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SCHICK TESTS AND IMMUNIZATION AGAINST DIPHTHERIA IN THE EIGHTH SANITARY DISTRICT OF VERMONT.

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Until 1922 there had been, so far as is known to the writer, no systematic use of the Schick test and toxin-antitoxin immunization against diphtheria in rural New England. The impracticability of controlling diphtheria infection to an adequate degree through the usual means for the discovery and isolation of cases and carriers is especially apparent in sparsely populated rural districts. In the Eighth Sanitary District of Vermont the State Health Department and the United States Public Health Service are cooperating in a demonstration project in rural health work.¹ In view of the relative importance of such undertaking as a part of the program of general activities, and with the facilities made possible by the cooperative arrangements, work to bring about, on a fairly large scale, active immunization against diphtheria was begun in this district on January 1, 1922.

The Eighth Sanitary District of Vermont comprises 26 towns (townships). The land area is about 948 square miles, and the population is about 35,000. In each of 8 of the towns is a center, or village, large enough to maintain a graded and high school. In the other 18 towns the population is small and widely scattered, the schools are principally one-room buildings with an enrollment of from 6 to 25 pupils each, and the homes of many of the pupils are from 1½ to 2 miles from the schools attended.

Under these rural conditions it was not practicable for the health officer to convey to the parents, through personal meetings or otherwise, full information about the Schick test and toxin-antitoxin immunization. The informatory method adopted, which seemed the best available, was to send to each parent, through the school teachers, a circular letter explaining briefly the Schick test and immunization

¹ See Reprint No. 699 from Public Health Reports, Oct. 7, 1921, and Reprint No. 788 from Public Health Reports, Sept. 29, 1922.

and the benefits to be derived therefrom. Attached to the letter was a form for use by the parents in making signed request for the application of the Schick test and administration of the toxin-antitoxin mixture to their children, if they desired it. Even by this method, which was necessarily poor, of acquainting the parents, formal requests for the test and immunization were received from the parents of over 60 per cent of the rural school children.

Between January 1, 1922, and November 15, 1922, 2,030 persons, principally school children and school teachers, were given the Schick test, and 761 of those reacting positively were immunized with three 1-c. c. doses of toxin-antitoxin, the doses being given in each case seven days apart. Of the 2,030 Schick tests made, 74 per cent were positive, about 2 per cent were positive combined, 23 per cent were negative, and 1 per cent was pseudo. The small number of immunizations as compared with the number of positive tests is accounted for by the fact that we have not yet had time to complete the immunizations requested.

The reactions to the Schick tests in the different age groups were as follows:

Age (years).	Number of persons tested.	Reaction.				Per cent positive.
		Positive.	Positive combined.	Negative.	Pseudo.	
2 to 4.....	2	2	0	0	0	100.0
5 to 9.....	721	590	7	123	11	81.4
10 to 14.....	849	626	14	203	6	75.4
15 to 19.....	367	290	9	125	3	65.1
20 to 44.....	76	55	6	13	2	80.3
45 and over.....	15	10	0	5	0	66.7
Total.....	2,030	1,503	36	469	22	75.9

In the rural towns, with a very large percentage of native-born children, the percentage of susceptibility was extremely high, ranging from 80 to 96 per cent. In the larger villages on the railroad and in the villages containing a larger percentage of foreign population, generally with poorer living conditions, the degree of susceptibility was correspondingly lower, ranging from 60 to 71 per cent.

Of the 761 persons who were immunized, 48 were school-teachers and 713 were school children. Of the adults immunized, one showed a rather marked local reaction and one a marked local reaction and moderately severe general reaction. For the marked local reaction in the adult no definite cause could be found. The individual showing both a marked local and a moderately severe general reaction was a school-teacher, approximately 20 years of age, who had diphtheria in 1916, but who gave a highly positive Schick reaction. Of the 713 school children immunized, 3 were reported as being ill

and out of school. A personal call was made upon each of them. One, a girl 10 years of age, was found with a severe follicular tonsillitis, with the typical symptoms of tonsillitis only. There were no complications, and the patient made the usual recovery. The other two were brothers, aged 6 and 8. They were found in the eruptive stage of chicken pox, with no symptoms other than those typical of that disease, and made the usual recovery.

Aside from these cases there were no marked reactions of any kind, and no teacher or pupil lost any time from school on account of the immunizing treatment. In each of the other 756 persons the only obvious reaction consisted of a small area of redness at the insertion of the deltoid muscle, where the toxin-antitoxin was injected, which persisted for 24 to 48 hours and then faded out rapidly. A few adults complained of a slight indisposition for one day following one of the three doses of toxin-antitoxin, with symptoms much like those in the beginning of an acute cold.

CONCLUSIONS.

Although the number of Schick tests and toxin-antitoxin immunizations as yet carried out in this district is small as compared with the numbers reported by Park, Zingher, and other workers in cities, the observations made in the course of the work here appear to warrant the following conclusions:

1. That both the percentage of susceptibles and the degree of susceptibility to diphtheria are higher in sparsely populated sections than in thickly settled or urban communities.
2. That the percentage of susceptibles among rural people, without regard to class or environment, is higher than that of the well-to-do classes in cities.
3. That in the rural districts, as well as in the cities, the percentage of susceptibles is much higher among the well-to-do than among the poorer classes.
4. That the percentage of susceptibles is much higher among the native born than among the foreign born.
5. That age is a relatively unimportant factor in the immunization of individuals living in strictly rural communities. This conclusion is supported by the fact that of 87 teachers between the ages of 20 and 60 years, included in the group of 2,030 persons tested, 82 per cent gave positive Schick reactions. It was found also that the degree of susceptibility as evidenced by Schick reactions was as high among the susceptible adults as among the susceptible school children.
6. That the higher the degree of susceptibility the less reaction there is to toxin-antitoxin.

7. That those individuals having a positive combined Schick reaction are more likely to have a severe reaction from toxin-antitoxin.

8. That notwithstanding the distances to be covered and the other factors in the relatively high cost and difficulties of such work in rural districts, the use of the Schick test and of toxin-antitoxin for immunization against diphtheria is, in view of the extent and degree of susceptibility to the disease and the frequent lack of facilities for prompt and adequate treatment of cases, especially important in rural communities and should be included at appropriate times in the program of activities of rural health departments.

STUDIES ON OXIDATION-REDUCTION.

II. AN ANALYSIS OF THE THEORETICAL RELATIONS BETWEEN REDUCTION POTENTIALS AND pH.

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In the first paper of this series (Clark, 1923), there was derived an equation for the difference of potential, E_h , between a normal hydrogen electrode and an electrode of an indifferent metal immersed in a solution containing a reductant and its oxidation product. The normal hydrogen electrode was selected as a convenient standard of reference and has no other significance. The equation is

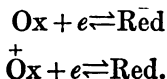
$$E_h = C - \frac{RT}{nF} \ln \frac{[\text{Red}]}{[\text{Ox}]} \quad (1)$$

where R is the gas constant, T the absolute temperature, F the faraday, and n the number of electrons involved in the transformation of the oxidant to the reductant. C is a constant differing from case to case but characteristic for any one set of oxidation-reduction equilibria. $[\text{Red}]$ was defined as the concentration of the reductant and $[\text{Ox}]$ was defined as the concentration of the oxidant when the relation of reductant to oxidant is



Here e represents the electron and n the number of electrons concerned.

It was pointed out in the first paper that there are various ways of developing the electrode equation and that the scheme adopted is merely for the purpose of consistent presentation. It may now be emphasized that if reaction (2) is used, we must, to be consistent, identify the reductant as an anion or the oxidant as a cation. In two simple cases we would then have



For the first case equation (1) must now be written

$$E_h = C - \frac{RT}{F} \ln \frac{[\text{Red}^-]}{[\text{Ox}]} \quad (3)$$

According to this scheme the active reductant in (3) is the anion of an acid, and its concentration is therefore dependent not only upon the amount of the total reductant present but also upon all conditions which govern the degree of ionization. *Among these conditions the hydrion concentration is the most important.*

If we were to employ equation (3) in the formulation of experimental data it would be necessary to determine in each case the degree of dissociation of the total reductant in order to find the correct value of the anion concentration, $[\text{Red}^-]$. However, it is extremely difficult in many cases to determine by independent methods the values of the acidic or basic dissociation constants that would permit the calculation of the relative concentrations of the ions or of the undissociated residues. Therefore equations should be developed in such a way as to include among the variables only those which are readily determinable. Concentrations of *total oxidant* and of *total reductant* are determinable, and the equation will therefore be modified to include these.

We shall first show that by a consistent development of the treatment used up to this point we obtain equations relating the electrode potential to the ratio, $\frac{[\text{Total Reductant}]}{[\text{Total Oxidant}]}$ and to pH, each of which is determinable. It will then be shown that the form of the equation (or its corresponding geometry) permits the estimation of dissociation constants.

The processes to be followed may be illustrated by means of the simple case $\text{Ox} + e \rightleftharpoons \text{Red}$, for which we assume the equilibrium equation $\frac{[\text{Ox}][e]}{[\text{Red}]} = K$.

Combining this equilibrium equation with the fundamental electrode equation,

$$E = C' - \frac{RT}{F} \ln [e] \quad (4)$$

there is first derived the relation

$$E_h = C - \frac{RT}{F} \ln \frac{[\text{Red}^-]}{[\text{Ox}]} \quad (5)$$

For dilute solutions we may assume that the total reductant, S_r , is the sum of the anions and the non-ionized acid. That is,

$$[S_r] = [\text{H Red}] + [\text{Red}^-] \quad (6)$$

The equilibrium equation for the acid dissociation of the reductant is

$$\frac{[\text{Red}][\text{H}^+]}{[\text{H Red}]} = K_a \tag{7}$$

Combining (6) with (7) and solving for $[\text{R}\bar{\text{e}}\text{d}]$, we have

$$[\text{R}\bar{\text{e}}\text{d}] = \frac{[\text{S}_r] K_a}{[\text{H}^+] + K_a} \tag{8}$$

Equations (8) and (5) now yield (9):

$$E_h = E_o - \frac{RT}{F} \ln \frac{[\text{S}_r]}{[\text{S}_o]} - \frac{RT}{F} \ln \frac{K_a}{[\text{H}^+] + K_a} \tag{9}$$

Here, $[\text{S}_o]$, the concentration of total oxidant, is assumed equal to $[\text{Ox}]$, the concentration of active oxidant. Inspection of (9) shows that E_h may vary with the hydrion concentration. When $\frac{[\text{S}_r]}{[\text{S}_o]}$ is

kept constant, E_h will vary with pH alone, since $\log \frac{1}{[\text{H}^+]}$ is pH.¹

E_h will then be a linear function of pH when K_a is small compared with $[\text{H}^+]$. But when K_a is large in relation to $[\text{H}^+]$ the variation of E_h with change in pH will be inappreciable. When $[\text{H}^+] = K_a$, E_h will be at the mid-point of the inflection of the curve connecting the one extreme set of conditions with the other. This fact makes K_a determinable experimentally, as will be shown graphically further on.

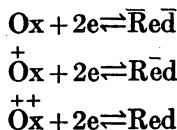
If, on the other hand, $[\text{H}^+]$ is held constant by means of buffers, we can unite the constants then found, and equation (9) now becomes $E_h = E'_o - \frac{RT}{F} \ln \frac{[\text{S}_r]}{[\text{S}_o]}$.

This equation is identical in form with (1), and its general form, with the symbols we are using, is

$$E_h = E'_o - \frac{RT}{nF} \ln \frac{[\text{S}_r]}{[\text{S}_o]} \tag{10}$$

If the value of E_h is known for each value of the ratio $\frac{[\text{S}_r]}{[\text{S}_o]}$, the number of electrons concerned, n , is determinable. This, of course, is fundamental to the investigation of any new system.

If we have two electrons to deal with, there are several possibilities. Three will be indicated at this point.



¹ $\text{Log} \frac{1}{[\text{H}^+]} = 0.4343 \ln \frac{1}{[\text{H}^+]}$. In this and subsequent cases the transformation is implied.

In dealing with any one of these we would write an equilibrium equation comparable to (7), a summation comparable to (6), and, introducing these into the proper equation comparable to (5), we would obtain an equation comparable to (9). In the first instance indicated above we would obtain

$$E_h = E_o - \frac{RT}{2F} \ln \frac{[S_r]}{[S_o]} + \frac{RT}{2F} \ln [K_{a_1}K_{a_2} + K_{a_1} [H^+] + [H^+]^2] \quad (11)$$

In (11) there are combined in one constant, E_o , all those constants which can be so combined.

In general, then, the consistent development adopted always leads to an equation of the form

$$E_h = \text{constant} - \frac{RT}{nF} \ln \frac{[S_r]}{[S_o]} - \frac{RT}{nF} \ln [\text{function of } [H^+] \text{ and equilibrium constants}] \quad (12)$$

Since we always obtain the term $\frac{RT}{nF} \ln \frac{[S_r]}{[S_o]}$, we may now, for the sake of simplicity, deal with instances in which $\frac{[S_r]}{[S_o]}$ is constant (e. g., unity) and consider the variation in the last term.

A description of all possible variations would require an elaborate treatment. It will suffice for the present to consider a few typical cases which we have grouped in Table 1. In this table class 1 of group A is that first discussed. Class 2 of group A is that for which the complete equation with assembled constants is (11).

Accompanying this table are Figures 1 to 7. It is, of course, understood that for each individual set of oxidation-reduction equilibria, we have a distinctive value for the constant appearing in the equation. Since, for purposes of illustration, we are going to neglect specific values of this constant, we shall add or subtract any constant we please, in order to place our curves at convenient positions on a graph.

In the graphic description of the cases listed we have selected a temperature of 30° C., so that $\frac{RT}{nF} \ln$ may be reduced to the expression $\frac{0.06}{n} \log$.² The variable term in class 1, group A, then becomes $0.06 \log [H^+] + K_a$, and it is at once seen, both from the form of the term and its graph (Figure 1), that the observed electrode potential difference, E_h , may vary with pH in such a way that there is either no appreciable change in E_h or else a change of 0.06 volt for each unit change in pH. We may speak of these relations as the zero and the 0.06 change. This is the meaning of the $-\frac{dE}{dpH}$ values given in Table 1.

² In this paper we shall use convenient rounded values, e. g., 0.06 instead of 0.0601. Where K_w enters it will be considered 10^{-14} , although this is not the true value of K_w at 30° C.

TABLE I.—Showing the term which varies when the ratio of total reductant to total oxidant is kept constant and the hydron concentration is varied.

GROUP A.

CREATION OF ANIONS.

Class 1. $Ox + e \rightleftharpoons \bar{Red}$, univalent anion created.

K_a = acid dissociation constant.

Variable term: $\frac{RT}{F} \ln [K_a + [H^+]]$

At 30° C. the distinctive possible values of $-\frac{dE}{dpH}$ are zero and 0.06.

Class 2. $Ox + 2e \rightleftharpoons \bar{Red}$, bivalent anion created.

K_{a1} = first acid dissociation constant.

K_{a2} = second acid dissociation constant.

Variable term: $\frac{RT}{2F} \ln [K_{a1} K_{a2} + K_{a1} [H^+] + [H^+]^2]$

At 30° C. the distinctive possible values of $-\frac{dE}{dpH}$ are zero, 0.03 and 0.06.

Class n. $Ox + ne \rightleftharpoons \bar{Red}^{n-}$, n-valent anion created.

$K_{a1}, K_{a2}, K_{a3}, \dots, K_{an}$ = acid dissociation constants.

Variable term: $\frac{RT}{nF} \ln [K_{a1} K_{a2} K_{a3} \dots K_{an} + K_{a1} K_{a2} K_{a3} \dots \dots K_{a_{n-1}} [H^+] + \dots K_{a1} [H^+]^{n-1} + [H^+]^n]$

At 30° C. the distinctive possible values of $-\frac{dE}{dpH}$ are zero, $\frac{0.06}{n}, \frac{0.06}{n-1}, \dots, 0.06$.

GROUP B.

DESTRUCTION OF CATIONS.

Class 1. $Ox + e \rightleftharpoons Red^+$, univalent cation destroyed.

K_b = basic dissociation constant.

Variable term: $\frac{RT}{F} \ln \frac{[H^+]}{K_w + K_b [H^+]}$

At 30° C. the distinctive possible values of $-\frac{dE}{dpH}$ are zero and 0.06.

Class 2. $Ox + 2e \rightleftharpoons Red^{++}$, bivalent cation destroyed.

K_{b1} = first basic dissociation constant.

K_{b2} = second basic dissociation constant.

Variable term: $\frac{RT}{2F} \ln \frac{[H^+]^2}{K_w^2 + K_w K_{b1} [H^+] + K_{b1} K_{b2} [H^+]^2}$

At 30° C. the distinctive possible values of $-\frac{dE}{dpH}$ are zero, 0.03, and 0.06.

GROUP C.

SIMULTANEOUS DESTRUCTION OF CATIONS AND CREATION OF ANIONS.

Class 1. $Ox + 2e \rightleftharpoons \bar{Red}$, destruction of univalent cation and creation of univalent anion.

K_a = acid dissociation constant.

K_b = basic dissociation constant.

Variable term: $\frac{RT}{2F} \ln \frac{[K_a + [H^+]]}{[K_w + K_b [H^+]]}$

At 30° C. the distinctive possible values of $-\frac{dE}{dpH}$ are zero, 0.03, and 0.06.

TABLE I.—Showing the term which varies when the ratio of total reductant to total oxidant is kept constant and the hydron concentration is varied—Continued.

GROUP D.

CREATION OF ANIONS AND HYDRATION TO BASE.

Class 1. $Ox + e \rightleftharpoons Red$, creation of univalent anion.

$H Red + H_2O \rightleftharpoons H_2 Red OH$, hydration to base.

K_a = acid dissociation constant.

K_b = apparent basic dissociation constant.

Variable term: $+\frac{RT}{F} \ln \left[K_a K_w + K_w [H^+] + K_b [H^+]^2 \right]$

At 30° C. the distinctive possible values of $-\frac{dE}{dpH}$ are zero, 0.06, and 0.12.

Class 2. $Ox + 2e \rightleftharpoons \bar{Red}$, creation of bivalent anion.

$H Red + H_2O \rightleftharpoons H_2 Red OH$, hydration to ampholyte.

K_{a1} = first acid dissociation constant.

K_{a2} = second acid dissociation constant.

K_b = apparent basic dissociation constant.

Variable term: $\frac{RT}{2F} \ln \left[K_{a1} K_{a2} K_w + K_{a1} K_w [H^+] + K_w [H^+]^2 + K_b [H^+]^2 \right]$

At 30° C. the distinctive possible values of $-\frac{dE}{dpH}$ are zero, 0.03, 0.06, and 0.09.

Class 3. $Ox + 2e \rightleftharpoons \bar{Red}$, creation of bivalent anion.

$H_2 Red + 2H_2O \rightleftharpoons H_4 Red (OH)_2$, hydration to bivalent base.

K_{a1} = first acid dissociation constant.

K_{a2} = second acid dissociation constant.

K_{b1} = first apparent basic dissociation constant.

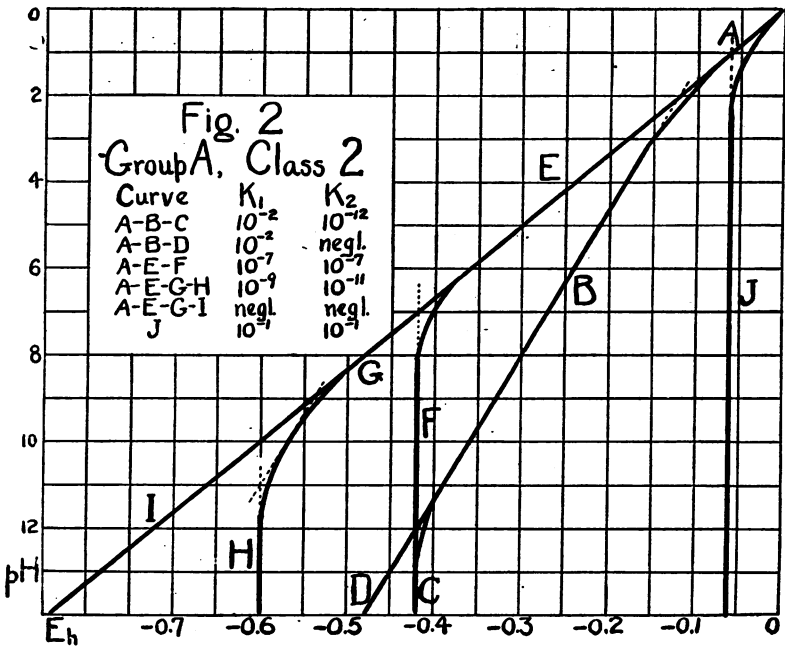
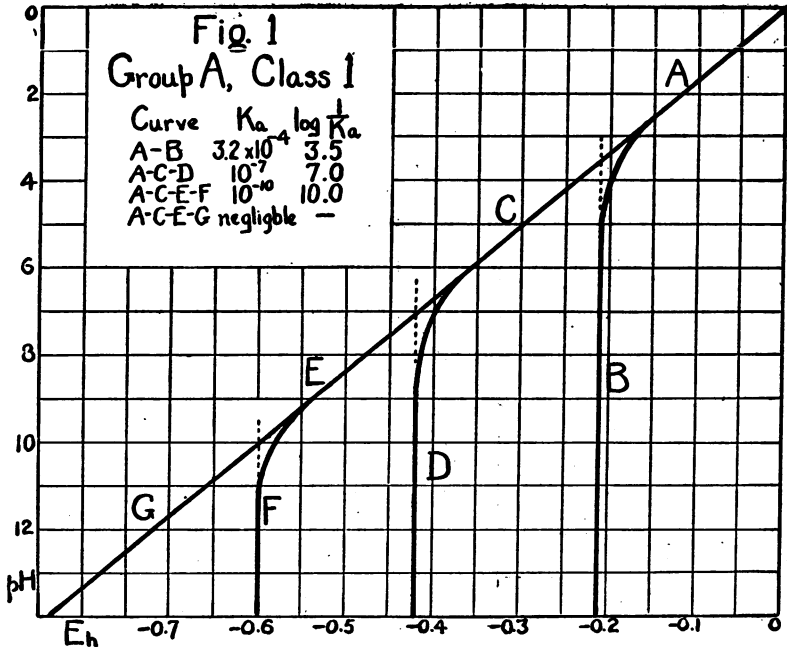
K_{b2} = second apparent basic dissociation constant.

