May 1–29: Cases, 345. Jan. 1–June 24, 1923: Cases, 1,069. Jan. 1–July 7, 1923: Cases, 1,110. Jan. 1–July 19, 1923: Cases, 1,198; deaths, 606.
City—				
Alexandria	Jan. 7–June 24	35	15	May 1–29, 1923: Cases, 14.
Do	July 1–15	3		
Port Said	Jan. 7–June 24	24	12	May 1–29, 1923: Cases, 13.
Do	July 1–15	10		
Suez	Mar. 2–June 15	12	7	May 1–29, 1923: Cases, 3

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

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

Reports Received from June 30 to August 24, 1923—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Egypt—Continued.				
Province—				
Assiout	May 1-29	64		Deaths not reported.
Benisouef	do	7		Do.
Fayoum	do	14		Do.
Garbieh	do	2		Do.
Geizeh	do	3		Do.
Girgeh	do	123		Do.
Keneh	do	22		Do.
Menoufieh	do	34		Do.
Minieh	do	46		Do.
Hawaii:				
Hamakua				Plague-infected rats: Pohakea, May 23, 1923, 1 rat; vicinity of Pacific Sugar Co. mill, June 2, 1 rat.
India				Apr. 29-June 9, 1923: Cases, 4,626; deaths, 3,517.
Bombay	Apr. 29-June 30	503	411	
Calcutta	May 6-June 9	13	13	
Karachi	May 13-June 30	110	85	Plague rats, 5.
Do	July 1-7	5	5	
Madras Presidency	May 13-June 30	254	141	
Do	do	5	4	
Rangoon	May 6-June 30	260	229	
Indo-China				Oct. 1-31, 1922: Cases, 93; deaths, 89. Preceding month: 70 cases; 68 deaths.
Province—				
Annam	Oct. 1-31	15	14	Preceding month, 15 deaths.
Cambodge	do	75	75	Preceding month, 51 deaths.
Cochin China	do	3		Preceding month, 4 cases, 2 deaths.
Iraq (Mesopotamia):				
Bagdad	May 1-31	222	143	
Java:				
East Java—				
Soerabaya	Apr. 1-May 19	488	488	May 1-31, 1923: Cases, 471; deaths, 471.
Soerakarta				May 16, 1923: Epidemic in five districts.
Madagascar				Apr. 1-June 15, 1923: Cases, 74; deaths, 71. Bubonic, pneumonic, septicemic.
Province—				
Tananarive	Apr. 1-June 15	56	53	
Tananarive	Apr. 16-June 15	20	20	
Mauritius Island				May 4-21, 1923: 2 cases.
Port Louis	May 4	1		
Mexico:				
Tampico				Apr. 15-21, 1923: 1 plague rat.
Palestine:				
Jaffa	June 19-July 2	8	1	Bubonic and septicemic.
Peru				May 1-June 30, 1923: Cases, 111 deaths, 68.
Locality—				
Ayabaca	May 16-June 30	15	13	
Callao	May 1-June 30	5	3	
Canete	May 16-June 30	3	2	
Cerro Azul	May 1-31	3	1	
Chiclayo	May 1-June 30	9	2	
Cutervo	May 1-15	2	1	
Huancabamba	May 1-June 30	34	25	
Huara	June 1-30	2	2	
Lima (city)	May 1-June 30	17	8	
Lima (country)	do	7	4	
Mollendo	June 1-30	1	1	
Salaverry	May 1-June 30	11	3	
Trujillo	do	2	3	
Russia				Jan. 1-May 15, 1923: Few cases in Far East regions.
Siam:				
Bangkok	Apr. 29-June 23	27	26	
Siberia				Sporadic cases of plague reported yearly in localities vicinity of stations Matsievskaya and Borzia, Transbaikal Railway.
Haranhor	May 6	1	1	Village in zone of endemic tarabagan (marmot) plague, Transbaikal Region.
Station No. 83				Station on Transbaikal Railway. Marmot plague during recent years.
Soktu				Do.

