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## STUDY OF THE EFFECT OF DEGREE OF ILLUMINATION ON WORKING SPEED OF LETTER SEPARATORS IN A POST OFFICE.

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### OBJECT AND METHOD OF THE STUDY.

In connection with the studies which the United States Public Health Service has been making relative to the protection and care of the eyes of industrial workers, the question has frequently arisen as to the degree of illumination that is necessary in order that work of a certain character involving the eyesight may be performed with the least strain on the eyes. It is to be assumed that, other things being equal, the degree of illumination best for the eyes is that under which the work in question can be performed with the greatest ease. The most natural measure of the ease with which work can be performed is the speed of working, or, in other words, the rate of production. It therefore becomes important, from the standpoint of the protection and care of the eyes, to determine in what manner the rate of production in industry depends upon the degree of illumination under which work is performed.

The study discussed in this report was made during the year 1923 in the New York City Hall post office. It was suggested by the recent survey of the illumination of the New York post offices, which was made by the Office of Industrial Hygiene and Sanitation, United States Public Health Service, as described in Public Health Bulletin No. 140, in which survey it was found that there was a marked increase in the number of test cards sorted per minute when the illumination was increased from 3.6 to 8 foot-candles. Since the tests in this survey were made with specially prepared cards, it was thought desirable to find out whether the same increase would occur when the clerks handled the ordinary letter mail, and whether this increase would be maintained if the increased illumination were maintained.

The study was authorized by the First Assistant Postmaster General, Mr. John H. Bartlett, and was carried on jointly by the Post Office Department, the Supervising Architect's Office of the Treasury

Department, and the Office of Industrial Hygiene and Sanitation of the United States Public Health Service. It was planned by Mr. S. W. Farnsworth, general superintendent of engineering in the Post Office Department, Mr. Chester C. Rausch, assistant director of service relations in the Post Office Department; Mr. Clarence A. Peterson, of the Supervising Architect's Office, Treasury Department; and the writer. The superintendent of the City Hall post office, Mr. G. B. Cutler, carried out the production tests and made the investigation possible by his cordial and enthusiastic cooperation.

After consultation it was decided to make the study by weighing the total letter mail sorted by a group of eight clerks at certain separation cases, every half hour, from 1 p. m. to 4 p. m., and by another group of eight clerks, from 4 p. m. to 9 p. m., for four consecutive days under a given illumination. It was decided to make tests simultaneously in the dispatching division on the mezzanine floor of the post office, and in the delivery division on the first floor. The tests on each floor were made at the same set of letter cases.

The sorting process carried on in the tests in the dispatching division was a primary one, involving 34 separations; that carried on in the delivery division was a secondary one, involving 50 separations. The nature of the work of letter separation, the shape and size of the cases used in the work, and the location and surroundings of these cases in the New York City Hall post office have been described in detail in Public Health Bulletin No. 140. The mail sorted in the tests included post cards, and large and small letters.

Six series of tests were made, in January, February, June, September, November, and December, respectively.

As the study proceeded, it was not found possible to give four consecutive days to each series, so that each of the three later series of tests covered only three days; it was not always possible to use the same clerks on the successive days of the same test, although this was generally done, and it was not always possible to keep eight clerks on a test, the number of clerks available varying from four to nine, although eight was the usual number. No tests were made on Saturdays nor on holidays nor during periods in which the post office was unusually busy. The three earlier series were made on Tuesday, Wednesday, Thursday, and Friday, and the three later, on Monday, Tuesday, and Wednesday. A record was kept for each half-hour period of the number of clerks working during that period. The total time spent in work by the group was recorded in terms of man-hours, in hours and minutes. For instance, if 8 clerks worked for half an hour, 4 man-hours were recorded for the group for that half hour; if only 7 clerks worked during the half hour, 3½ man-hours, or 3 hours and 30 minutes, were recorded for the group.

The clerks worked in three shifts of eight hours each, and the test for each group was made during the first part of the shift, except for the group on the first floor, working from 1 to 4 p. m., for which the test was made during the latter part of the shift.

The tests were made almost entirely under artificial light, there being very little natural light at the places where they were carried on. In the four later series of tests, readings of the illumination were taken on each side of each aisle, throughout its length, both directly under and between the units. The average of these readings was taken as the illumination under which the test was made. The measurements of the illumination were made with a MacBeth illuminometer. In the later tests the illumination on the working plane was fairly uniform, the deviation at any point being seldom greater than 20 per cent of the average value. In the two earlier series of tests the values given for the average illumination are less reliable. It is believed, however, that they fairly represent the illumination that prevailed when the tests were made.

#### RESULTS OF THE STUDY.

The results of the production tests, in terms of pounds of mail sorted per man per hour, are recorded in Tables 1 to 18. Summaries of the mean results, with the probable error for each mean, are given in Tables 19 and 20.

The first tests were made from January 16 to 19, under the lighting installations which had been in use for some time, and which gave an illumination on each floor of about 3.3 foot-candles.

After these tests had been made, 16-inch Trojan units, made of opal glass and totally inclosed, were installed in the aisles, with 200-watt Mazda C lamps on the mezzanine floor, and 150-watt Mazda C lamps on the first floor, giving an illumination of 7.7 foot-candles on the mezzanine floor, and of about 4.3 foot-candles on the first floor. On the mezzanine floor the Trojan units were hung in two rows in the aisle, with the units in each row 10 feet apart, the bottom of each unit 10 feet above the floor, and its center 1 foot in front of the letter separation case. On the first floor the Trojan units were suspended from the existing outlets, in two rows in the aisle, the outlets in each row being about 11 feet apart. After the clerks had worked under these installations for about a month, the second series of tests was made on each floor from February 13 to 16. The clerks then continued to work under these installations until the third series of tests was made from June 11 to 14.