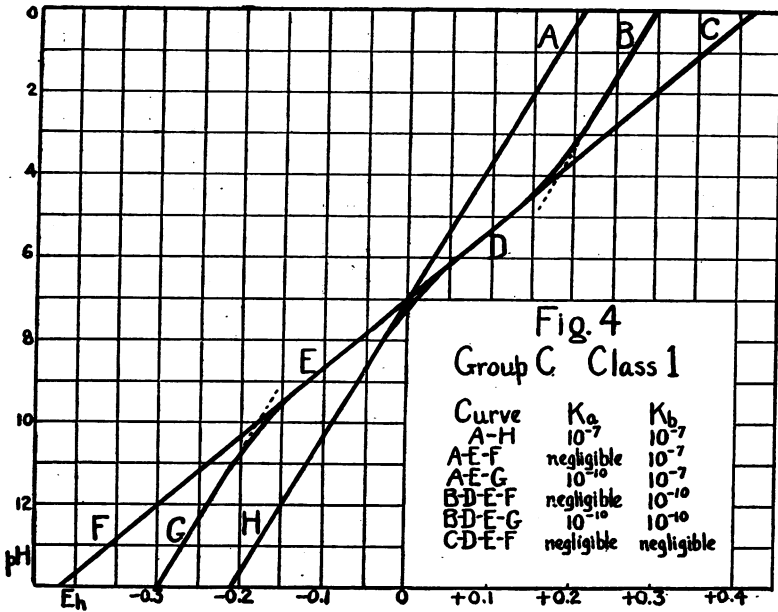
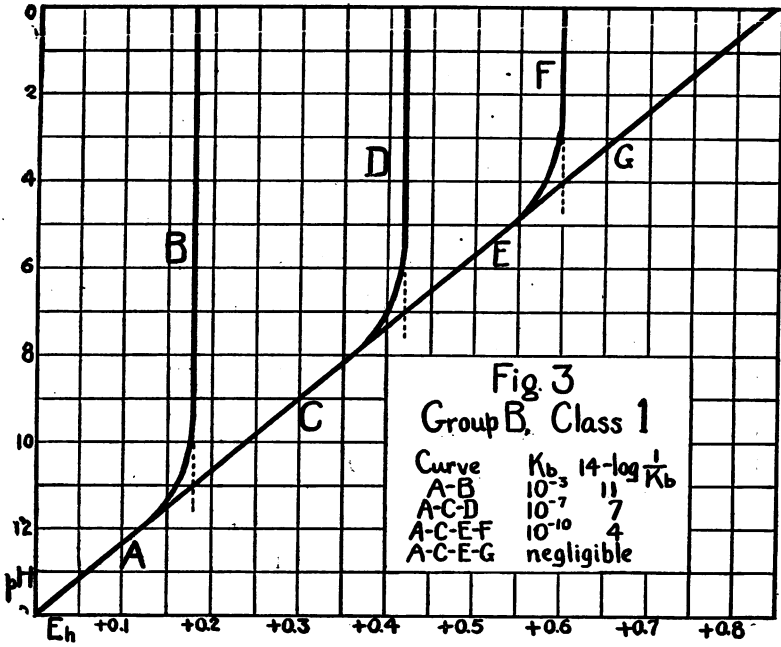
Variable term: $\frac{RT}{2F} \ln \left[K_{a1} K_{a2} K_w^2 + K_{a1} K_w^2 [H^+] + K_w^2 [H^+]^2 + K_{b1} K_w [H^+] + K_{b1} K_{b2} [H^+]^2 \right]$

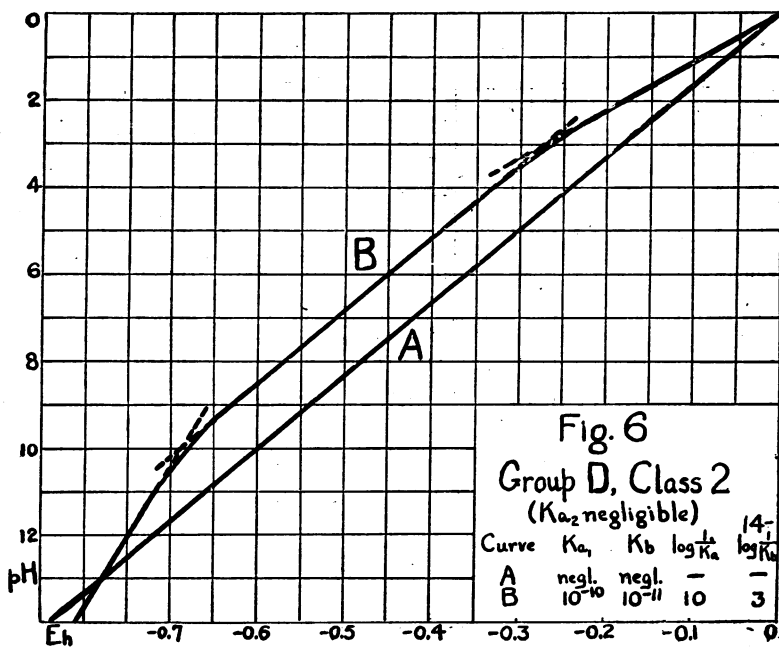
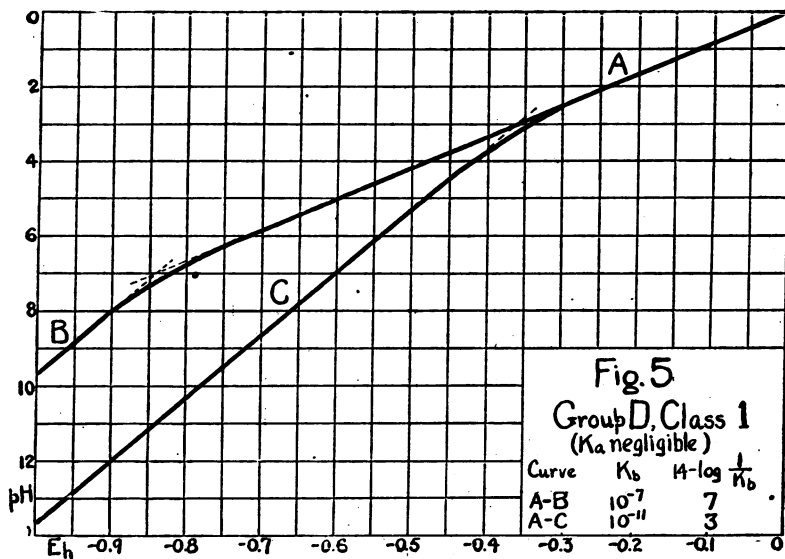
At 30° C. the distinctive possible values of $-\frac{dE}{dpH}$ are zero, 0.03, 0.06, 0.09, and 0.12.

In the figures there are shown extensions to sections of the several curves. They intersect at pH values related to the acid dissociation constant as follows: pH of intersection = $\log \frac{1}{K_a}$. In the case of basic constants, the intersection is at $14 - \log \frac{1}{K_b}$.

It can not be gainsaid that the treatment accorded group D seems extremely artificial. On the other hand, the organic chemist will maintain that there are numerous nitrogenous bases, the nitrogen of which is actually hydrogenated by reduction. It is therefore entirely consistent with our method of development to regard this hydrogen as potentially acidic but of practically negligible dissociation, as is expressed by a very small K_a value. Thus the reduction of imino to amino falls naturally within our system, and the amino group must be considered amphoteric. In order, then, to reach the postulated active reductant, we have to take into consideration

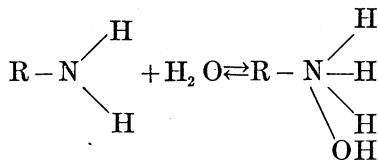




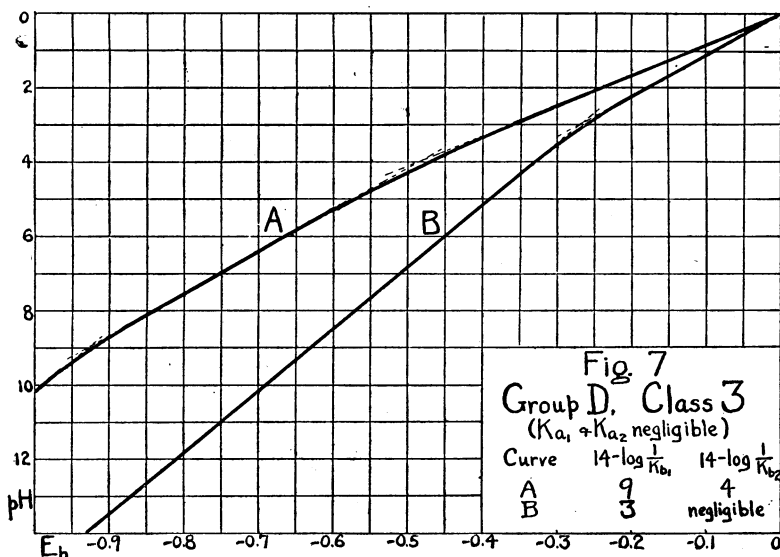


both the acidic and basic dissociation constants. Here a word must be said about the nature of the basic dissociation constant.

Before $R-N \begin{matrix} \text{H} \\ \diagup \\ \diagdown \\ \text{H} \end{matrix}$ can act as a base, it must be hydrated:



When, therefore, we consider the species which must be considered in our equilibrium equations, we should, in strictness, include both



the hydrated and unhydrated substituted ammonia. But under the limited conditions which determine any definite value for the basic dissociation constant there should be a definite ratio between hydrated and unhydrated forms.

In the case of ammonia we have, considering $[H_2O]$ constant,

$$\frac{[NH_3]}{[NH_4OH]} = K_b \text{ or } \frac{[NH_3] + [NH_4OH]}{[NH_4OH]} = K_b + 1 \quad (13)$$

Also

$$\frac{[NH_4^+][OH^-]}{[NH_4OH]} = K_b \quad (14)$$

(13) and (14) give

$$\frac{[NH_4^+][OH^-]}{[NH_3] + [NH_4OH]} = K'_b \quad (15)$$

This K'_b is a function of both the true basic dissociation constant and of the hydration constant. Since (15) includes the sum of $[NH_3]$ and $[NH_4OH]$, between which we ordinarily do not distinguish, K'_b is more useful than K_b and is generally used under the term *apparent dissociation constant*.

In the case at hand we must simplify our equations by eliminating the hydration constant K_h . In the summation

$[S_r] = [Red] + [H Red] + [H_2 Red OH] + [H_2 Red]^+$, the two middle terms are combined as in the case cited above, and our final equation includes the *apparent* basic dissociation constant. This is the interpretation of the K_b values indicated in our tables and charts.

As a matter of fact, K_a values, which are determined experimentally and which, conversely, are the useful values, are also "apparent" values in the sense just described.

Noting the reverse relations shown by a comparison of Figure 1 and Figure 3, one will be able to imagine a similar reversal of Figure 2. This would illustrate class 2 of group B.

In several instances there are omitted from Figures 4 to 7, curves which would depict relations made possible by the form of the variable term, but which would represent what are believed to be improbable circumstances.

THE INFLUENCE OF TAUTOMERISM.

It may well be supposed that one tautomeric form of a compound is much more active than another. If, however, there is true equilibrium between two tautomeric forms, the effect of tautomerism should not be apparent. In a case which is doubtless far more simple than any actually encountered, we may assume the oxidant to exist in two tautomeric forms represented by Ox and Ox'. If equilibrium exists,

$$\frac{[Ox]}{[Ox']} = K_T \tag{16}$$

$$[S_o] = [Ox] + [Ox']$$

If Ox' be the active oxidant that takes on an electron to form Red, then the electrode equation becomes

$$E_h = E_o - \frac{RT}{F} \ln \frac{K_a [K_T + 1]}{[H^+] + K_a} - \frac{RT}{F} \ln \frac{[S_r]}{[S_o]} \tag{17}$$

The constant term $\frac{RT}{F} \ln K_a [K_T + 1]$ combines with E_o . It is therefore evident that we could not, by the means at hand, distinguish this case from one of class 1, group A.

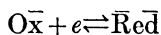
So far as we can see at the moment, there is no reason to doubt that the principle thus illustrated holds for more complex cases.

Since there is much in the literature regarding the activation of reductants or oxidants by so altering conditions that the concentration of an active tautomer is increased, it must here be specifically stated that we are dealing only with *equilibrium* conditions and have now nothing to do with questions of rates at which the equilibrium state is approached.

THE INFLUENCE OF IONIZATION AT POINTS UNCONCERNED IN OXIDATION-REDUCTION.

It will be noted that the treatment up to this point has included only acidic and basic ionizations at points directly concerned in the electron transfer. Nothing has yet been said about the effects of ionizations at points common to both oxidant and reductant. For instance, if the oxidant is H Ox and the reductant is H R H , we have been concerned only with the ionization of (2). We have left out of consideration the ionization at position (1). This must now be considered.

Let us take as an example the effect when the oxidation-reduction equilibrium is that of the reaction



Let K_o be the dissociation constant of oxidant;

K_1 be the first dissociation constant of reductant;

K_2 be the second dissociation constant of reductant;

K_o and K_1 referring to the same position.

Proceeding as usual we arrive at the variable term

$$\frac{RT}{F} \ln \frac{K_1 K_2 + K_1 [H^+] + [H^+]^2}{K_o + [H^+]} \quad (18)$$

In most cases the first and second dissociation constants are sufficiently different to make $K_2 [H^+]$ a value of the second order of magnitude compared to $K_1 [H^+]$. No great error will then be made if $K_2 [H^+]$ is added to the numerator of (18). If this is done, then, when $K_o = K_1$, term (18) reduces to

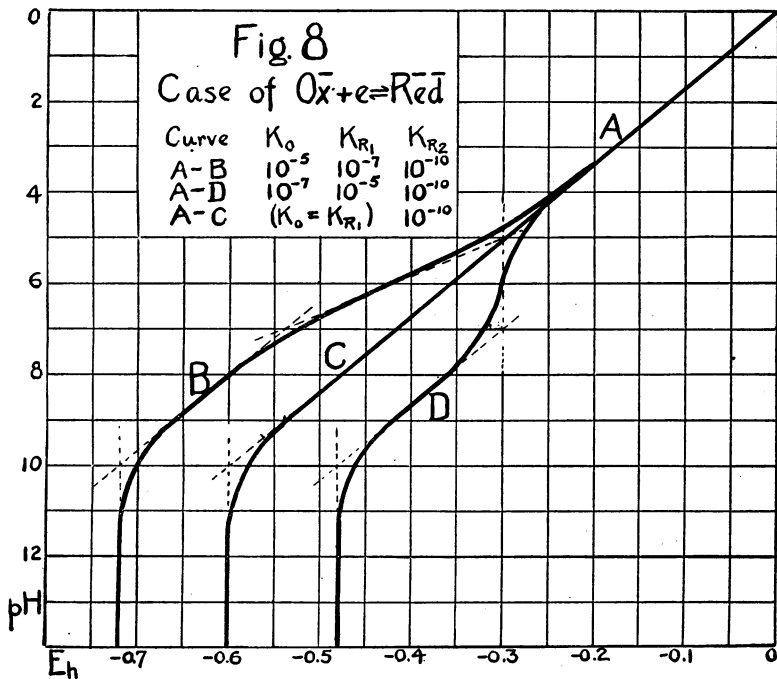
$$\frac{RT}{F} \ln \left[K_2 + [H^+] \right]$$

In other words, the result is the same, so far as can be seen from the form of the equation, as it would be if we neglected the ionization common to oxidant and reductant.

If, however, the ionization constant for the position common to both oxidant and reductant is altered in the transformation of

oxidant to reductant, then there will occur a shift in the curve relating E_h to pH. This is shown in Figure 8.

Curve A-B illustrates the case where there is a shift from 10^{-5} to 10^{-7} in the dissociation constant of the acidic hydrogen on reduction at another point. The reverse case illustrated by A-D is improbable. Curve A-C illustrates the absence of any observed effect when the dissociation constant of a group common to oxidant and reductant is not affected.

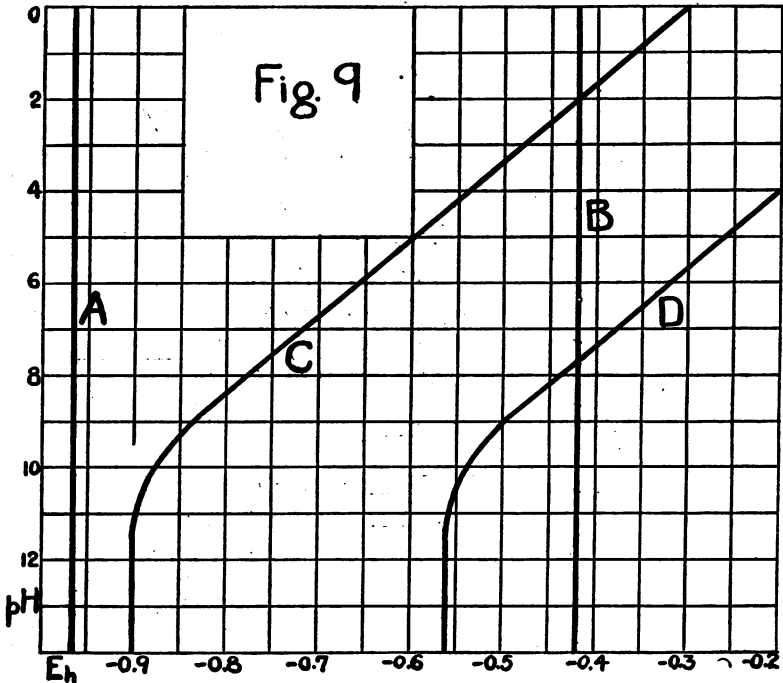


GENERAL DISCUSSION.

The foregoing analysis of the effect of hydron concentrations upon electrode potentials has been given not as the only possible analysis nor as that which is the most convenient in every case. However, so far as our preliminary surveys have shown, it is a system which formulates experimental data in correct relative relations. It also provides for consistency of treatment, and this amidst the great complexity of actual cases is of considerable importance. The critical reader will observe that perfect rigidity of treatment has been neglected at one or two points. Where revision is thus indicated, it will be made as experimental data require.

Before taking up this experimental data, there will be given a brief sketch of some of the more important consequences of the theoretical relations outlined up to this point.

It has sometimes been stated as a generalization that acidification of a solution increases the oxidizing tendency of a component. As a generalization, this statement is without meaning. In Figure 9 are plotted typical curves relating E_h to pH when the ratio of total reductant to total oxidant is constant. It is evident that system A and system B change neither in relative nor absolute E_h with change in pH. Systems C and D change in absolute E_h but not in relation to one another on changing pH. On the other hand, B has an oxidizing tendency toward D at pH=12, but a reducing tendency toward D at pH=4.



A matter of little intrinsic importance, but of considerable historical and theoretical interest, is the relation between E_h and the theoretical hydrogen and oxygen pressures in equilibrium.