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

Reports Received from June 30 to August 24, 1923—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Straits Settlements:				
Singapore	May 6-June 30	6	8	
Syria:				
Beirut	May 12-June 10	2		

SMALLPOX.

Algeria:				
Algiers	May 1-31	2		
Arabia:				
Aden	May 27-June 2		1	
Do	July 8-14	2		
Bolivia:				
La Paz	Apr. 1-30	1	2	
Brazil:				
Pernambuco	May 6-June 16	5		
Rio de Janeiro	May 13-June 23	10	2	
British East Africa:				
Kenya—				
Mombasa	May 20-26	1		From vessel from Bombay.
Tanganyika	Apr. 29-May 5	2		
Uganda—				
Entebe	Apr. 1-30	4		
Canada:				
Alberta—				
Calgary	May 27-June 2	1		Infection from Deer Lodge, Mont.
British Columbia—				
Vancouver	May 27-June 30	33	1	
Do	July 1-14	5	1	
Manitoba—				
Winnipeg	June 3-30	4		
Do	July 1-31	1		
New Brunswick—				
Kent County	July 1-7	1		
Ontario				June 1-30, 1923: Cases, 13. July 1-31, 1923: Cases, 14.
London	July 15-21	1		
Toronto	June 24-30	3		
Do	July 15-21	1		
Quebec—				
Quebec	June 10-16	1		Varioloid.
Saskatchewan—				
Moose Jaw	July 8-14	1		
Regina	June 24-30	3		
Ceylon:				
Colombo	May 6-June 2	23	1	
Chile:				
Concepcion	May 22-June 11		3	June 1-30, 1923: Cases, 2.
Valparaiso	May 7-June 23	6	121	June 10-16, 1923: 29 cases reported from 2 districts.
China:				
Amoy	May 13-June 23		3	June 19-25, 1923: Present.
Antung	May 14-20	1		
Chungking	May 13-June 30			Present and endemic.
Foochow	May 13-June 23			Do.
Hongkong	Apr. 29-June 23	65	53	
Manchuria—				
Dairen	May 21-27	1		
Harbin	May 7-June 24	5		
Do	July 1-7	1		
Mukden	May 13-20	1		
Nanking	May 13-June 23			Present.
Do	June 24-July 7			Do.
Shanghai	May 21-June 3	4		Foreign.
Do	July 2-8	1	2	Cases, foreign; deaths, Chinese.
Chosen (Korea):				
Chemulpo	May 1-31	1		
Fusan	do	1		
Gensan	do	1		
Seoul	do	33	9	
Cuba:				
Antilla	July 8-14		2	From Preston.
Czechoslovakia				Jan.-Mar., 1923: Cases, 15.
Ecuador:				
Guayaquil	May 16-31	1		
Egypt:				
Cairo	Mar. 12-Apr. 29	12	3	