On July 25 the illuminations under these installations were again measured and were found to give 7.5 foot-candles on the mezzanine floor and 4.3 foot-candles on the first floor. The lamps were then reduced to 150 watts on the mezzanine floor and 100 watts on the

first floor, the illumination on the two floors falling to 6 and 3.5 foot-candles, respectively. It was not possible, however, to make tests under these new intensities of illumination, since, shortly after this date, the post office was repainted, the ceilings and the upper part of the walls being done in white, and the lower part of the walls in black or dark gray. Measurements of the illumination on September 15 showed that the repainting had had the effect of raising the illumination under the 150 and 100 watt lamps to approximately what it was formerly under the 200 and 150 watt lamps, namely, to 7.2 foot-candles on the mezzanine floor and 4.6 foot-candles on the first floor. The fourth series of tests was made under these installations from September 10 to 12.

The clerks continued to work under these installations until November 12, when the fifth series of tests was begun. Measurements of the illumination showed that it had apparently deteriorated to 6.5 foot-candles on the mezzanine floor and to 4.3 foot-candles on the first floor.

The wattage of the lamps was then lowered to 100 watts on the mezzanine floor, and raised to 150 watts on the first floor, giving an illumination of 3.8 foot-candles on the mezzanine floor, and 5.9 foot-candles on the first floor. The clerks then worked under these installations until December 10, when the sixth, and last, series of tests was begun.

The results of all the tests, summarized in Tables 19 and 20, show that the rate of production ranged from 30.1 to 34.2 pounds per man per hour in the dispatching division, and from 14.4 to 17.3 pounds per man per hour in the delivery division. The average rate of production in the delivery division was, therefore, only about half that in the dispatching division.

The causes of this difference in the production rate for the two divisions are very interesting. It is evident that the difference depends, other things being equal, upon the number and nature of the separations that have to be made. It is evident that it would take longer to handle each individual letter in the delivery division, with 50 separations, than in the dispatching division, with 34 separations, since in the delivery division the average distance traveled by the hand is greater, and the clerk must look at the name and number of the street on the envelope and decide in what part of the city the letter is to be delivered. In the dispatching division the average distance traveled by the hand is less, and the clerk separates the letters only into a few well-known broad geographical divisions.

The results given in the tables seem to show that, after a higher illumination had been installed, the production rate had a tendency to increase during the course of from two to four months, even

though there was a slight decrease of illumination due to deterioration of the lamps, and to other causes.

It was originally intended (1) to find the rate of production under the old illumination; (2) to increase the illumination so as to find the change in the rate of production; (3) to maintain the illumination constant for a while, in order to determine whether there was any change in the rate of production—either an increase or a decrease—with the lapse of time; (4) to decrease the illumination; and (5) still further to increase it or decrease it; giving tests under four different intensities of illumination in each division. But, as already explained, the repainting of the post office had the effect of reducing the number of illuminations used practically to three, since, in both divisions, the illuminations in the February, June, September, and November tests were, on account of the repainting, approximately the same. If we take the mean production rate and the mean illumination for these four months in the dispatching division we get a mean production rate of 33.7 pounds per man per hour for a mean illumination of 7.2 foot candles; and, in the delivery division, of 16.2 pounds per man per hour for 4.4 foot candles. The results in the dispatching division give, in the order of time in which they were obtained, average production rates of 30.1, 33.7, and 32.1 pounds per man per hour for corresponding illuminations of 3.3, 7.2 and 3.8, foot candles, or an increase of 12 per cent in the production rate in going from 3.3 to 7.2 foot candles, and a decrease of 4.7 per cent in going from 7.2 to 3.8 foot candles. In the delivery division we obtain average production rates of 14.4, 16.2, and 17.3 pounds per man per hour for corresponding illuminations of 3.3, 4.4, and 5.9 foot candles, or an increase in the production rate of 12.5 per cent in going from 3.3 to 4.4 foot candles, and a further increase of 6.8 per cent in going from 4.4 to 5.9 foot candles.

The results of the last two tests on each floor are very marked. As will be seen by the tables, a test was made from November 12 to 14 under 150-watt lamps in the dispatching division, and under 100-watt lamps in the delivery division. After this test had been made, the wattage was reversed, 100-watt lamps being installed in the dispatching division and 150-watt lamps in the delivery division. The illuminations were correspondingly decreased from 6.5 to 3.8 foot candles in the dispatching division and increased from 4.3 to 5.9 foot candles in the delivery division. Four weeks later another test was made. In both divisions a marked change in the production rate was obtained, in the former division a decrease, and in the latter an increase.

An increase in the rate of production with improved illumination in the case of these experiments is unmistakable, and is not due to chance. For instance, from January to February there was, for the

work involving 34 separations, an increase of 3.5 pounds on the average in the rate of production, whereas the probable error of this difference was but 0.91. Similarly for the 50 separations, the increase of 1 pound was much greater than its probable error, namely, 0.33. However, it is realized that some of the changes in the rate of production which accompany changes in illumination in the course of these experiments may well have been due to chance. This is indicated if the afternoon and evening records are studied separately; and it must be kept in mind in connection with the theoretical discussion that follows.