It has already been noted that the zero point on the arbitrary scale adopted is the difference of potential between electrode and solution in a normal hydrogen half-cell. The electrode potential equation for a hydrogen electrode is

$$E_h = -\frac{RT}{F} \ln \frac{\sqrt{P}}{[H^+]}$$

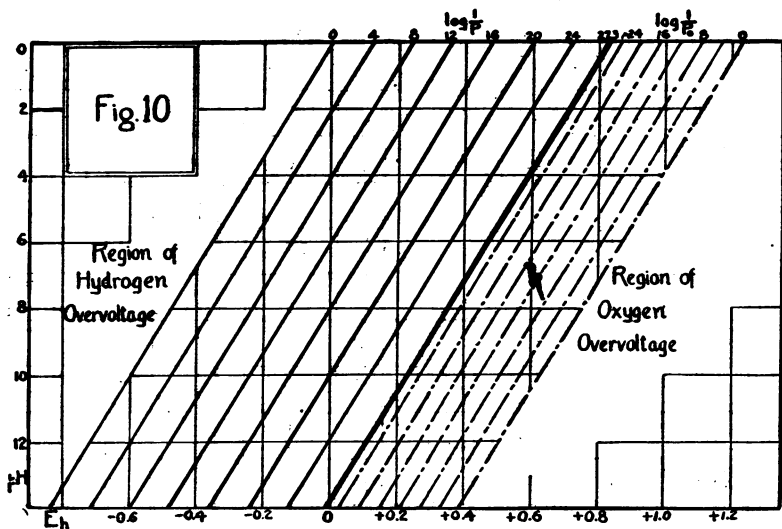
or

$$E_h = \frac{RT}{2F} \ln \frac{1}{P} - \frac{RT}{F} \text{pH}$$

If the hydrogen pressure, P , is unity (in atmospheres), E_h will vary as $-\frac{RT}{F} \text{pH}$. Then, if the temperature centigrade is 30° ,

$$E_h = -0.06 \text{ pH}$$

For each unit increase in pH , E_h becomes more negative by 0.06 volt. This is shown in Figure 10 by the line starting at $E_h=0$, $\text{pH}=0$.



Parallel to this line may be drawn others showing the relation of pH to E_h when the hydrogen electrode is under a definite hydrogen pressure less than unity. The curve marked 4 is for the case where $P=10^{-4}$. In this way we can construct the diagram of Figure 10, showing the relation of E_h to pH for various pressures of hydrogen (expressed as $\log \frac{1}{P}$).

The converse of this is that a definite hydrogen pressure may be ascribed for any given values of E_h and pH . Obviously such values are "calculation values" in many ways; but in the limited number of cases in which they are useful, they can be designated by the symbol rH , rH being defined as $\log \frac{1}{P}$, the logarithm of the reciprocal of the hydrogen pressure.

The oxygen electrode does not normally behave as might be expected, but it has been calculated (Lewis and Randall, 1914) that an electrode under one atmosphere pressure of oxygen should be 1.23 volts more positive than a hydrogen electrode under one atmosphere pressure of hydrogen in a solution of the same pH as that of

¹See p. 668.

the oxygen electrode. This estimate fixes the position on our scale of the line at the extreme right in Figure 10.

The electrode equation for the oxygen electrode is

$$E_h = 1.23 - \frac{RT}{F} \text{pH} - \frac{RT}{4F} \ln \frac{1}{P_o}$$

Proceeding as was done with the hydrogen pressure we can draw, as in Figure 10, a series of lines representing the relation of E_h to pH when $\log \frac{1}{P_o}$ is given the values indicated in the figure. Here again the value of E_h at any given pH can be considered as indicating a definite oxygen pressure (expressed in terms of $\log \frac{1}{P_o}$). Of course either series of relations can be extended throughout the whole range instead of being confined to one region as is done in Figure 10.

Thus, the oxidation-reduction scale can be expressed in terms of oxygen or hydrogen pressures. If there be any advantage in thinking of oxidation-reduction neutrality, it may be considered as occurring where the hydrogen and oxygen pressures are equal, namely, along the line marked 27.3, or where the hydrogen pressure is twice the oxygen pressure, namely, at the line of $\log \frac{1}{P} = 27.2$, or midway on the potential scale at $\log \frac{1}{P_o} = 41$ or $\log \frac{1}{P} = 20.5$.

Since there is little intrinsic importance in such a "neutrality," it need not be emphasized. Furthermore, it must be said that while there can be no valid objection to the method of presentation which employs the concept of electrodes acting as hydrogen or oxygen electrodes, it has had the unfortunate effect of leading many investigators to the belief that experimental confirmation of derived relations proves the actuality of the mechanism postulated. Again it must be emphasized that all such schemes are mere scaffolds, not wholly necessary to the end attained but employed as convenient aids to the construction of consistent working equations, and destined from the first to be discarded when once the working equations are built.

No matter from what point of view the problem be approached, it will be found that in the development of the electrode equation the constant (C, E_o , or the equivalent in the form $\frac{RT}{nF} \ln K$) captures a miscellany of dissociation constants, tautomer constants, etc., in the course of reducing the equation to working form. It will contain, by implication, a factor introduced on the assumption of a standard of electrode potential difference as has been pointed out by Haber (1901).

Haber also notes that there may easily be confusion in the interpretation of "normal potentials." A normal potential is that occurring when all components of the assumed reaction are at normal concentration. Thus, a given value, to have meaning, must be accompanied by a statement of the components which have been assumed in defining a normal potential. We may now add that even this is of limited significance. As the present analysis has shown, a complete description of a "normal potential" will not reveal actual conditions as pH is altered unless it is accompanied by values for acid or base dissociation constants.

It hardly seems necessary to dwell upon the fact that a stable potential is to be expected only when there are present both an oxidant and its reductant in finite ratio. This is evident both in the form of the electrode equation and in Figure 1 of the first paper. The occasion to emphasize this is the existence of published attempts to measure potentials of single "pure" oxidants or reductants. Such attempts are naturally of little use. On the other hand, there is closely connected with this aspect of the subject a matter of considerable real interest. Considering the case illustrated by curve A-C-D in Figure 1, we find the following relations: At $\text{pH}=0$, the ratio of undissociated to dissociated reductant is 10^7 . At $\text{pH}=14$, it is 10^{-7} . If the *actual* active reductant is the anion, it will be present in extremely small concentration at $\text{pH}=0$. If the *actual* reductant is the undissociated residue, it will be present in extremely small concentration at $\text{pH}=14$. Proceeding to more extreme cases, it can be shown that at certain pH values one or another species is present at a concentration of less than one discrete molecule per liter. Yet cases can be cited where electromotive force equilibria are attained as rapidly and maintained as securely at one extreme pH as another. The inevitable conclusion is that while we must still refrain from considering one or another species as the exclusively active actual reductant, there is some unknown mechanism which gives validity to our formulation of *relative relations* among electrode potentials.

From the fact that acidic or basic groups are created or destroyed in the reactions of oxidation-reduction, it follows that the oxidation or reduction of a system plays a part in the acid-base equilibria of a solution. We have been discussing this from the point of view of controlled pH values. We may now reverse the point of view and emphasize the fact that oxidation or reduction will displace pH in one direction or another in accordance with the acidic or basic nature of the group destroyed or created. We have also noted the possible effect of the oxidation-reduction process upon the dissociation constant of groups common to both oxidant and reductant, and have

depicted a case in Figure 8. The total of these two effects may have a very considerable influence. Thus, oxidation-reduction systems and acid-base systems are intimately related. This has long been suspected to be a matter of profound importance in physiology, but it is believed that this is the first systematic presentation of the numerous theoretical possibilities among the interrelated acid-base and oxidation-reduction equilibrium states.

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VITAL STATISTICS FOR ENGLAND AND WALES, 1921, 1922.

FIGURES FROM THE REGISTRAR GENERAL'S STATISTICAL REVIEW FOR 1921.

The first volume of the Registrar General's Statistical Review of England and Wales for the year 1921, which will henceforth take the place of the Registrar General's Annual Report, has recently been issued. The Statistical Review is now being issued in three sections, namely, Text; Tables, Part I, Medical; and Tables, Part II, Civil. The first volume, representing Tables, Part I, Medical, in this the first annual issue of the Registrar General's Statistical Review, consists primarily of those tables contained in the old series, which have been suitably arranged, together with the annual figures of the notifications of infectious diseases, heretofore published separately. Following are some of the important data contained in this volume of tables.

The crude death rates, 12.1 per 1,000 population for all persons, 13.0 for males and 11.3 for females, are the lowest recorded since civil registration was undertaken in 1837. Some idea of the progress that has been made in the saving of human life is given by comparing the rates prevailing in earlier years. For the decade 1841-1850, the crude death rate was 22.4; for the period 1871-1880 it was 21.4; and for the decade 1901-1910 it was 15.4. Had the death rate prevailing in the first decade noted obtained in 1921, the number of deaths for that year would have been nearly 850,000 instead of 458,629, or almost double the figure given. The standardized death rates, 11.5 per 1,000 for all persons, 12.7 for males, and 10.5 for

females, are also the lowest ever recorded for England and Wales. Also at all age groups up to 65 years the rates for 1921 are the lowest ever recorded. The standardized death rates are defined as those which would have resulted if the sex and age constitution of the population had been the same as in 1901. The rates for males and females are standardized for differences of age constitution in each sex and also between the two sexes.

Of the 458,629 deaths recorded in England and Wales in 1921, 53,710 are ascribed to heart disease, or nearly 12 per cent of the whole; cancer, 46,022, a little over 10 per cent; tuberculosis (all forms), 42,678, or 9 per cent; pneumonia, 34,684, or nearly 8 per cent; and bronchitis, 33,684, or over 7 per cent. These five causes account for 46 per cent of the total deaths during the year. The deaths from influenza numbered 8,995, as against 10,665 in 1920; 44,801 in 1919; and 112,329 in 1918. The death rates per 100,000 for these five causes were given as follows: Heart disease, 180.0; cancer, 121.5; tuberculosis (all forms), 112.7; pneumonia, 91.6; bronchitis, 88.9. The rate for tuberculosis (all forms) for 1921 was the lowest in the 11-year period 1911-1921, as were also the rates for bronchitis and pneumonia. The cancer rate showed a slight increase and was higher than that in any other year since 1918, the greater part of the increase being shown for females.

Encephalitis lethargica was given as the cause of 729 deaths, as compared with 480 for 1920, 294 for 1919, and 16 for 1918.

The number of births recorded was 848,814, giving a birth rate per 1,000 population of 22.4 as compared with a rate of 25.5 for 1920, which was the highest birth rate since 1909.

The infant mortality rate was 83 per 1,000 births, the lowest rate on record up to 1921, excepting that for 1920, in which year it fell to 80. The rate for 1921 is 25 per 1,000 lower than the average rate for the five pre-war years.

A comparison of the low infant mortality rate with the rates for earlier years is interesting. During the period 1841-1850, the average rate was 153 per 1,000 births, almost double the rate for 1921; for the period 1871-1880 it was 149; 1901-1910 it was 128; and for the decade 1911-1920 it was 100. Had the deaths under 1 year for 1921 been at the rate obtaining 75 years ago, they would have numbered 129,500 instead of 70,250—a saving of nearly 60,000 infant lives.

It is of interest to note the difference between the infantile death rate for legitimate infants and that for illegitimate infants, 79 and 158, respectively.

Cases for some of the more important infectious diseases were reported as follows: Scarlet fever, 137,073; tuberculosis (all forms)

74,952 (pulmonary, 59,299)—or 1.7 cases reported for each death registered; diphtheria, 66,506; typhoid fever, 3,835; encephalitis lethargica, 1,470—or 2 cases reported for each death registered; smallpox, 315.

The population of England and Wales at the middle of the year 1921 was given as 37,885,242.

PROVISIONAL FIGURES FOR 1922.

The Registrar General has issued provisional figures showing the birth and death rates for the calendar year 1922. The following is taken from the Quarterly Return of Births, Deaths, and Marriages (No. 296) of England and Wales:

“According to the quarterly returns furnished by local registrars, 780,187 births and 486,829 deaths were registered in England and Wales in the year 1922. The natural increase of population, by excess of births over deaths, was, therefore, 293,358, the average annual increase in the preceding five years having been 258,059. This statement excludes all war deaths except those registered in this country. The number of persons married during the year was 598,720.

“The marriage rate in England and Wales during the year 1922 was 15.8 per 1,000 of the population enumerated in 1921, the birth rate 20.6 per 1,000, and the death rate 12.9 per 1,000. Infant mortality was 77 per 1,000 registered births. The birth rate was the lowest recorded except during the war years and infant mortality was lower than in any other year, the lowest rate hitherto recorded being 80 in 1920.”

Birth rate, death rate, death rates from certain communicable diseases, and infant mortality in England and Wales, 1922. (Rates per 1,000 population.)

Birth rate per 1,000 population.....	20.6
Death rates per 1,000 population:	
All causes.....	12.9
Typhoid fever.....	.01
Smallpox.....	.00
Measles.....	.15
Scarlet fever.....	.04
Whooping cough.....	.16
Diphtheria.....	.11
Influenza.....	.54
Death rates per 1,000 live births:	
Diarrhea and enteritis (under 2 years).....	6.2
Total under 1 year.....	77.0

INFLUENZA IN THE UNITED STATES.

CASES REPORTED BY STATES FOR WEEK ENDED MARCH 24, 1923.

The following table shows the number of cases of influenza reported by State health officers, by telegraph, for the week ended March 24, 1923, compared with similar reports for the corresponding week of 1922, 1921, and 1920.

Cases of influenza reported by State health officers, for the week ended March 24, 1923, and corresponding week of the years 1922, 1921, and 1920.

State and division.	Week ended—			
	Mar. 24, 1923.	Mar. 25, 1922.	Mar. 26, 1921.	Mar. 27, 1920.
New England Division:				
Maine.....	196	222	1	73
Massachusetts.....	74	190	29	147
Vermont.....	9	9		85
Connecticut.....	32	146	6	47
Middle Atlantic Division:				
New York (exclusive of New York City).....	494	1,424	35	493
New York City.....	326	120	165	151
New Jersey.....	101	97	41	81
East North Central Division:				
Indiana.....	90			140
Illinois.....	516	686	19	319
Wisconsin.....	976	772	19	153
West North Central Division:				
Minnesota.....	9	16	10	57
Missouri.....	525	303	41	
South Dakota.....	0	56	4	53
Nebraska.....	67	164		209
Kansas.....	79	321	21	521
South Atlantic Division:				
Delaware.....	3	38	1	
Maryland.....	462	409	157	428
District of Columbia.....	10	4		8
West Virginia.....	0	98		
Georgia.....	495	470	12	1,573
Florida.....	8	57		440
East South Central Division:				
Alabama.....	441	177		472
Mississippi.....	161			530
West South Central Division:				
Arkansas.....	246	1,032	17	344
Louisiana.....	350	3,669		513
Texas.....	3,078	237	104	
Mountain Division:				
Montana.....	0	435		40
Colorado (exclusive of Denver).....	19	146		
New Mexico.....	15	1,534	2	36
Pacific Division:				
Oregon.....	10	126		
California.....	294	1,169	158	397

DEATHS FROM INFLUENZA AND FROM PNEUMONIA (ALL FORMS) IN CERTAIN LARGE CITIES, FEBRUARY 11-MARCH 17, 1923.

The following table shows the number of deaths from influenza and from pneumonia (all forms) in certain large cities of the United States from February 11 to March 17, 1923, inclusive. This table is taken from the Weekly Health Index, March 20, 1923, issued by the Division of Vital Statistics, Bureau of the Census. A similar table covering the period January 7 to February 10, 1923, was published in Public Health Reports for February 23, 1923, page 346.

Influenza and pneumonia (all forms).

City.	Deaths from influenza for week ended—						Deaths from pneumonia (all forms) for week ended—					
	Nov. 4, 1922, to Feb. 10, 1923.	1923					Nov. 4, 1922, to Feb. 10, 1923.	1923				
		Feb. 17.	Feb. 24.	Mar. 3.	Mar. 10.	Mar. 17.		Feb. 17.	Feb. 24.	Mar. 3.	Mar. 10.	Mar. 17.
Total.....	1,500	490	514	537	436	305	16,414	2,088	2,157	2,187	1,904	1,489
Akron.....	8	0	0	1	1	2	87	7	7	8	17	7
Albany.....	12	4	4	3	2	5	112	16	13	13	14	13
Atlanta.....	8						288	18	11	16	22	
Baltimore.....	79	22	17	20	15	10	537	62	76	74	66	62
Birmingham.....	2	4		1			114	5	6	8	11	8
Boston.....	54	5	5	4	9	7	647	63	40	56	49	25
Bridgeport.....	17					1	93	7	4	9	6	9
Buffalo.....	13	9	5	5	1	2	227	33	41	21	18	18
Cambridge.....	1	1					93	6	6	10	6	6
Camden.....							177	14	27	15	11	10
Chicago.....	97	36	42	50	31	22	1,294	158	189	190	163	145
Cincinnati.....	111	25	16	12	11		263	26	20	19	12	16
Cleveland.....	28	10	19	9	11	5	370	61	71	50	40	33
Columbus.....	60	15	22	13	7	5	148	27	16	16	11	9
Dallas.....	27	4	7	6	3	1	86	5	8	9	11	7
Dayton.....	9	6	5	5	7	3	105	9	8	14	6	9
Denver.....	6	3	6	9	5	9	197	26	30	13	23	11
Detroit.....	54	9	16	12	9	6	658	71	75	61	60	48
Duluth.....		1					20	1	5	7	5	7
Erie.....	6	6	5	12	14	9	47	11	5	4	11	7
Fall River.....	1						70	5	3	7	10	11
Flint.....	5	2	4		1	1	47	14	9	10	14	3
Fort Worth.....	2	1	2	5			50	6	9	12	6	2
Grand Rapids.....	4	3	2	5	4	1	53	14	17	18	5	6
Houston.....	0	0	0	1	3	0	61	8	6	5	7	5
Indianapolis.....	9	4	5	10	6	5	203	28	33	33	28	16
Jacksonville, Fla.....	1	0	1	3	0	2	18	2	2	2	1	4
Jersey City.....	10	9	11	10	9	7	173	20	21	29	18	15
Kansas City, Kans.....	5	2	3	1	5	2	62	12	15	12	11	6
Kansas City, Mo.....	41	14	15	22	22	13	226	23	28	41	25	23
Los Angeles.....	12	3	6	6	7	6	254	24	32	37	28	29
Louisville.....	12	3	4	2	0	0	211	33	27	29	18	18
Lowell.....	3		1	1			75	11	13	14	12	14
Lynn.....	1	1	2	4	1	2	56	3	7	9	3	8
Memphis.....	26	3	4	5	2	4	159	20	19	17	24	20
Milwaukee.....	6	4	4	1	1	3	187	48	45	37	32	21
Minneapolis.....	3	10	9	8		2	143	19	23	19	13	9
Nashville.....	15	0		2	2	2	96	9	11	7	4	14
New Bedford.....	1	0	0	0	0	0	100	14	14	18	18	12
New Haven.....	4	2	8	4	8	4	99	13	17	12	11	11
New Orleans.....	25	11	22	13	11	11	228	18	23	32	26	18
New York.....	266	125	149	140	118	71	2,851	424	464	453	399	296
Newark, N. J.....	6	6	9	6	13	7	214	32	30	37	28	17
Norfolk.....							68	6	9	8	11	13
Oakland.....	10					1	90	12	15	9	5	8
Omaha.....	0	0	1	2	2	0	80	20	28	31	24	23
Paterson.....							125	10	12	7	7	4
Philadelphia.....	217	36	16	17	14	18	1,525	145	135	155	112	106
Pittsburgh.....	43	16	23	31	19	14	834	121	128	127	103	67
Portland, Oreg.....							81	9	13	13	13	
Providence.....	9	1	0	0	1	2	151	13	13	19	28	23
Richmond.....	20	5	2	4	6	1	51	9	9	8	15	6
Rochester.....	6	4	4	6	6	5	67	7	12	22	25	12
St. Louis.....							606	91	46	80	82	65
St. Paul.....	7	2	1	1	1	4	107	13	15	17	17	13
Salt Lake City.....	0	0	1	1	0	1	81	3	1	2	5	6
San Antonio.....	2	0	0	4	1	3	64	11	9	16	8	11
San Francisco.....	30	16	16	19	13	9	212	28	27	26	25	13
Seattle.....	3		2	4	6	4	60	11	5	10	7	4
Spokane.....	2	0	0	1	2		32	2	3	4	1	
Springfield, Mass.....	2	3	3	1	1	2	89	15	21	14	16	12
Syracuse.....	5	3	0	2	2	2	102	12	11	9	4	8
Tacoma.....							21	4	3	2	1	5
Toledo.....	11	7	1	6	3	3	100	16	18	19	13	12
Trenton.....	7	4	1	5	2	2	96	14	7	14	3	5
Washington, D. C.....	68	14	9	12	18	4	409	55	38	28	37	33
Wilmington, Del.....	4	11	3	1			50	13	13	11	5	8
Worcester.....	2	2					32	13	20	7	18	
Yonkers.....	2						45	4	5	6	7	2
Youngstown.....	0	3					37	5	15	20	9	

Blank space indicates that no report was received; 0 indicates no deaths.

DEATHS DURING WEEK ENDED MARCH 17, 1923.

Summary of information received by telegraph from industrial insurance companies for week ended March 17, 1923, and corresponding week of 1922. (From the Weekly Health Index, March 20, 1923, issued by the Bureau of the Census, Department of Commerce.)

	Week ended Mar. 17, 1923.	Corresponding week, 1922.
Policies in force.....	51, 549, 248	49, 269, 076
Number of death claims.....	12, 819	11, 727
Death claims per 1,000 policies in force, annual rate.....	13.0	12.4

Deaths from all causes in certain large cities of the United States during the week ended March 17, 1923, infant mortality, annual death rate, and comparison with corresponding week of 1922. (From the Weekly Health Index, March 20, 1923, issued by the Bureau of the Census, Department of Commerce.)