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

Reports Received from June 30 to August 24, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Finland				May 1–15, 1923: 1 case.
Great Britain:				
Birmingham	June 18–30	3		
Bristol	June 28			Present.
Cardiff	June 3–30	6		
Gloucester	June 28			123 cases reported in hospital; present in rural districts. July 15, 1923: Present.
Do	July 12	19		
Nottingham	June 3–9	1		May 1–31, 1923: Cases, 211.
Do	July 8–14	1		
Greece:				
Athens	May 1–31	53		
Patras	Apr. 24–June 15		19	
Saloniki	Apr. 30–May 20	2	2	
India				Apr. 15–June 9, 1923: Cases, 5,914; deaths, 1,718.
Bombay	Apr. 22–June 30	298	141	
Calcutta	May 13–June 9	12	9	
Karachi	May 13–June 30	24	8	
Do	July 1–7	2		
Madras	May 13–June 23	91	16	
Rangoon	May 6–June 30	125	67	
Do	July 1–7	4	1	
Indo-China:				
Saigon	May 20–June 23	28	20	Including 100 surrounding square kilometers.
Iraq (Mesopotamia):				
Bagdad	Apr. 1–May 31	20		
Italy:				
Turin	May 28–June 3	1		
Do	July 2–15	2		
Jamaica				May 27–June 30, 1923: Cases, 226. July 1–7, 1923: Cases, 13. (Reported as alastrim.)
Kingston	May 27–June 30	39		
Do	July 1–7	12		
Japan:				
Kobe	May 28–June 10	2		
Do	July 2–8	1		
Java:				
East Java—				
Soerabaya	Apr. 22–June 16	172	19	
West Java—				
Batavia	May 5–June 8	17	3	Province.
Latvia				Apr. 1–30, 1923: Cases, 3.
Mexico:				
Aguascalientes	July 8–14		1	
Chihuahua	June 11–24	7		
Guadalajara	July 22–28		2	June 1–30, 1923: Cases, 15; deaths, 2.
Mexico city	May 19–June 30	164		Including municipalities in Federal district.
Do	July 1–14	36		
Palestine:				
Jaffa	June 5–11	1		
Persia:				
Tabriz	Apr. 1–14		1	District.
Teheran	Feb. 22–May 14		28	
Portugal:				
Lisbon	May 20–June 30	35	3	
Do	July 1–7	2		
Oporto	June 10–30	6	3	
Do	July 9–15	5	4	July 8–28, 1923: Cases, 7; deaths, 2.
Portuguese West Africa:				
Angola—				
Loanda	Apr. 1–21		2	
Rhodesia (British Africa):				
Northern Rhodesia	May 8–14	21	8	
Southern Rhodesia	May 3–16	4	2	
Siam:				
Bangkok	Apr. 29–June 23	79	43	
Sierra Leone:				
Kaballa	May 1–15	1		
Pujehun	May 16–31	1		In Sembehun district.
Spain:				
Barcelona	May 31–June 6		1	
Do	June 28–July 10		2	
Valencia	May 15–June 30	44	2	
Do	July 1–21	21	4	

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

Reports Received from June 30 to August 24, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Switzerland:				
Basel	May 27–June 30	4		
Berne	May 20–June 30	11		
Do	July 1–7	1		
Lucerne	May 1–June 7	36		
Zurich	May 20–June 23	10		
Syria:				
Damascus	May 15–June 11	7		
Tunis:				
Bizerta	June 10–20	1		
Tunis	June 11–17	1		
Do	June 26–July 1	1		
Turkey:				
Constantinople	May 13–June 26		45	
Do	June 27–July 3		4	
Union of South Africa				May 1–31, 1923: Cases, 33 deaths, 1 (colored).
Cape Province				May 1–31, 1923: Cases, 32 (colored).
Do	May 6–June 9			Outbreaks.
Orange Free State	Apr. 29–May 14			Do.
Transvaal				May 1–31, 1923: 1 case.
Do	May 26–June 9			Outbreaks.
Yugoslavia:				
Serbia—				
Belgrade	June 10–16	1	1	
On vessels:				
S. S. Kargola	May 20–26	1		At Mombasa, British East Africa. Vessel arrived from Bombay Mar. 25, 1923.
S. S. Makura	May 26	2		Two cases in quarantine (reported as alastrim). Vessel left Victoria, B. C., Apr. 28, 1923. Touched at Honolulu.

TYPHUS FEVER.