The results of this study appear to justify the recommendation recently made by the United States Public Health Service to the Post Office Department that the illumination on the working plane in the workrooms of the post office should be at least 8 foot candles.<sup>1</sup>

#### PROPOSED THEORY FOR THE RELATION OF PRODUCTION TO ILLUMINATION.

In an attempt to find a relation between the rate of production and the degree of illumination under which the work was performed, the results of the tests were plotted against the illuminations used. The graphs are shown in Figure 1, with curve 1 for 34 separations and curve 2 for 50 separations. In both cases smooth curves have been drawn through the points, leaving as many points on one side of the curve as on the other and making the sum of the negative deviations equal to the sum of the positive deviations for each curve.

To make clear the chronological order in which the tests were made, the date of each test is marked against its corresponding point on the graph.

The fact that all the points do not lie on the smooth curves is probably explained by the great fluctuations in the production rate which are shown in the tables, and which are probably largely due to fluctuations in the nature of the mail to be handled—whether cards or large or small letters—post cards weighing less than letters, and small letters less than large, making, therefore, a greater number to the pound; to fluctuations in the pressure of the work, i. e., the amount of mail that has to be sorted; to the fact that the same individuals were not used for each series of tests, introducing the personal element, to a greater or lesser degree; and to a possible lag between changes in illumination and corresponding changes in production rate. Seeming evidence of such a lag was observed in the study made by the Office of Industrial Hygiene and Sanitation, United States Public Health Service, of the illumination of the New York post office,<sup>2</sup> and in a recent

<sup>1</sup> Lighting of Post Offices—Summary of a report made by the Office of Industrial Hygiene and Sanitation of the United States Public Health Service at the request of Postmaster General Hubert Work, 1922. Government Printing Office, Washington, 1923.

<sup>2</sup> See Public Health Bulletin No. 140.

experiment in England on the relation of illumination to coal production.<sup>3</sup> The lag in the change in production, apparently occurring when the illumination is changed, appears to be either positive or negative according as the illumination is decreased or increased—the production rate not rising or falling immediately to the value ultimately corresponding to a given illumination, but rising or falling to it only after the new illumination has been maintained for a certain length of time.

From an inspection of the graphs and from the fact that when the illumination is zero the production rate will be zero, it may be in-

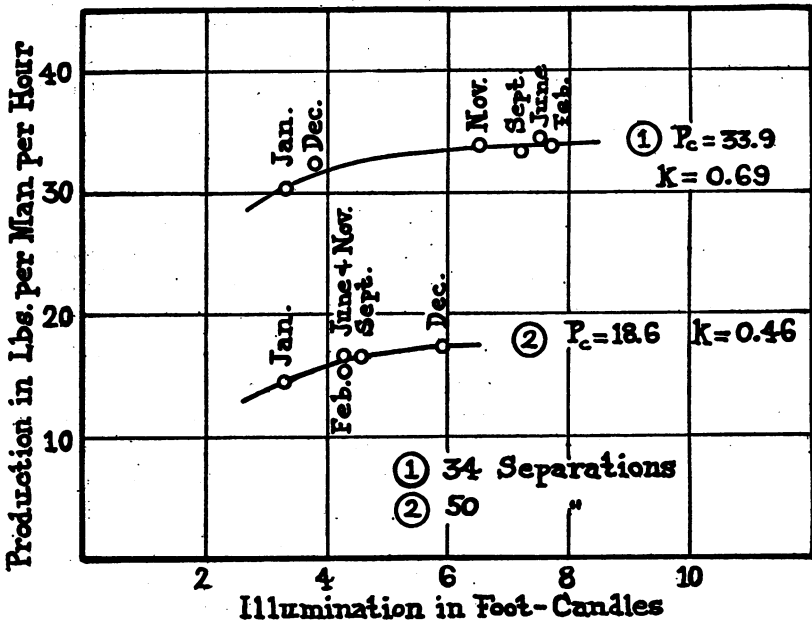


FIG. 1.—Results of tests in the New York City Hall post office, on the relation of illumination to production, with graphs conforming to the formula  $P = P_c (1 - e^{-kI})$

ferred that the curves can not be parts of logarithmic curves, parabolas, or hyperbolas. The shape of these curves, however, suggests the well-known curve, which, in the present case, would be expressed by the equation

$$P = P_c (1 - e^{-kI}), \quad (1)$$

where  $P$  would represent the value of the production rate in pounds per man per hour;  $P_c$ , a constant value which the production rate approaches as the illumination increases;  $e$ , the base of the natural system of logarithms, which is equal to 2.718;  $k$ , a constant which determines the slope of the curve, and  $I$ , the illumination in foot candles. If this equation does express the relation of production to

<sup>3</sup> Farmer, Adams, and Stephenson: An investigation in a coal mine (II), Journal of the National Institute of Industrial Psychology, vol. 1, pages 173-181, 1923.

illumination within the range of illumination covered by these tests,  $P_c$  will represent the production under relatively high illuminations, such as the illumination in the open under daylight, or in a room which is well lighted by daylight. From the equation it would then appear that, within the range of ordinary working illuminations, say from 1 to 1,000 foot candles, either indoors or outdoors, so far as the influence of illumination alone is concerned, and apart from the deterrent influence of glare, the production rate will increase with the increase of the illumination—increasing at first very rapidly and then slowly, and approaching, at an intensity of illumination somewhere between 10 and 100 foot candles, a value which for all practical purposes may be regarded as constant, this constant value being the production rate under good daylight illumination. According to this view, within the range of ordinary working illuminations, if glare is avoided, the production rate will steadily increase with the illumination until it reaches the value for full daylight, after which it will remain practically constant as the illumination is further increased. If, however, as the illumination is increased, glare increases more rapidly than the illumination, it may happen that, owing to the deterrent effect of glare,<sup>4</sup> a value of the illumination will be reached at which the production rate instead of increasing begins to decrease.