City.	Estimated population July 1, 1923.	Week ended Mar. 17, 1923.		Annual death rate per 1,000, corresponding week, 1922.	Deaths under 1 year.		Infant mortality rate, week ended Mar. 17, 1923. ¹
		Total deaths.	Death rate. ¹		Week ended Mar. 17, 1923.	Corresponding week, 1922.	
Total.....	29, 011, 375	8, 851	15.9	15.9	1, 054	1, 223	.....
Akron, Ohio.....	* 208, 435	48	12.0	11.8	9	5	107
Albany, N. Y.....	117, 375	57	25.3	18.4	3	5	66
Atlanta, Ga.....	222, 963	73	17.1	14.7	9	4	.....
Baltimore, Md.....	773, 590	283	19.1	19.8	33	41	97
Birmingham, Ala.....	195, 901	53	14.1	13.6	5	8	.....
Boston, Mass.....	770, 400	292	19.8	20.6	37	55	108
Bridgeport, Conn.....	* 143, 555	44	16.0	12.7	8	3	111
Buffalo, N. Y.....	536, 718	165	16.0	17.3	29	39	122
Cambridge, Mass.....	111, 444	43	20.1	14.1	9	2	160
Camden, N. J.....	124, 157	39	16.4	15.4	6	7	99
Chicago, Ill.....	2, 896, 121	815	14.7	14.8	101	146	.....
Cincinnati, Ohio.....	406, 312	137	17.6	18.5	12	19	75
Cleveland, Ohio.....	888, 519	215	12.6	13.9	28	44	77
Columbus, Ohio.....	261, 082	93	18.6	17.7	8	14	83
Dallas, Texas.....	177, 274	51	15.0	11.5	10	2	.....
Dayton, Ohio.....	165, 530	48	15.1	9.0	4	4	66
Denver, Colo.....	272, 031	89	17.1	23.2	11	9	.....
Detroit, Mich.....	995, 668	281	14.7	16.2	61	54	122
Duluth, Minn.....	106, 289	24	11.8	.....	1	.....	25
Erie, Pa.....	112, 571	42	19.5	15.7	8	2	163
Fall River, Mass.....	120, 912	46	19.8	28.5	8	17	114
Flint, Mich.....	117, 968	25	11.1	.....	3	.....	60
Fort Worth, Tex.....	143, 821	21	7.6	11.4	4	5	.....
Grand Rapids, Mich.....	145, 947	40	14.3	12.3	5	4	79
Houston, Tex.....	154, 970	41	13.8	14.6	7	7	.....
Indianapolis, Ind.....	342, 718	106	16.1	16.8	14	10	108
Jacksonville, Fla.....	100, 046	39	20.3	14.4	1	3	.....
Jersey City, N. J.....	309, 034	93	15.7	14.5	13	10	87
Kansas City, Kans.....	115, 781	25	11.3	11.5	5	4	114
Kansas City, Mo.....	351, 819	115	17.0	16.8	16	8	.....
Los Angeles, Calif.....	666, 853	209	16.5	22.0	13	24	49
Louisville, Ky.....	257, 671	105	21.2	14.2	15	13	162
Lowell, Mass.....	115, 089	46	20.8	15.9	7	4	122
Lynn, Mass.....	102, 683	30	15.2	.....	5	.....	132
Memphis, Tenn.....	170, 067	86	26.4	26.1	5	19	.....
Milwaukee, Wis.....	484, 595	144	15.5	11.8	20	20	99
Minneapolis, Minn.....	409, 125	99	12.6	18.6	18	15	98
Nashville, Tenn.....	121, 128	45	19.4	16.9	6	7	.....
New Bedford, Mass.....	130, 072	39	15.6	19.6	6	7	89
New Haven, Conn.....	172, 967	62	18.7	19.0	8	5	104
New Orleans, La.....	404, 575	146	13.8	19.4	14	11	.....
New York N. Y.....	5, 927, 625	1, 759	15.5	14.3	171	264	68
Bronx Borough.....	840, 544	195	12.1	10.4	20	19	70
Brooklyn Borough.....	2, 156, 687	606	14.7	14.1	53	90	56
Manhattan Borough.....	2, 267, 001	791	18.2	16.7	87	134	85
Queens Borough.....	535, 844	124	12.1	9.3	9	14	48
Richmond Borough.....	127, 549	43	17.6	22.2	2	7	36

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 Enumerated population Jan. 1, 1920.

Deaths from all causes in certain large cities of the United States during the week ended March 17, 1923, infant mortality, annual death rate, and comparison with corresponding week of 1922. (From the Weekly Health Index, March 20, 1923, issued by the Bureau of the Census, Department of Commerce.)—Continued.

City.	Estimated population July 1, 1923.	Week ended Mar. 17, 1923.		Annual death rate per 1,000, corresponding week, 1922.	Deaths under 1 year.		Infant mortality rate, week ended Mar. 17, 1923.
		Total deaths.	Death rate.		Week ended Mar. 17, 1923.	Corresponding week, 1922.	
Newark, N. J.....	438,699	131	15.6	14.7	10	10	47
Norfolk, Va.....	159,089	40	13.1	14.2	8	5	141
Oakland, Calif.....	240,086	52	11.3	15.2	4	4	51
Omaha, Nebr.....	204,382	74	18.9	14.8	13	11	141
Paterson, N. J.....	139,579	36	13.4	11.3	5	8	80
Philadelphia, Pa.....	1,922,788	610	16.5	17.0	63	79	82
Pittsburgh, Pa.....	613,442	229	19.5	14.6	33	27	115
Portland, Oreg.....	273,621	55	10.5	14.1	4	6	40
Providence, R. I.....	242,379	100	21.5	16.7	11	12	90
Richmond, Va.....	181,044	64	18.4	15.5	4	7	49
Rochester, N. Y.....	317,867	79	13.0	16.4	7	12	55
St. Louis, Mo.....	808,853	260	16.9	17.8	26	29	.....
St. Paul, Minn.....	241,891	72	15.5	19.6	12	11	111
Salt Lake City, Utah.....	126,241	41	16.9	18.9	2	5	33
San Antonio, Tex.....	184,727	65	18.3	.....	11	.....	.....
San Francisco, Calif.....	539,038	149	14.4	15.8	14	8	84
Seattle, Wash.....	* 315,312	63	10.4	9.8	8	8	71
Spokane, Wash.....	104,523	28	14.0	13.5	5	4	109
Springfield, Mass.....	144,227	41	14.8	17.5	3	3	43
Syracuse, N. Y.....	184,511	50	14.1	12.4	6	6	78
Tacoma, Wash.....	101,731	18	9.2	.....	4	.....	100
Toledo, Ohio.....	268,338	76	14.8	16.8	10	6	101
Trenton, N. J.....	127,390	42	17.2	16.8	4	3	68
Washington, D. C.....	* 437,571	154	18.4	18.0	11	22	63
Wilmington, Del.....	117,728	27	12.0	10.4	5	6	102
Yonkers, N. Y.....	107,520	24	11.6	11.4	3	5	65
Youngstown, Ohio.....	* 132,358	58	22.8	15.4	12	6	163

* Enumerated population Jan. 1, 1920.

PREVALENCE OF DISEASE.

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

UNITED STATES.

CURRENT STATE SUMMARIES.

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 March 24, 1923.

ALABAMA.		CALIFORNIA.	
	Cases.		Cases.
Cerebrospinal meningitis.....	3	Cerebrospinal meningitis—San Francisco....	1
Chicken pox.....	31	Diphtheria.....	95
Diphtheria.....	11	Influenza.....	294
Influenza.....	441	Measles.....	456
Malaria.....	34	Scarlet fever.....	140
Measles.....	623	Smallpox.....	20
Pellagra.....	10	Typhoid fever.....	2
Pneumonia.....	102		
Scarlet fever.....	4	COLORADO.	
Smallpox.....	26	(Exclusive of Denver.)	
Tuberculosis.....	40	Cerebrospinal meningitis.....	1
Typhoid fever.....	24	Chicken pox.....	20
Whooping cough.....	55	Diphtheria.....	9
		Influenza.....	19
		Measles.....	12
		Mumps.....	17
		Pneumonia.....	10
		Scarlet fever.....	18
		Smallpox.....	1
		Tuberculosis.....	93
		Typhoid fever.....	1
		Whooping cough.....	10
		CONNECTICUT.	
		Cerebrospinal meningitis.....	3
		Chicken pox.....	55
		Conjunctivitis.....	3
		Diphtheria.....	66
		German measles.....	4
		Influenza.....	32
		Lethargic encephalitis.....	6
		Measles.....	317
		Mumps.....	78
		Pneumonia (lobar).....	46
		Scarlet fever.....	101
		Trachoma.....	1
		Tuberculosis (all forms).....	33
		Typhoid fever.....	1
		Whooping cough.....	59

ALABAMA.

Cases.

CALIFORNIA.

Cases.

ARIZONA.

ARKANSAS.

Reports for Week Ended March 24, 1923—Continued.

DELAWARE.		INDIANA—continued.	
	Cases.		Cases.
Diphtheria.....	3	Measles.....	265
Influenza.....	3	Pneumonia.....	8
Measles.....	28	Scarlet fever.....	79
Mumps.....	1	Smallpox.....	38
Pneumonia.....	3	Typhoid fever.....	8
Scarlet fever.....	10		
Tuberculosis.....	8	IOWA.	
Typhoid fever.....	1	Diphtheria.....	24
		Scarlet fever.....	117
		Smallpox.....	29
		KANSAS.	
FLORIDA.		Cerebrospinal meningitis.....	1
Diphtheria.....	6	Chicken pox.....	59
Influenza.....	8	Diphtheria.....	38
Malaria.....	3	Influenza.....	79
Pneumonia.....	5	Lethargic encephalitis.....	1
Smallpox.....	12	Measles.....	196
Typhoid fever.....	11	Mumps.....	90
		Pneumonia.....	58
		Poliomyelitis.....	1
GEORGIA.		Scarlet fever.....	73
Cerebrospinal meningitis.....	2	Smallpox.....	18
Chicken pox.....	39	Tuberculosis.....	59
Diphtheria.....	12	Whooping cough.....	163
Dysentery (bacillary).....	1		
German measles.....	122	LOUISIANA.	
Hookworm disease.....	9	Cerebrospinal meningitis.....	2
Influenza.....	495	Dengue.....	5
Malaria.....	9	Diphtheria.....	17
Measles.....	865	Influenza.....	350
Mumps.....	2	Scarlet fever.....	9
Pneumonia.....	35	Smallpox.....	29
Scarlet fever.....	4	Typhoid fever.....	12
Smallpox.....	13		
Tuberculosis (pulmonary).....	5	MAINE.	
Typhoid fever.....	4	Chicken pox.....	15
Whooping cough.....	12	Conjunctivitis (infectious).....	8
		Diphtheria.....	3
		German measles.....	3
ILLINOIS.		Influenza.....	196
Cerebrospinal meningitis:		Measles.....	74
Bureau County.....	1	Pneumonia.....	9
Chicago.....	5	Scarlet fever.....	10
Knox County.....	1	Tuberculosis.....	2
Macoupin County.....	2	Typhoid fever.....	1
Monroe County.....	1	Whooping cough.....	52
Sangamon County.....	1		
Stephenson County.....	1	MARYLAND. ¹	
Diphtheria:		Chicken pox.....	124
Cook County (including Chicago).....	115	Diphtheria.....	44
Chicago.....	101	German measles.....	3
Sangamon County.....	11	Influenza.....	462
Scattering.....	98	Lethargic encephalitis.....	5
Influenza.....	516	Measles.....	454
Pneumonia.....	952	Mumps.....	68
Poliomyelitis—Clay County.....	1	Ophthalmia neonatorum.....	2
Scarlet fever:		Pneumonia (all forms).....	209
Cook County (including Chicago).....	107	Poliomyelitis.....	1
Chicago.....	88	Scarlet fever.....	92
Peoria County.....	10	Septic sore throat.....	1
Scattering.....	133	Tuberculosis.....	78
Smallpox.....	7	Typhoid fever.....	7
Typhoid fever.....	40	Whooping cough.....	64
Whooping cough.....	191		
INDIANA.			
Diphtheria.....	57		
Influenza.....	90		

¹ Week ended, Friday.

Reports for Week Ended March 24, 1923—Continued.

MASSACHUSETTS.		MONTANA.	
	Cases.		Cases.
Cerebrospinal meningitis.....	2	Diphtheria.....	10
Chicken pox.....	144	Scarlet fever.....	12
Conjunctivitis (suppurative).....	5	Smallpox.....	4
Diphtheria.....	167		
German measles.....	11	NEBRASKA.	
Influenza.....	74	Cerebrospinal meningitis—Omaha.....	1
Lethargic encephalitis.....	14	Chicken pox.....	13
Measles.....	760	Diphtheria.....	14
Mumps.....	253	Influenza.....	67
Ophthalmia neonatorum.....	16	Measles.....	15
Pneumonia (lobar).....	184	Mumps.....	11
Poliomyelitis.....	1	Pellagra.....	1
Scarlet fever.....	370	Pneumonia.....	5
Septic sore throat.....	2	Scarlet fever.....	27
Trichinosis.....	2	Smallpox.....	3
Tuberculosis (all forms).....	122	Tuberculosis.....	1
Typhoid fever.....	12	Whooping cough.....	31
Whooping cough.....	440		
		NEW JERSEY.	
MICHIGAN.		Cerebrospinal meningitis.....	3
Diphtheria.....	133	Diphtheria.....	153
Measles.....	210	Chicken pox.....	186
Pneumonia.....	146	Influenza.....	101
Scarlet fever.....	296	Measles.....	870
Smallpox.....	18	Pneumonia.....	193
Tuberculosis.....	75	Scarlet fever.....	221
Typhoid fever.....	9	Smallpox.....	1
Whooping cough.....	219	Typhoid fever.....	4
		Whooping cough.....	182
MINNESOTA.			
Cerebrospinal meningitis.....	1	NEW MEXICO.	
Chicken pox.....	16	Chicken pox.....	11
Diphtheria.....	53	Diphtheria.....	39
Influenza.....	9	Influenza.....	15
Lethargic encephalitis.....	14	Lethargic encephalitis.....	1
Measles.....	514	Measles.....	51
Pneumonia.....	13	Mumps.....	9
Scarlet fever.....	163	Pneumonia.....	12
Smallpox.....	49	Scarlet fever.....	5
Trachoma.....	1	Smallpox.....	1
Tuberculosis.....	100	Tuberculosis.....	16
Typhoid fever.....	7	Typhoid fever.....	1
Whooping cough.....	12	Whooping cough.....	3
MISSISSIPPI.		NEW YORK.	
Diphtheria.....	7	(Exclusive of New York City.)	
Influenza.....	161	Cerebrospinal meningitis.....	1
Smallpox.....	1	Diphtheria.....	113
Typhoid fever.....	11	Influenza.....	494
		Lethargic encephalitis.....	11
MISSOURI.		Measles.....	1,146
Cerebrospinal meningitis.....	4	Pneumonia.....	399
Chicken pox.....	35	Poliomyelitis.....	2
Diphtheria.....	62	Scarlet fever.....	347
Epidemic sore throat.....	8	Smallpox.....	15
Influenza.....	525	Typhoid fever.....	5
Measles.....	1,057	Whooping cough.....	263
Mumps.....	25		
Pneumonia.....	30	NORTH CAROLINA.	
Scarlet fever.....	77	Cerebrospinal meningitis.....	1
Smallpox.....	10	Chicken pox.....	146
Tetanus.....	1	Diphtheria.....	29
Trachoma.....	15	German measles.....	17
Tuberculosis.....	29	Measles.....	2,155
Typhoid fever.....	3		
Whooping cough.....	43		

Reports for Week Ended March 24, 1923—Continued.

NORTH CAROLINA—continued.		VIRGINIA.	
	Cases.		Cases.
Scarlet fever.....	105	Smallpox—Chesterfield County.....	1
Typhoid fever.....	2		
Whooping cough.....	335	WASHINGTON.	
OREGON.		Cerebrospinal meningitis—Seattle.....	1
Cerebrospinal meningitis.....	1	Chicken pox.....	51
Chicken pox.....	15	Diphtheria.....	18
Diphtheria.....	4	Lethargic encephalitis—Spokane.....	1
Influenza.....	10	Measles.....	8
Measles.....	5	Mumps.....	32
Pneumonia.....	13	Pneumonia.....	8
Scarlet fever.....	12	Scarlet fever:	
Smallpox:		Seattle.....	10
Portland.....	13	Spokane.....	10
Scattering.....	11	Scattering.....	21
Tuberculosis.....	9	Smallpox.....	27
Typhoid fever.....	1	Typhoid fever.....	6
Whooping cough.....	2	Whooping cough.....	71
SOUTH DAKOTA.		WEST VIRGINIA.	
Chicken pox.....	9	Diphtheria.....	10
Diphtheria.....	9	Poliomyelitis—Clarksburg.....	1
Measles.....	13	Scarlet fever:	
Pneumonia.....	9	Fairmont.....	12
Scarlet fever.....	27	Scattering.....	4
Smallpox.....	1	Smallpox.....	3
Tuberculosis.....	1	Typhoid fever.....	3
Typhoid fever.....	1		
Whooping cough.....	3	WISCONSIN.	
TEXAS.		Milwaukeee:	
Chicken pox.....	67	Chicken pox.....	8
Diphtheria.....	12	Diphtheria.....	26
Influenza.....	3,078	Lethargic encephalitis.....	1
Leprosy.....	1	Measles.....	104
Measles.....	31	Pneumonia.....	10
Mumps.....	1	Scarlet fever.....	213
Pellagra.....	2	Tuberculosis.....	12
Pneumonia.....	10	Whooping cough.....	22
Scarlet fever.....	4	Scattering:	
Smallpox.....	24	Cerebrospinal meningitis.....	4
Tuberculosis.....	77	Chicken pox.....	110
Typhoid fever.....	1	Diphtheria.....	48
Whooping cough.....	24	German measles.....	2
VERMONT.		Influenza.....	976
Chicken pox.....	11	Measles.....	858
Diphtheria.....	4	Pneumonia.....	51
Influenza.....	9	Poliomyelitis.....	1
Measles.....	5	Scarlet fever.....	164
Mumps.....	11	Smallpox.....	22
Pneumonia.....	7	Tuberculosis.....	30
Scarlet fever.....	10	Typhoid fever.....	7
Typhoid fever.....	1	Whooping cough.....	68
Whooping cough.....	10	WYOMING.	
		Chicken pox.....	4
		Diphtheria.....	1
		Scarlet fever.....	1

Report for Week Ended March 17, 1923.

NORTH DAKOTA.		NORTH DAKOTA—continued.	
	Cases.		Cases.
Chicken pox.....	10	Scarlet fever.....	21
Diphtheria.....	20	Smallpox.....	27
Influenza.....	76	Tuberculosis.....	1
Lethargic encephalitis.....	5	Typhoid fever.....	1
Measles.....	8	Whooping cough.....	10
Pneumonia.....	15		

¹ Deaths.

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.	Polomyelitis.	Scarlet fever.	Smallpox.	Typhoid fever.
<i>January, 1923.</i>										
Arizona.....		13						17	14	3
<i>February, 1923.</i>										
Arizona.....		9			19			21	38	3
Idaho.....		12			2			20	18	
Illinois.....	8	1,090	3,371	3	4,011		5	1,071	119	31
Indiana.....	5	326	888		1,051		4	412	149	19
Iowa.....		142			119		1	509	37	2
Maryland.....	2	240	10,867	1	1,242		3	327		23
Minnesota.....	2	278	42		1,536			819	297	15
Mississippi.....	1	81	16,392	3,344	3,614	153		33	41	59
New Jersey.....	6	555	1,904		4,588		1	868		21
North Carolina.....	4	155			4,333			116	446	30
Rhode Island.....	1	81	8		923			37		1
South Carolina.....	3	160	473		40			8	24	6
West Virginia.....	2	154	3,261		1,054			145	15	29
Wisconsin.....	6	248	4,558		5,000		2	1,425	161	12

CITY REPORTS FOR WEEK ENDED MARCH 10, 1923.

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 Mar. 10, 1923.		City.	Median for previous years.	Week ended Mar. 10, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
California:				New Jersey:			
Los Angeles.....	1		1	Clifton.....		1	1
Connecticut:				Jersey City.....	0	3	
New Haven.....	1	1		Orange.....	0	1	
Florida:				Paterson.....	0	1	
Key West.....			1	New York:			
Illinois:				New York.....	9	7	1
Chicago.....	1	1	1	Pennsylvania:			
Springfield.....	0	1	1	Philadelphia.....	1	1	
Kentucky:				Rhode Island:			
Louisville.....	0	1		Providence.....	0	1	1
Massachusetts:				South Carolina:			
Boston.....	2	2		Columbia.....	0	1	
Michigan:				Tennessee:			
Saginaw.....	0	1	2	Memphis.....	0	1	
Minnesota:				West Virginia:			
Duluth.....	0		1	Charleston.....	0	1	2
				Huntington.....	0		1

DIPHThERIA.

See p. 702; also Current State summaries, p. 690, and Monthly summaries by States above.

CITY REPORTS FOR WEEK ENDED MARCH 10, 1923—Continued.
INFLUENZA.