Algeria:				
Algiers	May 1–31	41	14	
Argentina:				
Rosario	May 25–31		3	
Bulgaria:				
Sofia	Apr. 22–June 23	11	2	Paratyphus, 2 cases, 2 deaths.
Chile:				
Concepcion	May 22–June 18		3	
Talcahuano	May 13–19	1		
Valparaiso	May 7–June 23		26	June 11, 1923: 34 cases in Salvador Hospital.
China:				
Antung	May 28–June 24	12		
Hankow	May 19–25	1		
Manchuria—				
Harbin	May 6–13	1		
Mukden	May 14–20	2		
Czechoslovakia				Jan.–Mar., 1923: Cases, 191; deaths, 6.
Egypt:				
Alexandria	May 14–June 24	7	5	
Do	June 25–July 1	2	2	
Cairo	May 12–Apr. 15	11	8	
France:				
Marseille	Mar. 1–May 31		3	
Germany:				
Coblenz	May 27–June 2		1	
Hamburg	May 20–26	3		
Königsberg	May 13–June 2	2		
Stettin	May 27–June 9	1	1	
Great Britain:				
Bootle	Aug. 4	1		Vicinity of Liverpool.
Greece				May 1–31, 1923: Cases, 876.
Athens	May 1–31	150	5	
Patras	Apr. 24–June 15		30	
Piræus	May 1–31	353	11	
Saloniki	Apr. 30–June 24	56	16	Apr. 30–May 27, 1923: Recurrent typhus: Cases, 3; deaths, 3.

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

Reports Received from June 30 to August 24, 1923—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Guatemala:				
Guatemala City	Apr. 1-June 30		5	
Hungary				Jan. 1-May 19, 1923: Cases, 318; deaths, 36. In 11 counties.
Budapest	Jan. 1-June 2	48	12	
Irak (Mesopotamia):				
Bagdad	Apr. 1-30	2		
Japan:				
Nagasaki	July 2-8	1		
Latvia				Apr. 1-30, 1923: Cases, 96.
Mexico:				
Mexico City	May 20-June 30	75		Including municipalities in Federal district.
San Luis Potosi	July 29-Aug. 4		1	
Palestine:				
Jaffa	May 22-28	2		
Do	June 26-July 9	4		Relapsing fever, 1 case.
Jerusalem	May 22-28	1		
Persia:				
Tabriz	Apr. 1-14	2		
Teheran	Feb. 22-May 14		2	
Poland				Mar. 4-Apr. 7, 1923: Cases, 2,253; deaths, 172. Recurrent typhus: Cases, 338; deaths, 6.
Portugal:				
Oporto	June 10-16	1		
Do	July 1-21	3		
Rumania:				
Kishineff	May 1-31	28		
Russia				Jan. 1-Apr. 30, 1923: Cases, 106,851. (Corresponding period 1922: Cases, 847,516.) Feb. 1-28, 1923: Cases, 17,577. Recurrent, Jan. 1-Feb. 28, 1923: Cases 43,540.
European Russia and autonomous republics.	Jan. 1-Apr. 30	93,999		
Siberia, Caucasus, and Central Asia.	do	9,921		
Waterways and railways	do	2,934		
Spain:				
Barcelona	June 21-27		1	
Madrid	May 1-31		1	
Syria:				
Aleppo	May 20-June 16	4	2	
Do	July 8-14			Present.
Beirut	May 1-10	1		
Tunis:				
Tunis	May 28-June 24	3	2	
Do	July 9-15	1	1	
Turkey:				
Constantinople	May 13-June 26		19	
Do	June 27-July 3		1	
Union of South Africa				May 1-31, 1923: Cases, 102; deaths, 21 (colored). White—Cases, 6. Total, 108 cases, 21 deaths.
Cape Province				May 1-31, 1923: Cases, 49 (colored); white, 5.
Do	Apr. 29-June 9			Outbreaks.
Natal				May 1-31, 1923: One case (colored).
Orange Free State				May 1-31, 1923: Cases, 45 (colored).
Do	May 6-26			Outbreaks.
Transvaal				May 1-31, 1923: Cases, 7.
Do	May 6-12			Outbreaks.
Johannesburg	May 1-31	1	3	
Yugoslavia:				
Croatia—				
Zagreb	May 27-June 2	1		

YELLOW FEVER.

Brazil:				
Bahia	May 13-June 16	21	6	
Colombia:				
Bucaramanga	June 25-July 15			Present.