It will be observed that, in the formula given by equation (1), there are two constants,  $P_c$  and  $k$ .  $P_c$ , as already explained, is the value of the production rate under good daylight illumination, and  $k$  is a constant which determines the steepness of the curve; the greater the value of  $k$  the more rapidly the curve will rise.

If  $P_c$  is taken equal to 1, the function  $P$  becomes

$$P = 1 - e^{-kx}$$

In Figure 2, graphs of this function for  $P_c = 1$  have been plotted for  $k = 1.0, 0.6, 0.4, 0.2,$  and  $0.1,$  respectively.

By suitably choosing  $P_c$  and  $k$ , calculated values for  $P$  can be obtained which agree very closely with the values obtained from the curves 1 and 2 of Figure 1. The values obtained from the curves given in Figure 1 and the calculated values are given side by side in Table 21. The values of the constants for the calculated curves were obtained by the "cut and try" method. In order to get calculated values which would agree with values obtained from the curves, it was found to be necessary for curve 1 to take  $P_c = 33.9$  and  $k = 0.69$ , and for curve 2 to take  $P_c = 18.6$  and  $k = 0.46$ . It will be seen from Table 21 that the calculated values and those obtained from the experimental curves agree very closely. From the experimental curves we see that, for curve 1, in going from 3.3 to 7.7

<sup>4</sup> As to the deterrent effect of glare, see Report of the Industrial Fatigue Research Board of the Medical Research Council of Great Britain, No. 20, p. 21, 1922.



foot candles, an increase in the production rate of 10.5 per cent was obtained; and that, for curve 2, in going from 3.3 to 5.9 foot candles an increase in the production rate of 18.5 per cent was obtained.

Even if the smooth curves shown in Figure 1 do not represent accurately the law governing the relation between production rate and illumination, several considerations indicate that the relation must be of this general character, since it is evident that, when the illumination is zero, the production rate will be zero; that the production rate will increase more rapidly at the lower illuminations than at the higher; and that it is likely that under abundant daylight illumination the rate of production will reach its greatest value, which will be independent, or nearly independent, of small changes in illumination. Such a relation could, of course, be expected to

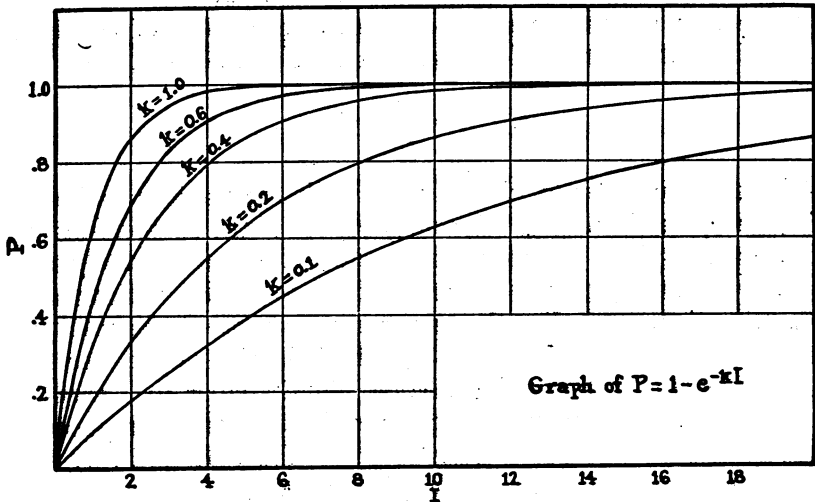


FIG. 2.—Graphs of the function  $P=1-e^{-kI}$ , for different values of  $k$

hold only within the ordinary ranges of daylight, or of artificial illumination, say from one to a thousand foot candles.

From a consideration of the nature of the work performed in letter sorting, it will be evident that if  $P$  is the production rate in pounds per man per hour, we have

$$P = N \times w, \quad (2)$$

where  $N$  is equal to the average number of letters handled per man per hour, and  $w$  is the average weight in pounds of a single letter. Also, if  $T$  is the average time taken by each man to handle each letter,

$$N = \frac{1}{T},$$

and

$$P = \frac{w}{T}. \quad (3)$$

But  $T$  is made up of three parts: the average time taken by the clerk to read the address, the average time taken by him to think what pigeonhole to put the letter into, and the average time taken by him to move his hand from the position of rest to the pigeonhole and back again. These three parts of  $T$  may to a certain extent overlap each other.

The degree of illumination will probably have a much greater influence upon the first part of the time than upon the second or the third part, and as a first approximation we may assume that the values of the two latter parts are independent of the degree of illumination.