City.	Cases.		Deaths, week ended Mar. 10, 1923.	City.	Cases.		Deaths, week ended Mar. 10, 1923.
	Week ended Mar. 11, 1922.	Week ended Mar. 10, 1923.			Week ended Mar. 11, 1922.	Week ended Mar. 10, 1923.	
Alabama:				Iowa:			
Birmingham.....		17	3	Council Bluffs.....			1
Dothan.....		3		Kansas:			
Mobile.....		2	2	Hutchinson.....	1		
Tuscaloosa.....		1		Kansas City.....	3	3	
Arkansas:				Lawrence.....	7		1
Little Rock.....	64	17		Parsons.....	1	2	
North Little Rock.....		7		Pittsburg.....	7		
California:				Salina.....	1		
Alameda.....	5			Topeka.....			1
Bakersfield.....	47			Wichita.....			3
Berkeley.....	127			Kentucky:			
Eureka.....	8			Lexington.....	3		
Long Beach.....	69			Louisville.....	67	18	
Los Angeles.....	1,243	142	7	Louisiana:			
Oakland.....	29	12	4	Baton Rouge.....	54	27	2
Pasadena.....	76	2	1	New Orleans.....	70	58	11
Riverside.....	77			Maine:			
Sacramento.....	16	5	4	Bangor.....		21	
San Bernadino.....			1	Bath.....	3		
San Diego.....	356	10	1	Biddeford.....		2	1
San Francisco.....	121			Lewiston.....	2	1	
Santa Ana.....	90			Portland.....		8	
Santa Cruz.....	13			Sanford.....	143		1
Stockton.....	59	16		Maryland:			
Colorado:				Baltimore.....	327	170	15
Denver.....			5	Cumberland.....	20	17	2
Pueblo.....			1	Frederick.....			1
Connecticut:				Massachusetts:			
Bridgeport.....	13			Amesbury.....			
Hartford.....	3			Attleboro.....	4	14	1
Meriden.....	36			Boston.....	119	19	9
New Britain.....	46			Braintree.....	21	2	1
New Haven.....	9	7	8	Brookline.....	7		
New London.....	1			Cambridge.....	36		2
Stonington.....	30			Chelsea.....	2		
Waterbury.....	7			Chicopee.....	1	1	
District of Columbia:				Clinton.....			
Washington.....	9	15	18	Danvers.....	1		
Florida:				Everett.....		9	
Tampa.....	3	2		Fall River.....	20	3	
Georgia:				Framingham.....		1	
Albany.....	1	1		Haverhill.....	18	2	2
Atlanta.....	93	15		Holyoke.....		2	
Augusta.....		12	1	Lawrence.....		1	
Macon.....	18	500		Leominster.....	2		
Rome.....	15	3		Lowell.....	5	4	1
Savannah.....	2	6		Lynn.....	1	8	1
Idaho:				Malden.....	1	6	1
Boise.....	75			New Bedford.....	18		
Illinois:				Newton.....	1	1	
Alton.....	23	1		North Adams.....	2		
Chicago.....	1	158	31	Northampton.....	1		
Cicero.....	1			Pittsfield.....	5	6	1
Danville.....	3			Quincy.....	13	1	
Decatur.....	25	3	1	Saugus.....	12	1	
East St. Louis.....	13		1	Somerville.....	24		
Evanston.....	6			Southbridge.....	3		
Freeport.....	3			Springfield.....	7	5	2
La Salle.....	3		1	Waltham.....	1		
Mattoon.....	1		1	Watertown.....	4		
Oak Park.....	1	2		Webster.....		2	
Pekin.....	10			Worcester.....	1	1	
Peoria.....			1	Michigan:			
Quincy.....		3		Battle Creek.....		1	
Rockford.....	8		1	Detroit.....	112	9	9
Rock Island.....	3			Flint.....	6	2	1
Springfield.....	2	5	4	Grand Rapids.....	2	1	
Indiana:				Highland Park.....	1	1	
Crawfordsville.....	1			Jackson.....			2
Fort Wayne.....			1	Kalamazoo.....			1
Indianapolis.....			6	Saginaw.....	1		2
Logansport.....			1	Minnesota:			
Mishawaka.....			1	Duluth.....	30		
Newcastle.....	1			Faribault.....			3
Terre Haute.....			1	Minneapolis.....	65		7

CITY REPORTS FOR WEEK ENDED MARCH 10, 1923—Continued.

INFLUENZA—Continued.

City.	Cases.		Deaths, week ended Mar. 10, 1923.	City.	Cases.		Deaths, week ended Mar. 10, 1923.
	Week ended Mar. 11, 1922.	Week ended Mar. 10, 1923.			Week ended Mar. 11, 1922.	Week ended Mar. 10, 1923.	
Minnesota—Continued.				North Carolina:			
Rochester.....	1			Charlotte.....	39		1
St. Paul.....			1	Durham.....			1
Winona.....	2		1	Wilmington.....			1
Missouri:				North Dakota:			
Independence.....		20		Grand Forks.....	2		
Joplin.....	9			Ohio:			
Kansas City.....	14	16	22	Akron.....	8	1	
St. Joseph.....	2	2	5	Ashtabula.....		5	
St. Louis.....	43			Cambridge.....	1		
Springfield.....			3	Canton.....			2
Montana:				Cincinnati.....	50	1	11
Billings.....	56			Cleveland.....	172	30	11
Butte.....			1	Columbus.....	10		7
Great Falls.....	16			Findlay.....		1	1
Missoula.....	244	3		Hamilton.....	2		1
Nebraska:				Mansfield.....	1		
Lincoln.....			1	Marion.....		1	1
Omaha.....			2	Newark.....	1		1
Nevada:				Norwood.....			1
Reno.....	23	40		Piqua.....			1
New Hampshire:				Sandusky.....		1	3
Berlin.....			1	Toledo.....	36	4	1
Dover.....	1			Youngstown.....	4		1
New Jersey:				Oklahoma:			
Bayonne.....	1	2		Oklahoma.....			4
Bloomfield.....		1		Oregon:			
East Orange.....	1	7		Portland.....	12		1
Garfield.....	1	1	1	Pennsylvania:			
Harrison.....	1	6		Philadelphia.....	23	10	14
Jersey City.....		4		Rhode Island:			
Kearny.....	8	34		Cumberland.....		4	
Long Branch.....		9	1	Providence.....	15	2	1
Montclair.....	5	2		South Carolina:			
Morristown.....		2		Charleston.....	3		2
Newark.....	118	80	8	Tennessee:			
Orange.....		1		Chattanooga.....	17		2
Passaic.....	8	5	1	Memphis.....			2
Paterson.....	5	5		Nashville.....			2
Plainfield.....	2			Texas:			
Trenton.....	5	6	2	Corsicana.....		10	
West Hoboken.....		1		Dallas.....	17	2	3
West Orange.....	2	2		Fort Worth.....		16	2
New Mexico:				Houston.....			3
Albuquerque.....	56	2		San Angelo.....			1
New York:				San Antonio.....			1
Albany.....	119	53		Utah:			
Amsterdam.....		14		Provo.....	30		
Auburn.....	8			Salt Lake City.....	10		
Binghamton.....	54			Virginia:			
Buffalo.....	73	13	1	Lynchburg.....			1
Cohoes.....	28			Petersburg.....	36	1	
Dunkirk.....	1	129	1	Richmond.....		2	5
Hornell.....	1			Roanoke.....	9		2
Ithaca.....	1			Washington:			
Jamestown.....	16	2		Spokane.....	14		
Lackawanna.....		3		Walla Walla.....	6		
Lockport.....		2		West Virginia:			
Middletown.....	5			Bluefield.....	1		
Mount Vernon.....	10	21		Charleston.....	12	4	2
New York.....	310	1,063	118	Fairmont.....	4		
Niagara Falls.....	1	1		Huntington.....			4
North Tonawanda.....	35			Morgantown.....		5	
Peekskill.....	4	2		Wisconsin:			
Poughkeepsie.....	4			Beloit.....	3		
Rochester.....	39	2	1	Kenosha.....	13	1	
Rome.....		4		Madison.....	1		
Saratoga Springs.....	167	20		Milwaukee.....		6	
Schenectady.....		11	2	Oshkosh.....	4		
Syracuse.....	2	1	2	Racine.....	2		
Watertown.....	8	1		Wausau.....	2		
Yonkers.....		2	2	Wyoming:			
				Casper.....	18		2
				Cheyenne.....		2	2

CITY REPORTS FOR WEEK ENDED MARCH 10, 1923—Continued.

LETHARGIC ENCEPHALITIS.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Connecticut:			Nebraska:		
New Haven.....	3	2	Omaha.....		1
Illinois:			New Jersey:		
La Salle.....	1		Jersey City.....	1	
Minnesota:			Oregon:		
Hibbing.....	2		Portland.....		1
St. Cloud.....	1		Wisconsin:		
			Milwaukee.....	1	

MALARIA.

Alabama:			Kentucky:		
Birmingham.....	1		Covington.....	1	
Dothan.....	1		Louisiana:		
Florida:			New Orleans.....	4	
Key West.....	1		New Jersey:		
Georgia:			Newark.....	1	
Albany.....	1		Tennessee:		
Savannah.....	1		Memphis.....		1
Illinois:			Virginia:		
Chicago.....		1	Norfolk.....	1	

MEASLES.

See p. 702; also Current State summaries, p. 690, and Monthly summaries by States, p. 694.

PELLAGRA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Alabama:			Tennessee:		
Dothan.....	1		Memphis.....		1
Georgia:			Texas:		
Atlanta.....		1	Dallas.....		1
Savannah.....		2	Fort Worth.....	1	1
North Carolina:					
Raleigh.....		1			

PNEUMONIA (ALL FORMS).

Alabama:			Florida:		
Birmingham.....	17	11	Key West.....		1
Mobile.....		1	St. Petersburg.....		3
Arkansas:			Georgia:		
Little Rock.....	4		Atlanta.....	23	22
North Little Rock.....	1		Augusta.....	3	1
California:			Macon.....	12	
Eureka.....		1	Rome.....	4	
Long Beach.....		2	Savannah.....		6
Los Angeles.....	79	23	Illinois:		
Oakland.....	17	5	Alton.....		1
Pasadena.....		5	Aurora.....	11	4
Richmond.....		1	Bloomington.....		4
Sacramento.....	5	1	Blue Island.....	1	
San Bernardino.....	2	1	Champaign.....	2	
San Diego.....		6	Chicago.....	473	163
San Jose.....		1	Cicero.....	6	3
Santa Cruz.....		3	Decatur.....	7	3
Stockton.....		3	East St. Louis.....		3
Colorado:			Elgin.....		1
Denver.....		23	Evanston.....	6	
Pueblo.....		4	Forest Park.....	1	
Connecticut:			Freeport.....		5
Bridgeport.....	9	7	Galesburg.....	1	
Hartford.....	8	2	Jacksonville.....		4
Manchester.....	3		Kewanee.....	2	1
New Haven.....		11	La Salle.....	1	
Norwich.....		1	Mattoon.....	4	1
District of Columbia:			Oak Park.....	6	2
Washington.....		37	Peoria.....		4

CITY REPORTS FOR WEEK ENDED MARCH 10, 1923—Continued.

PNEUMONIA (ALL FORMS)—Continued.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Illinois—Continued.			Massachusetts—Continued.		
Quincy.....	9	1	Pittsfield.....		2
Rockford.....		10	Plymouth.....		1
Springfield.....	7	6	Quincy.....	5	3
Indiana:			Salem.....	7	1
Anderson.....		3	Saugus.....		1
Bloomington.....		1	Somerville.....	6	3
East Chicago.....		3	Southbridge.....		1
Fort Wayne.....		5	Springfield.....	13	7
Frankfort.....		1	Taunton.....		7
Gary.....		2	Wakefield.....	1	
Hammond.....		2	Waltham.....	2	1
Indianapolis.....		28	Watertown.....		3
Kokomo.....		1	Webster.....	2	1
La Fayette.....		1	Winthrop.....	3	2
Logansport.....		1	Worcester.....		18
Michigan City.....		1	Michigan:		
Muncie.....		5	Ann Arbor.....	2	
South Bend.....		1	Battle Creek.....	3	
Terre Haute.....		1	Benton Harbor.....		1
Iowa:			Detroit.....	73	60
Burlington.....	3	1	Flint.....		14
Council Bluffs.....		4	Grand Rapids.....	9	5
Marshalltown.....	1		Hamtramck.....		2
Muscatine.....	1		Highland Park.....	3	2
Kansas:			Holland.....	1	
Fort Scott.....		4	Jackson.....	4	3
Hutchinson.....	5		Kalamazoo.....	7	4
Kansas City.....	7		Marquette.....	1	
Lawrence.....		1	Muskegon.....	1	
Leavenworth.....	3		Pontiac.....		4
Parsons.....		2	Fort Huron.....	1	
Topeka.....		6	Saginaw.....		6
Wichita.....		7	Sault Ste. Marie.....		1
Kentucky:			Minnesota:		
Covington.....		4	Duluth.....	13	4
Louisville.....	39	18	Faribault.....		2
Louisiana:			Hibbing.....		1
Baton Rouge.....	11	3	Minneapolis.....		13
New Orleans.....	28	26	Rochester.....	1	
Maine:			St. Paul.....		18
Auburn.....		1	Winona.....		2
Bangor.....		2	Missouri:		
Biddeford.....		5	Kansas City.....	26	25
Lewiston.....	2	1	St. Joseph.....		8
Portland.....	10	5	Springfield.....		6
Sanford.....		2	Montana:		
Maryland:			Billings.....		1
Baltimore.....	159	66	Butte.....		3
Cumberland.....	3	2	Great Falls.....		1
Frederick.....	4	1	Helena.....		1
Massachusetts:			Missoula.....	9	1
Arlington.....		1	Nebraska:		
Attleboro.....	2		Omaha.....		24
Boston.....	38	49	New Hampshire:		
Cambridge.....	9	6	Berlin.....		1
Chelsea.....		2	Concord.....		3
Chicopee.....		2	Kcene.....		1
Clinton.....		1	Nashua.....		1
Easthampton.....	5	1	New Jersey:		
Everett.....	3		Atlantic City.....		4
Fall River.....		10	Bayonne.....	2	
Fitchburg.....	3	1	Bellville.....		
Frammingham.....		3	Bloomfield.....	2	
Gardner.....		2	Clifton.....	3	
Haverhill.....	10	2	East Orange.....		2
Holyoke.....		14	Elizabeth.....		17
Lawrence.....	1		Englewood.....	5	
Lowell.....		12	Garfield.....	4	1
Lynn.....	5	3	Hackensack.....		4
Malden.....		3	Harrison.....	1	
Medford.....		1	Hoboken.....		8
Melrose.....		1	Jersey City.....	13	
Methuen.....	1		Kearny.....	6	2
Milford.....		1	Long Branch.....	3	
New Bedford.....		18	Morristown.....		4
Newburyport.....		2	Newark.....	102	22
Newton.....	5	4	Orange.....	5	4
North Adams.....		2	Passaic.....		4
Northampton.....		1	Paterson.....	7	
Peabody.....		1	Perth Amboy.....		1

CITY REPORTS FOR WEEK ENDED MARCH 10, 1923—Continued.

PNEUMONIA (ALL FORMS)—Continued.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
New Jersey—Continued.			Ohio—Continued.		
Phillipsburg.....		1	Springfield.....		3
Plainfield.....	13	4	Toledo.....		13
Summit.....		3	Youngstown.....		9
Trenton.....	8	2	Zanesville.....		2
West Hoboken.....		3	Oklahoma:		
West New York.....		1	Oklahoma.....		13
West Orange.....	1		Oregon:		
New Mexico:			Portland.....		13
Albuquerque.....		3	Pennsylvania:		
New York:			Philadelphia.....	175	112
Albany.....	21		Rhode Island:		
Amsterdam.....	3	1	Cumberland.....	5	
Auburn.....	5	4	Newport.....		1
Buffalo.....	52	18	Pawtucket.....		8
Dunkirk.....	12	2	Providence.....		28
Glens Falls.....		2	Woonsocket.....		3
Hornell.....	4	2	South Carolina:		
Hudson.....	4	2	Charleston.....		4
Ithaca.....	6	4	South Dakota:		
Jamestown.....	7	1	Sioux Falls.....		3
Lackawanna.....		2	Tennessee:		
Little Falls.....		1	Memphis.....		24
Mount Vernon.....	9	3	Nashville.....		4
New York.....	809	399	Texas:		
Newburgh.....		3	Beaumont.....		2
Niagara Falls.....	6	2	Corpus Christi.....	1	
North Tonawanda.....		1	Dallas.....		11
Olean.....	1		Fort Worth.....		5
Peekskill.....	2		Galveston.....		5
Rochester.....	57	25	Houston.....		7
Rome.....	2	1	San Angelo.....		1
Saratoga Springs.....	4		San Antonio.....		8
Schenectady.....	13	10	Waco.....		1
Syracuse.....	14	4	Utah:		
Troy.....		11	Salt Lake City.....		5
Watertown.....	5	2	Vermont:		
White Plains.....	10	3	Burlington.....		1
Yonkers.....	12	8	Virginia:		
North Carolina:			Alexandria.....	1	
Greensboro.....		1	Lynchburg.....		2
Rocky Mount.....		2	Norfolk.....		11
Wilmington.....		2	Petersburg.....		1
Winston-Salem.....		2	Richmond.....		14
Ohio:			Roanoke.....	2	1
Akron.....	11		West Virginia:		
Ashtabula.....		1	Bluefield.....		1
Barberton.....		1	Charleston.....		3
Bucyrus.....		1	Clarksburg.....		1
Cambridge.....		1	Huntington.....		3
Canton.....	3	2	Morgantown.....	1	
Cincinnati.....		12	Parkersburg.....		1
Cleveland.....	72	40	Wheeling.....		11
Columbus.....		11	Wisconsin:		
Dayton.....	2		Ashland.....		1
East Cleveland.....	3	2	Beloit.....		1
East Youngstown.....		2	Eau Claire.....	1	
Findlay.....		4	Janesville.....		3
Freemont.....	1		Kenosha.....		6
Hamilton.....		5	Madison.....	6	3
Kenmore.....	1		Marinette.....		3
Lima.....		6	Milwaukee.....	11	
Mansfield.....	8	3	Oshkosh.....		2
Middletown.....	3	2	Racine.....		2
Newark.....		2	Superior.....		3
Piqua.....		2	Wyoming:		
Salem.....		1	Cheyenne.....		1
Sandusky.....		3			

CITY REPORTS FOR WEEK ENDED MARCH 10, 1923—Continued.

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 Mar. 10, 1923.		City.	Median for previous years.	Week ended Mar. 10, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
Illinois:				New York:			
Chicago.....	1	1	.....	Dunkirk.....		1	.....
Iowa:				New York.....	0	1	.....
Burlington.....	0	1	.....	Pennsylvania:			
New Jersey:				York.....	0	1	.....
Bloomfield.....	0	1	.....			

RABIES IN ANIMALS.

City.	Cases.	City.	Cases.
California:		North Carolina:	
Los Angeles.....	22	Greensboro.....	1
Pasadena.....	2	Tennessee:	
Georgia:		Memphis.....	3
Savannah.....	1	Texas:	
Massachusetts:		Dallas.....	3
Saugus.....	1		
New Jersey:			
Orange.....	1		

SCARLET FEVER.

See p. 702; also Current State summaries, p. 690, and Monthly summaries by States, p. 694.

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 Mar. 10, 1923.		City.	Median for previous years.	Week ended Mar. 10, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
Arkansas:				Minnesota:			
Fort Smith.....	1	1	.....	Duluth.....	1	3	.....
California:				Faribault.....	0	2	.....
Los Angeles.....	1	2	.....	Minneapolis.....	23	10	.....
Oakland.....	1	3	.....	Rochester.....	2	1	.....
Stockton.....	0	1	.....	St. Paul.....	12	7	.....
Colorado:				Missouri:			
Denver.....	9	2	.....	St. Louis.....	4	2	.....
Florida:				North Carolina:			
St. Petersburg.....		1	.....	Durham.....	0	1	.....
Georgia:				Greensboro.....	0	2	.....
Atlanta.....	5	2	.....	Wilmington.....	0	1	.....
Augusta.....	13	2	.....	Winston-Salem.....	1	31	.....
Idaho:				Ohio:			
Boise.....	0	1	.....	Columbus.....	0	21	.....
Illinois:				Dayton.....	2	1	.....
Aurora.....	0	1	.....	Lima.....	2	1	.....
Indiana:				Middletown.....	1	2	.....
Anderson.....	0	1	.....	Toledo.....	8	2	.....
Fort Wayne.....	1	5	.....	Youngstown.....	5	2	.....
Gary.....	1	10	.....	Oklahoma:			
Hammond.....	0	1	.....	Oklahoma.....	8	3	.....
Muncie.....	1	1	.....	Oregon:			
Iowa:				Portland.....	9	11	.....
Cedar Rapids.....	7	1	.....	Pennsylvania:			
Kansas:				Philadelphia.....	0	1	.....
Coffeyville.....	0	1	.....	York.....	0	2	.....
Michigan:				South Carolina:			
Battle Creek.....	0	1	.....	Greenville.....	0	1	.....
Detroit.....	5	2	.....	Tennessee:			
Highland Park.....	1	3	.....	Memphis.....	8	1	.....