The third part of the time will depend upon the speed with which the letter separator moves his hand and upon the number and arrangement of the pigeonholes in the case. If  $d$  is the average distance to a pigeonhole and  $S$  is the average speed of the motion to and from the pigeonhole, this latter time will be equal to

$$\frac{2d}{S}$$

The average distance,  $d$ , will vary with the number and size of the pigeonholes in a case. A consideration of the problem involved will show that  $d$ , for separation cases which are approximately square and in which the pigeonholes are all of the same size, will, to a close approximation, vary directly as the square root of the number of pigeonholes in the case or as the length of the side of the case.

All processes of production involve manual labor to a greater or lesser degree. In some processes the manual element is reduced to a minimum, a machine performing nearly all the work and only supervision being required. In general, however, the process of production is made up of two parts, one part dependent upon the use of the eyes and involving the illumination, and the other part not dependent upon the use of the eyes and not involving the illumination. In the case of blind people, when making brooms or caning chairs, the whole process is of the latter character.

In the case of letter separating we may divide  $T$  into two parts,  $T_1$  and  $T_2$ , where  $T_1$  is dependent upon the illumination and  $T_2$  independent of it. We may then write

$$P = \frac{w}{T_1 + T_2}$$

$T_1$ , the average time taken by the clerk to read the address, will depend upon the amount of matter to be read on the envelope, the clearness with which it is written, the color and nature of the envelope, and the intensity of the illumination.

From equations (1) and (3) we get

$$T = \frac{T_0}{1 - e^{-kI}} \quad (4)$$

where  $T_0$  is the value for  $T$  under high illuminations, and is assumed to be constant.

In Figure 3 this function has been plotted for  $T_0 = 1$  and  $k = 1, 0.6,$  and  $0.4$ . The graphs show that as  $I$  is increased,  $T$  first decreases rapidly and then approaches the constant value of unity.

Since

$$T = T_1 + T_2,$$

we get

$$T_1 = \frac{T_0}{1 - e^{-kI}} - T_2, \quad (5)$$

$T_2$  being constant with respect to the illumination.

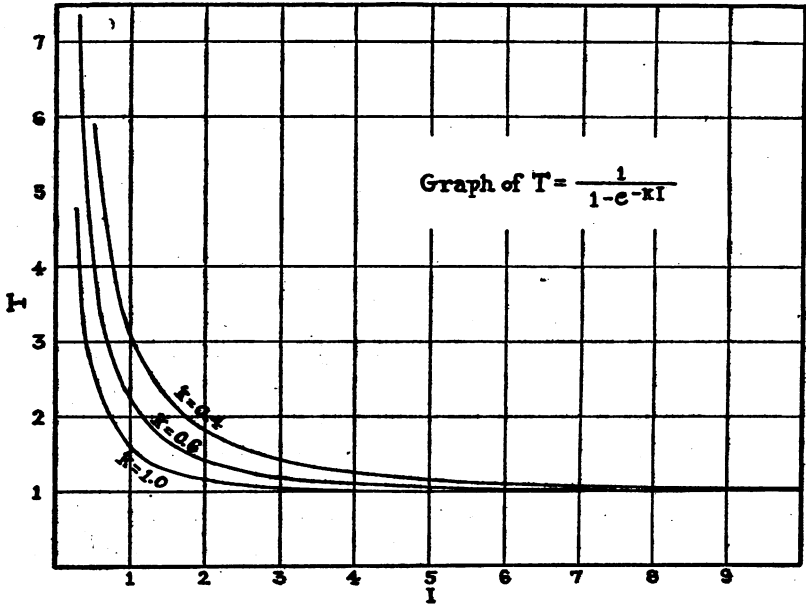


FIG. 3.—Graphs of the function  $T = \frac{1}{1 - e^{-kI}}$ , for different values of  $k$

The constant  $k$  has an interesting physical meaning. In problems in electromagnetism<sup>5</sup> and mechanics<sup>6</sup> the reciprocal of  $k$  is known as the time constant and is equal to the time that it takes for the quantity under calculation—for example, the electric current, or mechanical velocity—to rise to 0.632 of its steady value. By analogy, in the present case we may call the reciprocal of  $k$  the *illumination-constant*. It affords a measure of the illumination

<sup>5</sup> Equation for the rise of an electric current in the field coils of an electromagnet.

<sup>6</sup> Equation for the increase of the velocity of a railroad train under the constant pull of an engine.

necessary to give a production equal to approximately two-thirds of its value under high illuminations.

The influence of  $k$  upon the rapidity with which the function  $P$ , the production rate, approaches its greatest value may be seen very clearly from the curves of Figure 2. For  $k=1$ , the production for all practical purposes has reached its greatest value at 8 foot-candles; for  $k=0.6$  at 8 foot-candles it is 1 per cent below it; for  $k=0.4$ , 4 per cent below it, and so on.

It has long been recognized that in order that they may be performed with the same degree of efficiency, some kinds of eye work require more illumination than others; for instance, work on dark cloth requires more illumination than similar work on white material. The reflection factor of the material worked on and the degree of discrimination of detail required in the work have much to do with the amount of illumination that will be required to accomplish the work in the shortest time and as easily as possible. For instance, in the Code of Lighting for Factories, Mills, and Other Work Places, the advisory commission of the Council of National Defense<sup>7</sup> recommended for rough manufacturing, such as rough machining, rough assembling, and rough bench work, 2 to 4 foot-candles; for fine manufacturing, such as fine lathe work, pattern and tool making, and work on light-colored textiles, 4 to 8 foot-candles; for special cases of fine work, such as watchmaking, engraving, drafting, and work on dark-colored textiles, 10 to 15 foot-candles.

The departmental committee of the British home office<sup>8</sup> found that for work requiring the same degree of discrimination of detail, the illumination which was deemed to be sufficient by the worker varied inversely as the reflecting power of the material worked on. In other words, a certain brightness is necessary for comfortable seeing, or the product of the illumination and the reflection factor of the material being worked on must be constant.

The nature of the work, therefore, determines how great the intensity of the illumination must be in order that the production rate shall reach a certain percentage of its maximum value. If equation (1) correctly expresses the relation between production-rate and illumination, then, as we have already seen, when the illumination is equal to the reciprocal of  $k$  the production rate will have reached about 63 per cent of its maximum value.

If equation (1) can be used to express the relation between the illumination and the production rate, it is interesting to determine the rate at which the production rate varies with the illumination.

<sup>7</sup> Reprint No. 499, from Public Health Reports, Jan. 24, 1919.

<sup>8</sup> First Report of the Departmental Committee on Lighting in Factories and Workshops, vol. 1. H. M. Stationery Office, London, 1915.

From equation (1), by differentiating  $P$  with respect to  $I$ , we get

$$\frac{dP}{dI} = k(P_c - P) \quad (6)$$

which gives a differential law for the variation of the production rate with the illumination. According to equation (6), the rate at which the production rate varies with the illumination, for any given illumination,  $I$ , is directly proportional to the difference between the production rate,  $P$ , for that illumination, and the greatest possible value of the production rate,  $P_c$ ;  $k$  being the constant of proportionality.

The constant  $k$ , from the manner in which it enters into equation (1), is not easy to determine from an experimental curve, although if  $P$  is known for a high value of the illumination, and also for a low value, and  $\frac{dP}{dI}$  is known for the low value of  $P$ , the value of  $k$  can be approximately determined from the equation

$$k = \frac{\frac{dP}{dI}}{P_c - P}, \quad (7)$$

since  $P_c$  may be taken as approximately equal to the value that  $P$  assumes for a high value of the illumination.

The constants  $w$  and  $T_c$ , occurring in equations (2) and (4), respectively, can be determined by experiment.  $w$ , the average weight of a letter, including large and small letters and postal cards, was recently found by the Post Office Department to be equal to 0.02428 pound.  $T_c$  can be determined, from equation (3), if  $P_c$  and  $w$  are known. From the values for  $P_c$  given for curves 1 and 2 of Figure 1,  $T_c$  may be computed to be approximately equal to 0.00072 of an hour and 0.00131 of an hour, respectively. No determination of the value of the constant  $T_2$  has yet been made.

The nature of the constant  $k$  and its relation to the constants  $T_c$  and  $T_2$  will be discussed in a later paper.

#### RELATION OF THE PROPOSED THEORY TO THE RESULTS OBTAINED IN OTHER INVESTIGATIONS.

Information as to the way in which the production rate varies with illumination in industry is very scarce, but such information as exists would seem to indicate that the formula given in equation (1) will, at least approximately, represent the relation as far as it is known. For instance the results obtained by the United States Public Health Service<sup>9</sup> during the recent survey of the lighting of the New York post office, in the sorting of test cards under illumina-

<sup>9</sup> Public Health Bulletin No. 140.

tions of 3.6, 8, and 14 foot-candles, respectively, can be calculated by this formula within 0.3 of 1 per cent, if  $P_c$  is taken as 60.3 cards per minute, and  $k$ , as 0.77.<sup>10</sup> The results for this case are shown in Figure 4, where the experimental values are shown by circles, and the calculated values by the smooth curve.

While the results obtained by Hess and Harrison<sup>11</sup> for the inspection of parts of roller bearings under various levels of illumination from 5 to 20 foot-candles do not show conclusively that the production rate approaches a constant value as the illumination is increased, they do not disprove such an assumption.

The results obtained by Cohn,<sup>12</sup> Ferree and Rand,<sup>13</sup> Luckeish, Taylor and Lowden,<sup>14</sup> and Cobb<sup>15</sup> in their investigations of visual acuity, speed of discrimination, speed of reading, and speed of vision are interesting in this connection.

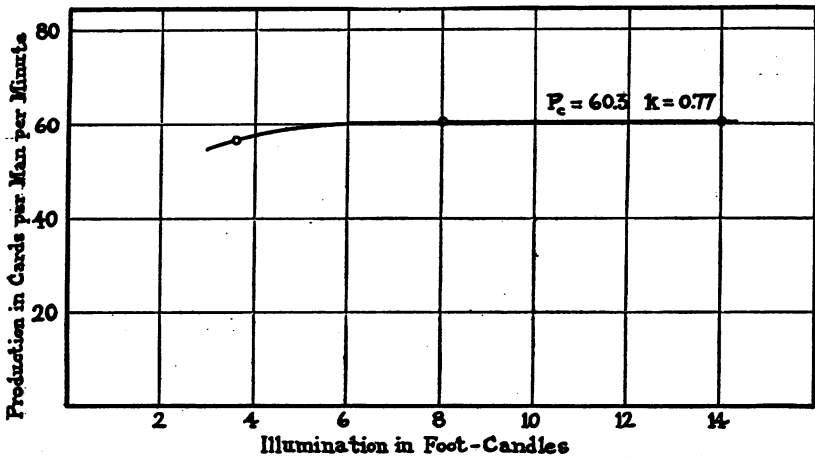


FIG. 4.—Smooth curve drawn through points representing results obtained for the sorting of test cards in a recent survey of the lighting of the New York City Hall post office made by the United States Public Health Service. (The same lighting units were used for all the tests, only the lamps within the units being changed.)