CITY REPORTS FOR WEEK ENDED MARCH 10, 1923—Continued.

SMALLPOX—Continued.

City.	Median for previous years.	Week ended Mar. 10, 1923.		City.	Median for previous years.	Week ended Mar. 10, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
Texas:				Washington:			
Dallas.....	11	1	.....	Seattle.....	3	20	.....
Fort Worth.....	2	2	.....	Vancouver.....	0	1	.....
Waco.....	2	1	.....	West Virginia:			
Utah:				Huntington.....	0	2	.....
Salt Lake City.....	5	1	.....	Wisconsin:			
Vermont:				Asbland.....	.....	1	.....
Burlington.....	0	1	.....	Racine.....	0	1	.....
Virginia:				Superior.....	2	10	.....
Roanoke.....	1	3	.....			

TETANUS.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
California:			Minnesota:		
Los Angeles.....	1	1	Minneapolis.....	2	2
Florida:			Missouri:		
Key West.....	.....	1	Springfield.....	.....	1
Illinois:			St. Louis.....	1	1
Chicago.....	1	.....	Texas:		
Maryland:			Fort Worth.....	1	1
Baltimore.....	.....	1			

TUBERCULOSIS.

See p. 702; also Current State summaries, p. 690.

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 Mar. 10, 1923.		City.	Median for previous years.	Week ended Mar. 10, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				New Jersey:			
Birmingham.....	1	2	2	East Orange.....	0	1	.....
California:				Jersey City.....	0	1	.....
Oakland.....	0	2	.....	Trenton.....	0	1	.....
District of Columbia:				New York:			
Washington.....	1	2	.....	Buffalo.....	1	1	1
Florida:				Middletown.....	0	1	.....
Tampa.....	1	4	2	New York.....	8	7	1
Georgia:				Rochester.....	0	2	1
Albany.....	0	1	.....	Syracuse.....	0	1	.....
Atlanta.....	0	1	.....	North Carolina:			
Savannah.....	0	1	.....	Raleigh.....	0	1	.....
Illinois:				Ohio:			
East St. Louis.....	0	.....	1	East Cleveland.....	0	1	.....
Kentucky:				Toledo.....	2	1	.....
Covington.....	0	2	.....	Oregon:			
Louisiana:				Portland.....	0	1	.....
New Orleans.....	2	2	.....	Pennsylvania:			
Maine:				Braddock.....	0	1	.....
Lewiston.....	0	1	.....	New Kensington.....	0	1	.....
Maryland:				Washington.....	0	1	.....
Baltimore.....	3	3	.....	Rhode Island:			
Massachusetts:				Providence.....	0	1	.....
Chelsea.....	0	2	.....	South Carolina:			
Lawrence.....	0	1	.....	Columbia.....	0	1	.....
Lynn.....	0	1	.....	Washington:			
Southbridge.....	0	2	.....	Tacoma.....	0	1	.....
Worcester.....	0	.....	1	West Virginia:			
Michigan:				Charleston.....	0	1	.....
Detroit.....	4	3	1	Fairmont.....	0	2	.....
Minnesota:				Martinsburg.....	0	1	.....
Minneapolis.....	0	1	.....	Wisconsin:			
St. Paul.....	0	1	.....	Kenosha.....	0	1	.....

CITY REPORTS FOR WEEK ENDED MARCH 10, 1923—Continued.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

City.	Popula- tion Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Alabama:										
Birmingham.....	178,806	78	2		25		2		21	6
Mobile.....	60,777	18							1	1
Tuscaloosa.....	11,996				4		2			
Arkansas:										
Fort Smith.....	28,870		2		1					
Hot Springs.....	11,995	3								
Little Rock.....	65,142		1		39			4		
North Little Rock.....	14,048				45					
California:										
Alameda.....	28,806	4	1				2			
Bakersfield.....	18,638	6			2					
Eureka.....	12,923	6					5		1	
Glendale.....	13,536	7				1				
Long Beach.....	55,593	24	2		15		1			1
Los Angeles.....	576,673	220	70		168		43		86	28
Oakland.....	216,261	72	8		22		9		7	1
Pasadena.....	45,354	19	4		4		6		1	
Richmond.....	16,843	6								
Riverside.....	19,341	9			2		2			1
Sacramento.....	65,908	24			1		2		1	3
San Bernardino.....	18,721	8					1			
San Diego.....	74,683	28	3		122		10		7	3
San Jose.....	39,642	14								1
Santa Ana.....	15,485	1			8					
Santa Barbara.....	19,441	3								
Santa Cruz.....	10,917	6								
Stockton.....	40,296	15	2	1	8		5			1
Colorado:										
Denver.....	256,491	90	36	2	22		32			9
Pueblo.....	43,050	14	4	1	1		1			1
Trinidad.....	10,906				1		1			
Connecticut:										
Bridgeport.....	143,555	37	8		47	3	17		6	2
Fairfield (town).....	11,475	1			14		1			
Greenwich (town).....	22,123						1			
Hartford.....	138,036	40	12	1			5		3	1
Manchester (town).....	18,370	4							1	
Meriden (city).....	29,867		1	1					3	
Milford (town).....	10,193	2					1			
New Haven.....	162,537	44	1		17		6		11	1
New London.....	25,688	11			9		1			
Norwich (town).....	29,685	5	1							
District of Columbia:										
Washington.....	437,571	196	8		198	3	33	1	29	16
Florida:										
Key West.....	19,749	9			1					2
St. Petersburg.....	14,237	11			3		1			
Tampa.....	51,608	20	3		2				1	3
Georgia:										
Albany.....	11,555								1	
Atlanta.....	200,616	87	5		3		3			9
Augusta.....	52,548	24			1		3			
Brunswick.....	14,413	3								
Macon.....	52,995		2		400		1		2	
Savannah.....	85,252	37			1		3		2	4
Valdosta.....	10,783	2								
Idaho:										
Boise.....	21,393	1					1			
Illinois:										
Alton.....	24,682	6	1		6					
Aurora.....	26,397	15	9		1		1		1	
Bloomington.....	28,725	13	1		1		2		2	
Blue Island.....	11,424	1								
Centralia.....	12,491	1					1			
Champaign.....	15,873	4	1		13					
Chicago.....	2,701,705	886	149	6	531	6	100	7	195	41
Cicero.....	44,995	7	2		3		2		1	
Decatur.....	43,818	11	2		1		6		4	
East St. Louis.....	66,767	23			33				1	1
Elgin.....	27,454	10	1		3		2		1	
Evanston.....	37,234	15			18		4		2	
Forest Park.....	10,768		1				1			
Freeport.....	19,669	12			2		2			

CITY REPORTS FOR WEEK ENDED MARCH 10, 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	328	38	3	153	1	50	2	20	20
Cumberland.....	29, 837	16	1		48				1	
Frederick.....	11, 066	11	1							
Massachusetts:										
Adams (town).....	12, 967	1			1					
Amesbury (town).....	10, 036	1								
Arlington (town).....	18, 665	9	1		26		1			
Attleboro.....	19, 731	2	1		2				4	1
Belmont (town).....	10, 749	1			1					
Boston.....	748, 060	283	62	3	115	7	76	3	29	13
Braintree (town).....	10, 580	2			18		2			
Brookline.....	37, 748	11	1		3		5			
Cambridge.....	109, 694	32	7		56		12		7	2
Chelsea.....	43, 184	11			11		3		1	
Chicopee.....	36, 214	8	1				2			1
Clinton.....	12, 979	6								
Danvers.....	11, 108		1				2			
Dedham.....	10, 792	3								
Easthampton.....	11, 261	1	1							
Everett.....	40, 120	6			10		4			
Fall River.....	120, 485	41	6		9	1	7		3	4
Fitchburg.....	41, 029	12	2				3			1
Framingham.....	17, 033	6			4		3			
Gardner.....	16, 971	6							1	1
Greenfield.....	15, 462	8					3		1	1
Haverhill.....	53, 884	18	2	1	9		3		1	
Holyoke.....	60, 203	30	1				33			1
Lawrence.....	94, 270	28	4	1	12		6		2	2
Leominster.....	19, 744	8					1			
Lowell.....	112, 759	44	3	1	104	1	7	1		1
Lynn.....	99, 148	24	6		35	1	5		2	1
Malden.....	49, 103	21	2	1	26		5		4	3
Medford.....	39, 038	8			15		6		2	
Melrose.....	18, 204	5	1							
Methuen.....	15, 189	4	1							
Milford.....	13, 471	4	1				9			1
Natick.....	10, 907						4			
New Bedford.....	121, 217	45	4	1	74		2	1	16	1
Newburyport.....	15, 618	8			2					
Newton.....	46, 054	20	1		6		15			
North Adams.....	22, 282	8								
Northampton.....	21, 951	12					6			
Northbridge.....	10, 174	4								
Peabody.....	19, 552	10	1		2		1			
Pittsfield.....	41, 763	12			1		1		1	
Plymouth.....	13, 045	4								
Quincy.....	47, 876	13	1		2		20		1	2
Salem.....	42, 529	1			1		3		3	
Saugus.....	10, 874	2			5					
Somerville.....	93, 091	38	5	1	22		7		3	2
Southbridge.....	14, 245	3	1				1		1	
Springfield.....	129, 614	54	1		4		7		9	3
Taunton.....	37, 137	18			41	1	11		1	1
Wakefield.....	13, 025	4			6					
Waltham.....	30, 915	11	2				6			1
Watertown.....	21, 457	7	1		1		3			
Webster.....	13, 258	4					4		1	
West Springfield.....	13, 443	3								
Westfield.....	18, 604	4	2						1	
Winthrop.....	15, 455				28					
Woburn.....	16, 574	7								
Worcester.....	179, 754	65	4		29		9		6	4
Michigan:										
Alpena.....	11, 101				1		4			
Ann Arbor.....	19, 516	11	3		1		2			1
Battle Creek.....	36, 164		1							
Benton Harbor.....	12, 233	4			2		5			
Detroit.....	998, 678	300	58	6	35		138	4	86	19
Flint.....	91, 599	42	9	3	14		9		4	1
Grand Rapids.....	137, 634	53	5	1	1		12		7	3
Hamtramck.....	48, 615	7	4		3				1	
Highland Park.....	46, 499	7	1		3		11		1	
Holland.....	12, 183						4			

CITY REPORTS FOR WEEK ENDED MARCH 10, 1923—Continued.

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

City.	Popula- tion Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Michigan—Continued.										
Ironwood.....	15,739				1		2			
Jackson.....	48,374	13			1		10		3	2
Kalamazoo.....	48,487	29	6		1		12		2	2
Marquette.....	12,718	3	1				1		1	
Muskegon.....	36,570	7	1		1		2			
Pontiac.....	34,273	12	2				6			
Port Huron.....	25,944	10					1		1	1
Saginaw.....	61,903	28					13		1	1
Sault Ste. Marie.....	12,096	6							1	
Minnesota.										
Duluth.....	98,917	20	8	1	121		3		5	1
Faribault.....	11,089	7					5			
Hibbing.....	15,089	3				18				
Mankato.....	12,469						5			
Minneapolis.....	380,582	106	6	2	41		53	2	13	5
Rochester.....	13,722	23								
St. Cloud.....	15,873						1			
St. Paul.....	234,698	84	11	2	135		47	1	9	6
Winona.....	19,143	15					1			2
Missouri:										
Cape Girardeau.....	10,252	7							1	1
Independence.....	11,686		1							
Joplin.....	29,902				1					
Kansas City.....	324,410	137	8		31	2	8		15	12
St. Joseph.....	77,939	27	2		1		1			
St. Louis.....	772,897	262	41		524	2	22	2	23	9
Springfield.....	39,631	25								3
Montana:										
Anaconda.....	11,668	1								
Billings.....	15,100	7	1				1			
Butte.....	41,611	12		2						3
Great Falls.....	24,121	5	1				1			
Helena.....	12,037	2								
Missoula.....	12,668	7					4			
Nebraska:										
Lincoln.....	54,948	20			1		2		2	
Omaha.....	191,601	72	5	2	1		2			7
Nevada:										
Reno.....	12,016	2			1					
New Hampshire:										
Berlin.....	16,104	10	1							
Concord.....	22,167	12			1					
Dover.....	13,029	2								
Keene.....	11,210	1	1				2			
Nashua.....	28,379	7							3	1
New Jersey:										
Asbury Park.....	12,400	4			1					
Atlantic City.....	50,707	11	2		43		5		1	
Bayonne.....	76,754		3						2	
Belleville.....	15,660		1		4		1			
Bloomfield.....	22,019	7			9		3			
Clifton.....	26,470	4			18		2			
East Orange.....	50,710	11	1		31		5		1	
Elizabeth.....	95,783		14	2	13		9	1	1	3
Englewood.....	11,627	3			23		2			
Garfield.....	19,381	9			6					
Hackensack.....	17,667	10					2			
Harrison.....	15,721				3				1	
Hoboken.....	68,166	23	2		4		2		1	1
Jersey City.....	298,103		14		3		17		17	
Kearny.....	26,724	16	1		15		1			
Long Branch.....	13,521	3							1	
Montclair.....	28,810	8			10		4		1	
Morristown.....	12,548	10					2			
Newark.....	414,524	143	7	1	157	2	23		31	18
Orange.....	33,268	14			19				1	1
Passaic.....	63,841	21	3		17		6		1	3
Paterson.....	135,875		14		8		12		4	
Perth Amboy.....	41,707	6	1				3			
Phillipsburg.....	16,923	9								
Plainfield.....	27,700	10			7		2			
Summit.....	10,174	5								
Trenton.....	119,289	51	17	1	2		17	1	3	7

CITY REPORTS FOR WEEK ENDED MARCH 10, 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 Jersey—Continued										
Union (town).....	20,651		2				2		2	
West Hoboken.....	40,074	12	3		1		1			3
West New York.....	29,926	4							2	
West Orange.....	15,573	1	2		16					
New Mexico:										
Albuquerque.....	15,157	11	2						3	4
New York:										
Albany.....	113,344		1		1				7	
Amsterdam.....	33,524	3	4		2		1		1	
Auburn.....	36,192	15	3		4		1			
Buffalo.....	506,775	167	12	2	313	3	30	1	21	13
Dunkirk.....	19,326	6					3			1
Geneva.....	14,648	3								
Glens Falls.....	16,638	3								
Hornell.....	15,025	3			2					
Hudson.....	11,745	8								
Ithaca.....	17,004	12								
Jamestown.....	38,917	12			2		2		1	
Lackawanna.....	17,918	5	4		1		2			
Little Falls.....	13,029	5							1	
Lockport.....	21,308	10								1
Middletown.....	18,420				2		1			
Mount Vernon.....	42,726	10			1		2		3	1
New York.....	5,620,048	1,963	191	15	337	5	318	3	1,283	1,105
Newburgh.....	30,366	17	3						1	1
Niagara Falls.....	59,760	17	1				1			
North Tonawanda.....	15,482	4			4					1
Olean.....	20,506	5	2		65		20			
Peekskill.....	15,368	5			8		7		1	1
Rochester.....	295,750	96	7	1	72		9		14	4
Rome.....	28,341	18	1				2			1
Saratoga Springs.....	13,181	3								
Schenectady.....	88,723	35	3		12		11		2	1
Syracuse.....	171,717	60	8		6		18		6	2
Troy.....	72,013	23	5				1		3	1
Watertown.....	31,285	5			1		2			1
White Plains.....	21,031	14					9			
Yonkers.....	100,176	33	3		8		13	1		1
North Carolina:										
Durham.....	21,719	5	3		54				2	
Greensboro.....	15,861	10			3		1			
Raleigh.....	24,418	16			69					1
Rocky Mount.....	12,742	4								
Salisbury.....	13,584	2								
Wilmington.....	33,372	13	2		1					1
Winston-Salem.....	48,395	23								2
North Dakota:										
Fargo.....	21,961	0	1				3			
Grand Forks.....	14,010						2			
Ohio:										
Akron.....	208,435	55	4		10		11		2	
Ashtabula.....	22,062	8								1
Barberton.....	14,811	5			1		4			
Bucyrus.....	14,425	3			7					
Cambridge.....	10,104	7					3		1	
Canton.....	8,091	18					4			1
Cincinnati.....	401,247	120	16	1	15		13	1	19	10
Cleveland.....	796,841	204	34		270	4	131	7		16
Cleveland Heights.....	15,236				22		7			
Columbus.....	237,031	92	4		121	1	11		15	6
Coshocton.....	10,847		1							
Dayton.....	152,559	51	8		4		8		8	
East Cleveland.....	27,292	8	1		98		5		2	
East Youngstown.....	11,237	2								
Findlay.....	17,021	11			43					
Fremont.....	12,468	3			1					
Hamilton.....	39,675	15			2		1			
Kenmore.....	12,633						3			
Lancaster.....	14,706	9			1				1	1
Lima.....	41,323	15					2			1
Lorain.....	37,295		7		23		8			
Mansfield.....	27,824	15			29				2	2

¹Pulmonary only.

CITY REPORTS FOR WEEK ENDED MARCH 10, 1923—Continued.
DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Ohio—Continued.										
Marion.....	27,891		3		1		2		3	
Martins Ferry.....	11,634	2								
Middletown.....	23,594	10					1		2	1
Newark.....	26,718	12			4					2
Niles.....	13,080	1		1	5			1		
Norwood.....	24,966	0					1			
Piqua.....	15,044	11			1		1			1
Salem.....	10,305		2	1						
Sandusky.....	22,897	9			17	1	2		2	
Springfield.....	60,840	16			82		1		1	
Staubenville.....	28,908	10					2			
Toledo.....	243,164	80	5	1	61	1	28		1	6
Youngstown.....	132,358	20	21		13		4		2	2
Zanesville.....	29,569	10	1		2		1		3	1
Oklahoma:										
Oklahoma.....	91,295	35	1	1						
Oregon:										
Portland.....	258,288	70	3				5		11	7
Pennsylvania:										
Allentown.....	73,502		6		134		7			
Altoona.....	60,531		1		79		1			
Ambridge.....	12,730				2				1	
Beaver Falls.....	12,802		1		2					
Bethlehem.....	50,358		7		88		6			
Braddock.....	20,879		1							
Bradford.....	15,525				20					
Bristol.....	10,273		1		1		1			
Butler.....	23,778				13				2	
Canonsburg.....	10,632								1	
Carbondale.....	18,640									
Carlisle.....	10,916		1		1		3			
Carnegie.....	11,516				3					
Carrick.....	10,504								3	
Chambersburg.....	13,171				22		4			
Chester.....	58,030		1		26		6			
Coatesville.....	14,515				1					
Columbia.....	10,836				26					
Connellsville.....	13,804				2					
Dickson.....	11,049				2				1	
Donora.....	14,131				26					
Dubois.....	13,681				3		1			
Duquesne.....	19,011		1		1					
Easton.....	33,313				38		1			
Erie.....	93,372		5		4		4		1	
Farrell.....	15,236				2		2			
Greensburg.....	15,033		1		2					
Harrisburg.....	75,917		2		267		7			
Hazleton.....	32,277		2		1					
Homestead.....	20,452		1		8				5	
Jeannette.....	10,627				22					
Johnstown.....	67,327		3		5		16		3	
Lancaster.....	53,150		2		208		5			
Lebanon.....	24,643		2		17		2			
McKees Rocks.....	16,713						10			
McKeesport.....	46,781				4				1	
Mahanoy City.....	15,599		3							
Monessen.....	18,179		1		1		1			
Mount Carmel.....	17,469		1				2			
Nanticoke.....	22,614				7					
New Castle.....	44,938						1			
New Kensington.....	11,987				2					
Norristown.....	32,319		2		8					
North Braddock.....	14,928		2		3					
Oil City.....	21,274		3		68					
Philadelphia.....	1,823,779	685	70	12	260	14	57	1	79	47
Phoenixville.....	10,484				4		2			
Pittsburgh.....	588,343		25		468		26		17	
Pittston.....	18,497				3					
Plymouth.....	16,500		1				1			
Pottstown.....	17,431				95					
Pottsville.....	21,876		2		3		1			
Reading.....	107,784		5		97		2		2	
Scranton.....	137,783		2		24		1		9	

CITY REPORTS FOR WEEK ENDED MARCH 10, 1923—Continued.