Cobb, for instance, found that when a small black dot, arising out of a clear white field and followed by such a field, was used as a test object, speed of vision increased as the logarithm of the brightness of the field, but that when a larger and more complicated test object, preceded and followed by another object tending to confuse the vision, was used, a maximum speed of vision was reached for a brightness somewhere below 100 millilamberts, further addition to the illumination adding nothing to the speed.

<sup>10</sup> The tests under these three illuminations were made with the same lighting units, the wattage of the lamps within the units only being varied.

<sup>11</sup> Trans. Illum. Eng. Soc., 18, 787-800, 1923.

<sup>12</sup> Ueber den Beleuchtungswert der Lampenglocken, Wiesbaden, 1885, pp. 70-72.

<sup>13</sup> Trans. Illum. Eng. Soc., 15, 769-801, 1920; 17, 69-102, 1922.

<sup>14</sup> Jour. Franklin Institute, December, 1921.

<sup>15</sup> Trans. Illum. Eng. Soc., 19, 150-175, 1924.

In this connection it is interesting to note that for moderate values of  $k$ , i. e., in the neighborhood of 0.4, the curve given by equation (1) coincides closely with the curve for the logarithm of  $I+1$  from  $I=0$  to  $I=4$ . Beyond  $I=4$  the two curves diverge. The graph of  $\log(I+1)$  is shown in Figure 5.

It seems to be established by the experiments of Cobb and others that, for a simple stimulus, speed of vision varies directly as the logarithm of the brightness of the test object. If, however, the stimulus is a complicated one, the relation between speed of vision and illumination is no longer logarithmic, but approaches a relation

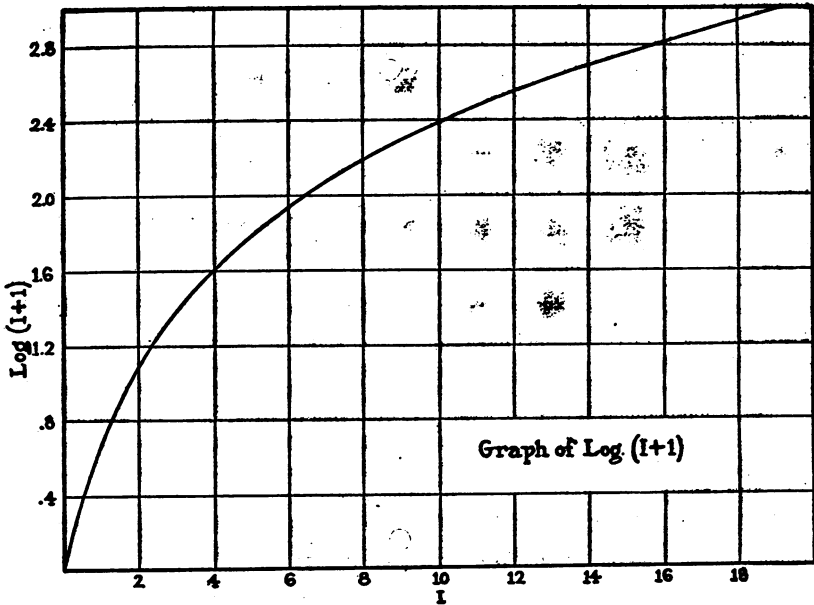


FIG. 5.—Graph of the function  $\log(I+1)$

of the form given by equation (1). Further, in the case of the relation of the rate of production to illumination the relation is still further complicated by the time occupied by the manual element of the production and by the time occupied by mental processes, both times being, to a greater or lesser degree, independent of the illumination. It seems possible therefore that, in general, the relation between rate of production and intensity of illumination may be given by an equation of the form of equation (1).

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TABLE 1.—Weight of mail separated each half hour during four consecutive days, under the original illumination of 3.3 foot-candles, in the dispatching division (34 separations) on the mezzanine floor of the New York City Hall post office, January 16-19, 1923.

Time, p. m.	Jan. 16.		Jan. 17.		Jan. 18.		Jan. 19.	
	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.
(8 clerks.)								
1 to 1:30.....	4	105	4	117	4	108	4	88
1:30 to 2.....	4	85	3½	89	4	84	4	93
2 to 2:30.....	4	101	4	132	4	112	4	95
2:30 to 3.....	4	100	4	107	4	108	4	105
3 to 3:30.....	4	126	4	145	4	94	4	93
3:30 to 4.....	4	101	4	108	4	89	4	50
(8 clerks.)								
4 to 4:30.....	4	107	4	109	1½	33	2	32
4:30 to 5.....	4	107	4	154	2½	53	4	164
5 to 5:30.....	4	201	4	195	4	167	4	155
5:30 to 6.....	4	94	4	147	4	126	4	157
6 to 6:30.....	4	126	4	125	4	95	4	128
6:30 to 7.....	4	109	4	142	4	148	4	126
7 to 7:30.....	4	104	4	124	4	108	4	114
7:30 to 8.....	4	84	4	100	3½	144	4	125
8 to 8:30.....	4	171	3½	99	4	77	3	93
8:30 to 9.....	4	190	4	157	4	146	4	168