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

City.	Popula- tion Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Pennsylvania—Continued.										
Shamokin.....	21,204		1		6					
Sharon.....	21,747				26					
Sherandoah.....	24,726		1		1					
Steelton.....	13,428				1					
Sunbury.....	15,721		1							
Swissvale.....	10,908		3		6					
Tamaqua.....	12,363						6			
Uniontown.....	15,692				21				1	
Warren.....	14,272						2			
Washington.....	21,480				6					
West Chester.....	11,717				5					
Wilkes-Barre.....	73,833		4		5		3		2	
Wilkinsburg.....	24,403				58					
Williamsport.....	36,198		5							
Woodlawn.....	12,495				6					
York.....	47,512		2		29		4			
Rhode Island:										
Cranston.....	29,407		8		3		1			
Cumberland (town).....	10,077		0	2	10					
East Providence (town).....	21,793				51					
Newport.....	30,255		4		10					1
Pawtucket.....	64,248		2		4					
Providence.....	237,595	106	13		250	9	6			3
Woonsocket.....	43,496	11								1
South Carolina:										
Charleston.....	67,957	24					1			2
Columbia.....	37,524	28	1		2					
Greenville.....	23,127	4								
South Dakota:										
Sioux Falls.....	25,202		9	4	1		4			
Tennessee:										
Memphis.....	162,351	67	10	1	172		1		13	4
Nashville.....	118,342	52	1		121	4	2		2	3
Texas:										
Beaumont.....	40,422	9								
Corpus Christi.....	10,522	3								
Corsicana.....	11,356	1	2							
Dallas.....	158,976	47			3				7	2
Fort Worth.....	106,482	25	4		1				10	3
Galveston.....	44,255	15	2		1					
Houston.....	138,276	52	4				2			5
San Angelo.....	10,030	7								2
San Antonio.....	161,379	63	1	1					3	7
Waco.....	38,500	11			30					2
Utah:										
Salt Lake City.....	118,110	40			10		1			4
Vermont:										
Barre.....	10,008				1		1			
Burlington.....	22,779	6								1
Virginia:										
Alexandria.....	18,060	3								
Charlottesville.....	10,688	5	1							
Lynchburg.....	30,070	12	1		179				1	1
Norfolk.....	115,777	1	1		9				9	4
Petersburg.....	31,012	10			4		1		1	
Richmond.....	171,667	81	1		21		9		9	6
Roanoke.....	50,842	12	1		85		2		2	
Washington:										
Seattle.....	315,312		3				9		14	
Tacoma.....	96,965		4				5		2	
West Virginia:										
Bluefield.....	15,282		6	4	10	1				
Charleston.....	39,608	20			2				1	
Clarksburg.....	27,869	9	1							
Fairmont.....	17,851		2		3		3			
Huntington.....	50,177	21	1		5		1		3	
Martinsburg.....	12,515		1		1		1			
Morgantown.....	12,127				24					
Moundsville.....	10,669		4	1						
Parkersburg.....	20,050		10							
Wheeling.....	56,208	33	2		119	1	1		1	3

FOREIGN AND INSULAR.

BOLIVIA.

Mortality—La Paz, 1922.

The crude death rate for La Paz, Bolivia, for the year 1922 is reported to be 25.8 per 1,000 population, pulmonary tuberculosis being the principal cause of death among adults, and smallpox and whooping cough among children. (Estimated population, 125,000.)

BRAZIL.

Yellow Fever—Bahia.

During the two weeks ended February 10, 1923, yellow fever was reported present at Bahia, Brazil, with 13 reported cases and three deaths.

CANADA.

Communicable Diseases—Ontario—February, 1923 (Comparative).

Communicable diseases were reported in the Province of Ontario, Canada, during the month of February, 1923, as follows:

Disease.	February, 1923.		February, 1922.	
	New cases.	Deaths.	New cases.	Deaths.
Cerebrospinal meningitis.....	11	9	6	6
Chancroid.....	1	.....	3	.....
Diphtheria.....	156	21	405	33
Gonorrhoea.....	84	.....	138	.....
Influenza.....	.....	335	.....	.....
Measles.....	708	7	541	1
Pneumonia.....	.....	756	.....	289
Pneumonia, influenzal.....	.....	83	.....	41
Polomyelitis (infantile paralysis).....	8	.....	.....	2
Scarlet fever.....	309	13	610	17
Smallpox.....	23	.....	185	.....
Syphilis.....	100	.....	181	.....
Tuberculosis.....	173	137	177	117
Typhoid fever.....	65	4	31	5
Whooping cough.....	402	30	158	5

Population, estimated, 2,523, 200.

CHILE.

Movement at Quarantine—Year 1922—Antofagasta.

The following report of infectious diseases treated at the quarantine hospital at Antofagasta, Chile, during the year 1922, has been received: *Plague*—Month of March, one case; May, one case. *Typhus fever*—Month of October, one fatal case, arrived by steamship from Valparaiso, Chile; November, seven cases; December, nine cases. Remaining under treatment December 31, 1922, three cases.

CUBA.

Communicable Diseases.

Communicable diseases have been notified in Habana, Cuba, as follows:

Disease.	Mar. 1-10, 1923.		Re- main- ing under treatment Mar. 10, 1923.
	New cases.	Deaths.	
Chicken pox.....	15	.....	14
Diphtheria.....	3	3	3
Leprosy.....	.....	.....	10
Malaria.....	22	.....	1 26
Measles.....	1	.....	2
Typhoid fever.....	8	4	1 16

¹ From the interior, 23.

² From the interior, 9.

ESTHONIA.

Disease Prevalence—Year 1922.

The following statement in regard to disease prevalence in Esthonia during the year 1922 is based on statistics furnished by the Esthonian Public Health Service:

Diphtheria, 523 cases; *measles*, 3,018 cases; *scarlet fever*, 541 cases; *tuberculosis*, 1,615 new cases; *typhoid fever*, 739 cases, of which 210 occurred in one locality; *typhus fever*, 159 cases. Of the typhus fever cases, 140 appeared at Narva, indicating importation from Russia. Recurrent typhus was reported with 91 cases, of which 83 occurred at Narva.

Dysentery—Syphilis.

Dysentery was reported during the year 1923 with 389 cases; 737 cases of syphilis were reported. The registration of cases of syphilis was stated to have been greatly extended during the year. (Population, officially estimated, 1,109,479.)

GREECE.

Influenza Mortality—Athens.

Two deaths from influenza were reported at Athens, Greece, during the month of October, 1922. During the four-week period ended December 13, 1922, 6 deaths from influenza were reported; for the four-week period ended January 13, 1923, 19 deaths; for the period from January 14 to February 13, 26 deaths.

GUADELOUPE (WEST INDIES).**Quarantine Against Guadeloupe Removed at Trinidad.**

Under date of March 6, 1923, quarantine restrictions imposed at the island of Trinidad, West Indies, against arrivals from the island of Guadeloupe, were stated to have been removed February 12, 1923, the disease prevalent at Guadeloupe, on account of which the restrictions were imposed, having been declared to be chicken pox.¹

JAMAICA.**"Alastrim."**

During the two weeks ended February 24, 1923, 75 new cases of "alastrim" were reported in the island. Of these, 2 cases occurred in the parish of Kingston.²

Typhoid Fever—Kingston and Vicinity.

During the same period 3 cases of typhoid fever were reported at Kingston and 18 cases in the surrounding country.

MALTA.**Trachoma.**

Trachoma has been reported in the island of Malta as follows: January 1-31, 1923, cases, 61; February 1-15, 1923, cases, 157.

MEXICO.**Malaria—Progreso and Vicinity.**

Under date of March 8, 1923, an increase in malaria prevalence was reported at Progreso, Mexico. During January, 1923, the occurrence was estimated at 700 cases with 8 deaths. Prevalence was stated to have decreased in February. The population of Progreso is about 10,000.

In some of the near-by coast villages malaria infection was stated to have been general. The town of Izamal, with 250 inhabitants, showed 50 deaths due to malaria. There was no medical treatment of the cases.

Plague—Plague-Infected Rodent—Tampico.

Two cases of plague with one death were reported at Tampico, Mexico, March 23, 1923. The cases occurred in a locality in which a plague-infected rodent was reported found March 14, 1923.

Smallpox—Vera Cruz.

Under date of March 7, 1923, smallpox was reported present in several sections of the city of Vera Cruz, Mexico.

¹ Reported as "alastrim" in Public Health Reports, Jan. 26, 1923, p. 174, and Feb. 2, 1923, p. 224.

² Public Health Reports, Mar. 23, 1923, p. 651.

PANAMA.

Communicable Diseases—February, 1923.

Communicable diseases were notified for the Panama Canal during the month of February, 1923, as follows:

Disease.	Canal Zone.	Colon.	Panama.	Nonresident.	Total.
Chicken pox.....	6	2	9	1	18
Diphtheria.....	2		9	2	13
Dysentery.....	3	1	2		6
Hookworm disease.....	27	7	19		53
Malaria.....	132		11		143
Measles.....	11	4		8	23
Meningitis.....			1		1
Mumps.....	1			1	2
Pneumonia.....		3	6		9
Tuberculosis.....	5	2	10	4	21

PERU.

Plague—January 1-31, 1923.

During the month of January, 1923, 151 cases of plague with 59 deaths, occurring in 21 localities, were reported in Peru. For distribution of occurrence according to locality, see p. 714.

UNION OF SOUTH AFRICA.

Vital Statistics—Cape Town, 1921-22.

The figures given below are taken from the annual report of the medical officer of health of Cape Town, and are for the year ended June 30, 1922.

Class of population.	Death rate.	Birth rate.	Infant mortality rate.		
			1922	1921	1920
European ¹	11.88	24.21	69.03	101.05	81.31
Non-European.....	27.46	51.65	176.44	237.77	183.76
All classes.....	18.80	36.39	136.93	185.26	145.31

¹ The term "European" means white persons; non-European means blacks, half castes, Malays, Indians, Chinese, etc.

It was stated that communicable diseases were responsible for 22.51 per cent of the total number of deaths, while organic diseases caused 60.86 per cent.

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 March 30, 1923.¹

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India:				
Calcutta.....	Jan. 28-Feb. 3.....	31	28	
Madras.....	Feb. 4-10.....	1	1	
Siam:				
Bangkok.....	Jan. 21-27.....	2		

PLAGUE.

Brazil:				
Bahia.....	Jan. 28-Feb. 3.....	1	1	
Ceylon:				
Colombo.....	do.....	9	12	
Chile:				
Antofagasta.....				Quarantine. Year 1922: March, 1 case; May, 1 case.
Egypt:				Jan. 1-Feb. 8, 1923: Cases, 8; deaths, 5.
Province—				
Assiout.....	Feb. 3-7.....	2	1	
India:				Jan. 21-27, 1923: Cases, 5,223; deaths, 3,960.
Bombay.....	Jan. 21-27.....	5	3	
Karachi.....	Jan. 28-Feb. 10.....	4	4	
Madras Presidency.....	Feb. 4-10.....	478	551	
Rangoon.....	Jan. 28-Feb. 3.....	26	25	
Java:				
East Java—				
Soerabaya.....	Jan. 14-20.....	2	2	
Mexico:				Plague rodent found Mar. 14, 1923.
Tampico.....	Mar. 23.....	2	1	Jan. 1-31, 1923: Cases, 151; deaths, 59.
Peru:				Including districts.
Locality—				At Campina.
Canete.....	Jan. 1-31.....	22	7	District.
Casma.....	do.....	1		
Catacaos.....	do.....	4	1	
Chepen.....	do.....	1		
Chiclayo.....	do.....	18	9	
Guadaloupe.....	do.....	4	1	
Huacho.....	do.....	4	1	
Huara.....	do.....	6		Country estates.
Huaral.....	do.....	3	1	
Lambeyque.....	do.....	9	7	
Lima (City).....	do.....	1	1	
Lima (suburbs).....	do.....	4	2	
Magdalena del Mar.....	do.....	1	1	
Mala.....	do.....	4		
Miraflores.....	do.....	3		
Paita.....	do.....	10	7	
Piura.....	do.....	14	4	
Pueblo Nuevo.....	do.....	10	6	
San Pedro.....	do.....	6	3	
Sullana.....	do.....	1	1	
Trujillo.....	do.....	25	7	District.
Siam:				
Bangkok.....	Jan. 14-27.....	5	4	

SMALLPOX.

Algeria:				
Algiers.....	Feb. 11-20.....	1		
Arabia:				
Aden.....	Feb. 11-17.....	4	1	
Brazil:				
Pernambuco.....	Jan. 21-27.....	1	1	
Canada:				Feb. 1-28, 1923: Cases, 23.
Ontario.....				

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 March 30, 1923—Continued.****SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Canton.....	Feb. 4-10.....			Present.
Foochow.....	Jan. 31-Feb. 10.....			Present. One death among foreign population.
Manchuria—				
Harbin.....	Feb. 5-11.....	1		
Dominican Republic:				
Santo Domingo.....	Feb. 28-Mar. 6....	3		
Egypt:				
Alexandria.....	Feb. 19-25.....	1		
Great Britain:				
Nottingham.....	Feb. 11-24.....	6		
Greece:				
Patras.....	Jan. 21-Feb. 3....		10	
India:				
Bombay.....	Jan. 21-27.....	3	1	
Calcutta.....	Jan. 28-Feb. 3....	8	5	
Karachi.....	Jan. 28-Feb. 10....	8	5	
Madras.....	Feb. 4-10.....	21	10	
Rangoon.....	Jan. 28-Feb. 3....	25	5	
Java:				
West Java—				
Batavia.....	Jan. 27-Feb. 2....	2	1	Province.
Mexico:				
Vera Cruz.....	Mar. 5-11.....	7	1	In several sections.
Portugal:				
Lisbon.....	Jan. 22-Feb. 24....	14	32	
Oporto.....	Feb. 18-24.....		1	
Spain:				
Madrid.....	Jan. 1-31.....		1	
Switzerland:				
Berne.....	Feb. 18-24.....	13		
Zurich.....	do.....	6		

TYPHUS FEVER.

Chile:				
Antofagasta.....				Quarantine station; October, 1922—one fatal case, on vessel from Valparaiso; November, 1922—cases, 7; December, 1922—cases, 9; remaining, Dec. 31—cases, 3.
Egypt:				
Cairo.....	Dec. 25-31.....	4		
Esthonia:				
Narva.....				Year, 1922: Cases, 159; recurrent typhus, 91.
Hungary:				
Budapest.....	Feb. 11-17.....	1		Year, 1922: Cases, 140; recurrent typhus, 83 cases.
Palestine:				
Jaffa.....	Feb. 20-26.....	2		
Union of South Africa:				
Cape Province—				
Port Elizabeth.....	Jan. 28-Feb. 3....	1		

YELLOW FEVER.

Brazil:				
Bahia.....	Jan. 28-Feb. 10....	13	3	

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

Reports Received from December 30, 1922, to March 23, 1923.¹

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Liutaoku.....	Sept. 23.....	60	20	
Chosen (Korea):				
Yalu River Region.....				Sept. 22, 1922; 30 deaths reported.
India.....				Sept. 24-Dec. 30, 1922: Cases, 14,637; deaths, 8,833.
Bombay.....	Oct. 27-Dec. 23.....	2	1	
Calcutta.....	Nov. 12-Dec. 30.....	102	60	
Do.....	Dec. 31-Jan. 27.....	83	48	
Madras.....	Nov. 19-Dec. 16.....	4	2	
Do.....	Jan. 21-27.....	1		
Rangoon.....	Nov. 12-Dec. 23.....	17	10	
Do.....	Dec. 31-Jan. 27.....	3	2	
Philippine Islands:				
Province—				
Laguna.....	Oct. 12-18.....	1		
Russia.....				Jan. 1-Oct. 7, 1922: Cases, 83,367.
Archangel (Government).....	Oct. 1-7.....	7		
Tashkent.....	.....do.....	27		Turkestan Republic: 3 cases reported on waterways.
Ukraine.....				Sept. 1-30, 1922: Cases, 119.
Donetz (Government).....	Sept. 1-30.....	29		
Tchernigov (Government).....	.....do.....	36		
Siam:				
Bangkok.....	Oct. 29-Dec. 23.....	4	1	
Do.....	Dec. 31-Jan. 6.....	1		

PLAGUE.

Azores:				
Fayal Island—				
Castelo Branco.....	Dec. 2-31.....		3	Vicinity of Horta. Dec. 30, 1922: Several cases.
Pico Island—				
Lages.....	Nov. 27-Dec. 15.....		8	1 case present Dec. 15, 1922.
St. Michaels Island.....				Nov. 12-Dec. 30, 1922: Cases, 100; deaths, 35. At localities 3-9 miles from Ponta Delgada.
Ponta Delgada.....	Nov. 26-Dec. 9.....	3		Dec. 31, 1922-Feb. 3, 1923: Cases, 108; deaths, 41. From 6 to 20 miles distant from port of Ponta Delgada.
Brazil:				
Bahia.....	Oct. 29-Dec. 30.....	5	5	
Pernambuco.....	Jan. 14-20.....	3	2	
Porto Alegre.....	Nov. 19-25.....	1		
British East Africa:				
Kenya Colony—				
Tanganyika Territory.....	Oct. 15-Dec. 16.....	12	7	
Ceylon:				
Colombo.....	Nov. 12-Dec. 30.....	46	38	Plague rodents, 16.
Do.....	Dec. 31-Jan. 27.....	25	19	Plague rodents, 12.
China:				
Hongkong.....	Nov. 5-Dec. 23.....	14	12	
Manchuria—				
Harbin.....	Jan. 29-Feb. 4.....	7		
Ecuador:				
Guayaquil.....	Nov. 1-Dec. 31.....	9	3	Rats examined, 16,600; found infected, 72.
Do.....	Jan. 1-Feb. 15.....	11	3	Rats examined, 13,800; found infected, 48.
Egypt.....				Jan. 1-Dec. 28, 1922: Cases, 485; deaths, 228. Jan. 1, 1922-Jan. 4, 1923: Cases, 437; deaths, 228.
City—				Jan. 1-Feb. 8, 1923: Cases, 8; deaths, 5.
Alexandria.....	Nov. 19-25.....	2		
Do.....	Jan. 8-10.....	1	1	
Port Said.....	Nov. 19-27.....	4	2	
Do.....	Jan. 26.....	1		
Suez.....	Nov. 18-Dec. 5.....	3	4	
Province—				
Assiout.....	Nov. 19-Dec. 29.....	4	1	Septicemic: 1 case, 1 death.
Do.....	Jan. 26-Feb. 1.....	4	3	Pneumonic: 3 cases, 3 deaths.
Dakahlich.....	Dec. 3.....	1	1	Pneumonic.
Minieh.....	Nov. 18-27.....	2	1	
Hawaii:				
Honokaa.....				Feb. 8-9, 1923: Plague rats, 3.

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

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

Reports Received from December 30, 1922, to March 23, 1923—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
India				Oct. 1—Dec. 30, 1922: Cases, 25,007; deaths, 18,803. (Report for Nov. 19-25, 1922, not received.)
Bombay.....	Oct. 27—Dec. 30.....	41	32	Dec. 31, 1922—Jan. 20, 1923: Dec. 31, 1922—Jan. 20, 1923: Cases, 13,768; deaths, 10,091.
Do.....	Dec. 31—Jan. 20.....	9	8	
Karachi.....	Dec. 10-16.....	1	1	
Do.....	Dec. 31—Jan. 27.....	4	3	
Madras Presidency.....	Nov. 19—Dec. 30.....	2,269	1,448	
Do.....	Dec. 31—Feb. 3.....	2,020	1,326	
Madras.....	Nov. 19-25.....	1	1	
Do.....	Jan. 21-27.....	1	1	
Rangoon.....	Nov. 12—Dec. 30.....	52	49	
Do.....	Dec. 31—Jan. 27.....	49	42	
Japan:				
Osaka.....				July 1—Nov. 30, 1922: Cases, 70.
Java:				Oct. 1—Nov. 30, 1922: Cases, 900; deaths, 763.
East Java—				
Residencies—				
Pekalongan.....	Dec. 1-31.....	56		
Samarang.....	do.....	202		
Soerabaya.....	Oct. 22—Dec. 31.....	34	14	
Do.....	Jan. 17-23.....	5	3	
Toeloung-Agoeng.....	Oct. 29—Dec. 16.....	18	18	Not a seaport.
Soerakarta—				
Klaten.....	Nov. 4.....			Present in epidemic form.
Madagascar				Jan. 1—Dec. 10, 1922: Cases, 143; Jan. 1-15, 1923: cases, 22.
Diego Suarez.....	Jan. 1-15.....	1		
Province—				
Moramanga.....				To Nov. 12, 1922: Cases, 24; deaths, 21. Cases reported to Oct. 30, pneumonic.
Amparafara region.....	Sept. 18—Nov. 5.....	21		Bubonic, 18; septicemic, 3 (doubtful, 2).
Moramanga.....	Dec. 6-9.....	3		Bubonic.
Tamatave.....	Feb. 10—Sept. 12.....	10		Do.
Miarinarivo.....				Dec. 14, 1922—Jan. 1, 1923: 1 case (European).
Tananarive.....				Jan. 1—Dec. 10, 1922: Cases, 73 (bubonic, 37; pneumonic, 8; septicemic, 28). Jan. 1-15, 1923: Cases, 19.
Ambohimangakeley.....	Nov. 19—Dec. 9.....	9		Bubonic, 3; pneumonic, 3; septicemic, 3.
Anketrina.....	Mar. 27—May 9.....	11		Bubonic, 4; pneumonic, 2; septicemic, 5 (3 doubtful).
Fenoarivo region.....	Oct. 7—Nov. 28.....	16		Bubonic, 3; pneumonic, 8; septicemic, 5.
Tananarive.....	Oct. 23—Dec. 10.....		5	1 septicemic.
Do.....	Dec. 14—Jan. 15.....	13		
Mesopotamia:				
Bagdad.....	Oct. 1—Nov. 30.....	16		
Palestine:				
Jaffa.....	Nov. 27—Dec. 4.....	1		
Peru				Nov. 1—Dec. 31, 1922: Cases, 199; deaths, 93.
Localities—				Including vicinity.
Canete.....	Nov. 16—Dec. 31.....	56	19	Present Nov. 9-15, 1922.
Chepen.....	Dec. 16-31.....	2	1	
Chiclayo (city and country).....	Nov. 16—Dec. 15.....	17	7	
Eten.....	do.....	4		
Guadeloupe.....	Nov. 1—Dec. 31.....	22	12	
Huacho.....	Nov. 16—Dec. 31.....	4	2	
Huaral.....	Nov. 16-30.....	1		
Huarmey.....	Dec. 1-31.....	2	2	
Jayanca.....	Nov. 16—Dec. 31.....	10	8	
Lambayeque.....	do.....	7	3	
Lima (city).....	Nov. 1—Dec. 31.....	11	8	
Lima (country).....	do.....	14	5	
Lurin.....	Dec. 1-15.....	1		
Magdalena del Mar.....	Nov. 16-30.....	1		
Magdalena Vieja.....	Dec. 16-31.....	1	1	
Mala.....	Dec. 1-31.....	2		
Mochumi.....	Dec. 16-31.....	3	3	
Mosche.....	Nov. 16-30.....	2	1	
Paita.....	Dec. 16-31.....	3	2	
Piura.....	Nov. 16—Dec. 31.....	12	7	
Pueblo Nuevo.....	Dec. 1-31.....	7	4	
San Pedro.....	Nov. 1—Dec. 31.....	8	4	
Sullana.....	Nov. 16-30.....	3	3	
Trujillo.....	Nov. 1—Dec. 31.....	3	1	
Tuman.....	Nov. 16-30.....	3		

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

Reports Received from December 30, 1922, to March 23, 1923—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Portugal:				
Lisbon.....	Nov. 10-20.....	4	2	
Oporto.....	Jan. 21-27.....		1	
Portuguese West Africa:				
Angola—				
Loanda.....	Oct. 1-Dec. 30.....		45	Fatal cases among white population.
Siam:				
Bangkok.....	Nov. 12-Dec. 23.....	5	5	
Do.....	Dec. 31-Jan. 13.....	3	3	
Spain:				
Barcelona.....	Nov. 15-Dec. 18.....	1		Sept. 24-Nov. 14, 1922: Cases, 23; deaths, 9.
Malaga.....	Jan. 27.....	3		17 suspected cases.
Straits Settlements:				
Singapore.....	Dec. 17-23.....	2	2	
Do.....	Jan. 21-27.....	1	1	
Syria:				
Beirut.....	Nov. 6-30.....	4	3	
Turkey:				
Constantinople.....	Nov. 22-28.....	2		
Do.....	Jan. 23-Feb. 10.....	2		
Union of South Africa:				
Transvaal—				
Klipfontein Farm.....	Dec. 15.....	2	1	Natives. Jan. 25, 1923: Plague-infected wild rodent found in vicinity.
On vessels:				
S. S. Helcion.....	Dec. 1.....	1		At Thursday Island Quarantine, Australia, from Singapore, Straits Settlements. In Chinese firemen.
S. S. —.....	Dec. 30.....			At Port of London: Plague-infected rats and cats found in grain cargo on vessel from South America.

SMALLPOX.

Algeria:				
Algiers.....	Dec. 1-10.....	1		
Do.....	Jan. 1-31.....	1		
Arabia:				
Aden.....	Nov. 19-Dec. 23.....	7	3	
Do.....	Jan. 7-27.....	1	1	
Brazil:				
Bahia.....	Nov. 5-11.....	1		
Rio de Janeiro.....	Nov. 25-Dec. 30.....	40	15	
Do.....	Dec. 31-Feb. 10.....	31	14	
Sao Paulo.....	Oct. 16-22.....	1	1	
British East Africa:				
Kenya Colony—				
Tanganyika Territory.....	Oct. 8-Dec. 15.....	179	9	
Uganda.....	Sept. 1-30.....	1	1	
Canada:				
Manitoba—				
Winnipeg.....	Dec. 10-30.....	14		
Do.....	Jan. 21-27.....	1		
New Brunswick—				
Northumberland County.....	Jan. 21-Feb. 17.....	8		
Ontario:				
Hamilton.....	Dec. 31-Feb. 24.....	7		
Niagara Falls.....	Dec. 3-30.....	10		
Do.....	Dec. 31-Jan. 12.....	12		
Ottawa.....	Dec. 10-23.....	6		
Do.....	Jan. 7-20.....	10		
Toronto.....	Dec. 10-30.....	2		
Do.....	Feb. 4-10.....	1		
Quebec—				
Quebec.....	Jan. 14-20.....	3		
Saskatchewan—				
Regina.....	Dec. 3-23.....	2		
Ceylon:				
Colombo.....	Nov. 12-Dec. 24.....	9	4	1 case, 1 death outside city.

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

Reports Received from December 30, 1922, to March 23, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Chile:				
Concepcion.....	Oct. 30-Dec. 25.....		7	
Valparaiso.....	Oct. 2-Dec. 26.....	4	54	In hospital, 83 cases.
Do.....	Jan. 9-Feb. 10.....		90	Dec. 31, 1922-Jan. 27, 1923: Deaths, 66. Feb. 16, 1923: 80 cases present (estimated).
China:				
Amoy.....	Nov. 5-Dec. 23.....		3	Nov. 26-Dec. 30, 1922: Present.
Do.....	Jan. 7-Feb. 3.....		5	
Antung.....	Nov. 13-Dec. 10.....	2		
Canton.....	Oct. 1-Nov. 30.....			Prevalent.
Do.....	Jan. 21-27.....			Present.
Chungking.....	Nov. 5-Dec. 30.....			Do.
Do.....	Dec. 31-Jan. 27.....			Do.
Foochow.....	Nov. 12-Dec. 30.....			Do.
Do.....	Dec. 31-Jan. 27.....			Do.
Hankow.....	Dec. 31-Jan. 20.....	4	1	
Hongkong.....	Nov. 5-11.....		1	
Do.....	Dec. 31-Jan. 20.....	3	1	
Manchuria—				
Harbin.....	Nov. 20-Dec. 31.....	13		
Do.....	Jan. 8-21.....	6		
Mukden.....	Nov. 19-Dec. 16.....			Do.
Do.....	Jan. 7-Feb. 3.....			Do.
Nanking.....	Nov. 5-Dec. 23.....			Do.
Do.....	Jan. 7-20.....			Do.
Shanghai.....	Jan. 15-Feb. 4.....	3		Foreign.
Chosen (Korea):				
Chemulpo.....	Oct. 1-Dec. 31.....	135	84	
Do.....	Jan. 1-31.....	26	17	
Fusan.....	Nov. 1-Dec. 31.....	4		
Do.....	Jan. 1-31.....	5		
Gensan.....	Dec. 1-31.....	6	2	
Seoul.....	Oct. 1-Dec. 31.....	19	1	
Do.....	Jan. 1-31.....	35	11	
Colombia:				
Buenaventura.....	Jan. 25-Feb. 20.....	48		Estimated, 50 cases present; type mild; among colored popula- tion.
Cuba:				
Province—				
Camaguey.....	Nov. 11-Dec. 31.....	20		
Matanzas.....	Jan. 1-31.....	2		
Oriente.....	Nov. 21-Dec. 31.....	22		
Do.....	Jan. 1-Feb. 10.....	10		
Santa Clara.....	Dec. 21-31.....	1		
Czechoslovakia:				
Province—				
Bohemia.....	Oct. 1-31.....	1		
Moravia.....	do.....	1		
Slovakia.....	Oct. 1-Nov. 30.....	2		
Dominican Republic:				
Puerto Plata.....	Dec. 14-30.....	2		
Santo Domingo.....	Dec. 3-16.....			Present.
San Pedro de Macoris.....	Jan. 13-19.....	2		
Ecuador:				
Guayaquil.....	Dec. 1-31.....	10		
Do.....	Jan. 1-Feb. 15.....	10		
Egypt:				
Port Said.....	Jan. 21-27.....	1		
Estonia:				
Esthonia.....	Oct. 1-Dec. 31.....	61		
France:				
Paris.....	Dec. 1-10.....	1		
Germany:				
Bremen.....	Dec. 3-9.....	1		
Great Britain:				
Liverpool.....	Dec. 11-17.....	1		From vessel.
London.....	Nov. 26-Dec. 23.....	3		
Nottingham.....	Nov. 19-Dec. 13.....	4		
Do.....	Jan. 7-27.....	5		
Greece:				
Saloniki.....	Nov. 6-Dec. 31.....	6	5	
Do.....	Jan. 15-23.....	3		
Zante.....				Epidemic, Jan. 17, 1923.
Do.....	Jan. 7-14.....	13		

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

Reports Received from December 30, 1922, to March 23, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
India				Nov. 5-Dec. 30, 1922: Cases, 5,783; deaths, 333.
Bombay	Nov. 5-Dec. 30	22	10	
Do.	Dec. 31-Jan. 20	19	10	
Calcutta	Nov. 12-Dec. 30	46	23	
Do.	Dec. 31-Jan. 27	46	25	
Karachi	Nov. 26-Dec. 30	6	6	
Do.	Dec. 31-Jan. 27	14	7	
Madras	Nov. 12-Dec. 30	71	23	
Do.	Dec. 31-Feb. 3	102	32	
Rangoon	Nov. 5-Dec. 30	27	6	
Do.	Jan. 7-27	31	9	
Japan:				
Kobe	Jan. 13-Feb. 16	6	2	
Yokohama	Jan. 22-28	1		
Java:				
East Java— Soerabaya	Nov. 5-11	4		
West Java— Batavia	Nov. 11-Dec. 22	25	1	City and Province.
Latvia.	Oct. 1-Dec. 31	7		
Mesopotamia:				
Bagdad	Oct. 1-Nov. 30	568	361	
Mexico:				
Chihuahua	Dec. 4-17		4	
Do.	Jan. 1-Feb. 28	23	15	
Guadalajara	Dec. 1-31	4		
Do.	Jan. 1-30	15		
Mexico City	Nov. 12-Dec. 23	43		Including municipalities in Federal District.
Do.	Dec. 31-Feb. 17	107		Do.
Nogales	Dec. 10-19		1	
Do.	Dec. 31-Feb. 10		2	
Saltillo	Jan. 28-Feb. 3		1	
San Luis Potosi	Jan. 14-20		1	
Sonora, State				Nov. 1-30, 1922: Present in northern section.
Empalme	Nov. 1-30	4	1	
Torreón	Dec. 1-31		1	
Vera Cruz	Feb. 26-Mar. 4	2	3	
Palestine				Jan. 23-Feb. 19, 1923: Cases, 8; Northern district.
Persia:				
Teheran	Oct. 24-Nov. 24		36	
Peru:				
Callao	Nov. 1-15	2		
Lima (city)	Dec. 1-15	3	1	
Lima (country)	Nov. 1-15	2	1	
Poland				Oct. 1-Dec. 2, 1922: Cases, 103; deaths, 24.
Portugal:				
Lisbon	Nov. 19-Dec. 30	143	34	
Do.	Dec. 31-Feb. 17	121	41	Dec. 25-31, 1922: Deaths, 12.
Oporto	Oct. 15-Dec. 30	24	12	
Do.	Dec. 31-Feb. 17	15	7	Jan. 5-20, 1923: Cases, 22; deaths, 6.
Portuguese West Africa:				
Angola— Loanda	Oct. 27-Nov. 11		10	
Russia:				
Province— Ukraine				Jan.-Sept., 1922: Cases, 8,744.
Spain:				
Corunna	Nov. 26-Dec. 2		1	
Huelva	Nov. 24-Dec. 31		4	
Madrid	Dec. 1-31		1	
Seville	Nov. 27-Dec. 31		32	
Do.	Jan. 1-Feb. 25		15	
Valencia	Nov. 26-Dec. 23	3		
Do.	Dec. 31-Feb. 24	18	1	
Switzerland:				
Berne	Nov. 19-Dec. 30	85		
Do.	Dec. 31-Feb. 17	120		
Lucerne	Jan. 1-31	6		
Zurich	Nov. 19-Dec. 30	19		
Do.	Jan. 14-Feb. 17	30		

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

Reports Received from December 30, 1922, to March 23, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Syria:				
Aleppo.....	Nov. 19-Dec. 23...	38	20	Dec. 3-30, 1922: Present.
Do.....	Dec. 31-Feb. 17...	20	5	
Beirut.....	Dec. 11-20.....	1		Jan. 23-Feb. 3, 1922: Present.
Damascus.....	Nov. 1-Dec. 31...	97	16	
Do.....	Jan. 1-20.....	17		
Tunis:				
Tunis.....	Dec. 1-22.....	2	1	
Do.....	Jan. 22-Feb. 4....	1	1	
Turkey:				
Constantinople.....	Nov. 19-Dec. 16...	122	34	
Do.....	Dec. 31-Feb. 10...	334	120	
Union of South Africa.....				
Cape Province.....				
Do.....	Oct. 29-Dec. 30...			Oct. 1-Dec. 31, 1922: Cases—Colored, 64; deaths, 1; white, cases 4.
Do.....	Dec. 31-Jan. 27...			Oct. 1-Dec. 31, 1922: Cases—Colored, 48; deaths, 1; white, 4 cases.
East London.....	Jan. 7-13.....	2		Outbreaks. Do.
Natal.....				Dec. 1-31, 1922: Cases, 6 (colored).
Orange Free State.....				Dec. 1-31, 1922: Cases, 2 (colored)
Do.....	Jan. 14-20.....			Outbreaks.
Southern Rhodesia.....	Nov. 9-15.....	3		
Transvaal.....				
Do.....	Oct. 29-Dec. 23...			Oct. 1-Dec. 31, 1922: Cases, 10.
Do.....	Dec. 31-Jan. 6....			Outbreaks. Do.
Johannesburg.....	Nov. 1-30.....		1	
Yugoslavia.....				
Serbia.....				
Belgrade.....	Nov. 12-Dec. 31...	10	4	Aug. 1-31, 1922: Cases, 30; deaths, 12. Aug. 1-31, 1922: Cases, 23.
On vessel:				
S. S. Huntress.....	Nov. 11.....	1		At Fremantle, Australia; from Cape Town, South Africa.
S. S. Junin.....	Jan. 13.....	1		At Antofagasta, Chile. Vessel proceeded to Arica, Chile, with patient on board.
S. S. —.....	Dec. 17-23.....	1		At Liverpool.

TYPHUS FEVER.

Algeria:				
Algiers.....	Nov. 11-Dec. 31...	2	1	
Do.....	Jan. 1-31.....	7	2	
Oran.....	Jan. 11-20.....	1	1	
Brazil:				
Pernambuco.....	Dec. 3-9.....	2	2	
Porto Alegre.....	Nov. 19-Dec. 16...	3		
Chile:				
Antofagasta.....	Nov. 12-Dec. 30...	24	5	Nov. 11-Dec. 5, 1922: Cases, 10; deaths, 2.
Do.....	Dec. 31-Jan. 6....	2	1	
Concepcion.....	Oct. 17-Dec. 18...		9	
Do.....	Dec. 26-Jan. 15...		7	
Iquique.....	Jan. 14-23.....		1	
Talcahuano.....	Nov. 12-Dec. 23...	10	6	
Do.....	Jan. 7-Feb. 11...	5	2	
Valparaiso.....	Dec. 3-30.....		9	
Do.....	Dec. 31-Feb. 10...		23	Daily hospital average, 25 cases
China:				
Antung.....	Nov. 13-Dec. 10...	7		
Manchuria—				
Harbin.....	Nov. 20-26.....	7		
Do.....	Jan. 1-23.....	4		
Cuba:				
Matanzas.....	Dec. 25-31.....	1	1	
Czechoslovakia:				
City—				
Prague.....	Nov. 19-25.....	1		
Province—				
Bohemia.....	Nov. 1-30.....	1		
Ruthenia.....	Oct. 1-Dec. 31...	25		
Slovakia.....	Nov. 1-30.....	2		

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

Reports Received from December 30, 1922, to March 23, 1923—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Danzig (Free City).....	Jan. 7-13.....	1		
Egypt:				
Alexandria.....	Nov. 19-Dec. 31....	2	1	
Do.....	Jan. 22-28.....	1		
Cairo.....	Oct. 1-Dec. 23.....	15	9	
Estonia.....				Oct. 1-Dec. 31, 1922: Cases, 6.
Libau.....	Dec. 24-30.....	1		Recurrent typhus: Cases, 10.
Germany:				
Berlin.....	Nov. 26-Dec. 2.....		1	
Coblenz.....	Dec. 10-16.....	1		
Dresden.....	.....do.....	1		
Great Britain:				
Glasgow.....	Jan. 7-Feb. 17.....	4	1	
Greece:				
Corfu Island.....	Feb. 8.....			Present.
Leucadia.....	Jan. 17.....			Do.
Patras.....	Nov. 19-25.....		1	
Do.....	Jan. 1-7.....	3	1	
Piræus.....	Feb. 8.....			Do.
Preveza.....	Jan. 1-7.....			Do.
Saloniki.....	Dec. 18-24.....	3		Among refugees.
Do.....	Jan. 7-28.....	16	3	Refugees.
Zante.....	Jan. 17.....			Present.
Guatemala:				
Guatemala City.....	Jan. 1-31.....		1	
Hungary:				
Budapest.....	Jan. 14-27.....	7	3	
Ireland:				
Belmullet.....	June 15-Dec. 14....	20		In county Mayo.
Latvia.....				Oct. 1-Dec. 31, 1922: Cases, 74.
Mexico:				Recurrent typhus, cases, 10.
Mexico City.....	Nov. 12-Dec. 23.....	78		Including municipalities in Federal District.
Do.....	Dec. 31-Feb. 17.....	81		Do.
San Luis Potosi.....	Jan. 28-Feb. 10.....		2	
Palestine.....				Dec. 5-25, 1922: Cases, 3; in northern section.
Jaffa.....	Dec. 12-18.....	2		
Do.....	Jan. 16-22.....	2		
Jerusalem.....	Dec. 28-Jan. 1.....	1		
Paraguay:				
Asuncion.....	Jan. 1-27.....		1	
Persia:				
Teheran.....	Sept. 24-Nov. 24....		3	
Poland.....				Oct. 1-Dec. 2, 1922: Cases, 1,415; deaths, 101. Recurrent typhus: Cases, 1,583; deaths, 45.
Portugal:				
Oporto.....	Oct. 15-Dec. 2.....	1	1	
Rumania:				
Bucharest.....				To Jan. 31, 1923: Cases, 96; deaths, 13.
Chisinau.....	Nov. 1-30.....	5		
Russia.....				July 30-Sept. 23, 1922: Cases, 25,803.
Ukraine.....	Jan.-Sept.....	307,329		Provisional figures.
Ukraine, Tartar Republic, and Siberia.....	June 1-30.....	35,926		
Do.....	July 1-31.....	17,262		Do.
Do.....	Aug. 1-31.....	6,864		Do.
Do.....	Sept. 1-30.....	2,388		Do.
Siberia:				
Vladivostok.....	Nov. 1-Dec. 31.....	5		Recurrent typhus, cases, 4.
Spain:				
Barcelona.....	Nov. 30-Dec. 27.....		3	
Do.....	Jan. 11-17.....		1	
Madrid.....	Dec. 1-31.....		1	
Syria:				
Aleppo.....	Dec. 10-16.....	1	1	
Do.....	Jan. 7-Feb. 17.....	37	9	Generally among refugees.
Beirut.....	Oct. 1-22.....	1		
Turkey:				
Constantinople.....	Nov. 27-Dec. 2.....	3		
Do.....	Dec. 31-Feb. 10.....	44	4	Mar. 6, 1923: Present.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.
Reports Received from December 30, 1922, to March 23, 1923—Continued.
TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Union of South Africa.....				Oct. 1-Dec. 31, 1922: Colored—cases, 3,097; deaths, 298; white—cases, 11; deaths, 2.
Cape Province.....				Oct. 1-Dec. 31, 1922: Colored—cases, 2,799; deaths, 250; white—cases, 6; deaths, 1.
Do.....	Dec. 31-Jan. 27.....			Outbreaks.
Natal.....				Oct. 1-Dec. 31, 1922: Colored—cases, 143; deaths, 32; white—cases, 2.
Orange Free State.....				Oct. 1-Dec. 31, 1922: Colored—cases, 91; deaths, 8; white—cases, 3; deaths, 1.
Do.....	Jan. 7-27.....			Outbreaks.
Transvaal.....				Oct. 1-Dec. 31, 1922: Colored—cases, 64; deaths, 8.
Do.....	Jan. 14-20.....			Outbreaks.
Johannesburg.....	Nov. 1-30.....	3	6	
Venezuela:				
Maracaibo.....	Jan. 21-27.....		1	
Yugoslavia:				
Bosnia-Herzegovina.....	Aug. 1-31.....	1		
Serbia.....				Aug. 1-31, 1922: Recurrent typhus fever, cases, 4.

YELLOW FEVER.

Brazil:				
Bahia.....	Dec. 31-Jan. 27....	21	4	
Mexico:				
Ciudad Victoria.....	Dec. 17-23.....	1		
West Africa:				
Gold Coast—				
Saltpond.....				Reported present Dec. 21, 1922.
Nigeria—				
Warrai.....				Do.