**TABLE 2.**—*Weight of mail separated each half hour during four consecutive days under the original illumination of 3.3 foot-candles, in the delivery division (50 separations) on the first floor of the New York City Hall post office, January 16-19, 1923.*

Time, p. m.	Jan. 16.		Jan. 17.		Jan. 18.		Jan. 19.	
	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.
(8 clerks.)								
1 to 1:30.....	4	66	4	64	4	55	4	55
1:30 to 2.....	4	79	4	70	4	65	4	55
2 to 2:30.....	4	59	4	85	4	65	4	70
2:30 to 3.....	4	70	4	61	3½	55	4	45
3 to 3:30.....	4	45	4	90	3	45	3½	50
3:30 to 4.....	3½	60	4	70	4	76	3½	55
(8 clerks.)								
4 to 4:30.....	3	40	4	55	3½	51	2½	46
4:30 to 5.....	3	45	4	60	2½	34	4	51
5 to 5:30.....	4	54	4	55	3	22	4	51
5:30 to 6.....	3½	40	4	50	3	37	3½	45
6 to 6:30.....	3½	43	3½	48	4	33	4	54
6:30 to 7.....	4	71	4	56	4	45	4	57
7 to 7:30.....	4	78	4	49	4	60	4	50
7:30 to 8.....	4	62	4	50	4	58	4	53
8 to 8:30.....	4	61	4	47	4	52	4	52
8:30 to 9.....	3½	42	4	48	4	49	4	46

**TABLE 3.**—*Average weight in pounds of mail separated per man per hour during the afternoon and evening for four consecutive days in the month of January, 1923, by a group of clerks in both the dispatching and delivery divisions of the New York City Hall post office.*

Group.	Jan. 16.	Jan. 17.	Jan. 18.	Jan. 19.	Mean for January.
<b>DISPATCHING DIVISION, MEZZANINE FLOOR (31 SEPARATIONS, 3.3 FOOT-CANDLES.)</b>					
Afternoon (8 clerks).....	23.7	29.7	24.8	21.8	25.5
Evening (8 clerks).....	32.3	34.2	30.9	34.1	32.9
Both together.....	29.9	32.5	28.4	29.3	30.1
<b>DELIVERY DIVISION, FIRST FLOOR (50 SEPARATIONS) 3.3 FOOT-CANDLES.</b>					
Afternoon (8 clerks).....	16.1	18.3	16.0	14.3	16.2
Evening (8 clerks).....	14.7	13.1	12.2	13.3	13.3
Both together.....	15.3	15.1	13.7	13.7	14.4

TABLE 4.—Weight of mail separated each half hour during four consecutive days under 7.7 foot-candles in the dispatching division (34 separations) on the mezzanine floor of the New York City Hall post office, February 13-16, 1923.

Time, p. m.	Feb. 13.		Feb. 14.		Feb. 15.		Feb. 16.	
	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.
(8 clerks.)								
1 to 1:30	4	136	3	67	2:55	80	3	100
1:30 to 2	4	135	3	75	3	93	3	101
2 to 2:30	3:55	168	3	74	3	97	3	88
2:30 to 3	4	136	3	71	3	89	3	100
3 to 3:30	3:55	139	2:55	61	3	92	2:50	88
3:30 to 4	3:55	132	2:55	66	2:55	102	2:55	91
(8 clerks.)								
4 to 4:30	4	140	2:40	50	3:30	141	2:30	80
4:30 to 5	4	147	4	180	3:45	173	3:20	96
5 to 5:30	4	149	3:55	144	4	115	4	122
5:30 to 6	4	130	4	184	4	114	4	134
6 to 6:30	4	149	3:50	195	4	117	4	115
6:30 to 7	3:35	118	3:55	186	3:45	96	3:50	112
7 to 7:30	3:55	143	3:50	163	3:45	76	3:50	110
7:30 to 8	4	141	3:55	163	4	80	3:40	99
8 to 8:30	3:50	142	3:50	161	3:45	77	4	120
8:30 to 9	3:50	122	3:40	140	1:25	48	2:40	138

TABLE 5.—Weight of mail separated each half hour during four consecutive days under an illumination of 4.3 foot-candles in the delivery division (50 separations) on the first floor of the New York City Hall post office, Feb. 13-16, 1923.

Time, p. m.	Feb. 13.		Feb. 14.		Feb. 15.		Feb. 16.	
	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.
(8 clerks.)								
1 to 1:30	2:45	39	3	49	3	57	3	48
1:30 to 2	1:35	37	2:50	44	3	56	3	46
2 to 2:30	1:20	33	3	60	3	54	2:55	42
2:30 to 3	1	18	3	56	2:55	45	3	48
3 to 3:30	1:20	26	2:55	46	3	52	2:50	43
3:30 to 4	2:55	45	2:50	42	2:50	49	2:40	39
(8 clerks.)								
4 to 4:30	3	63	4	60	4	60	4	60
4:30 to 5	3	37	4	48	4	59	4	61
5 to 5:30	3	67	4	49	4	61	4	61
5:30 to 6	4	39	4	75	4	57	4	59
6 to 6:30	4	74	4	58	4	59	4	58
6:30 to 7	4	43	4	64	4	52	4	61
7 to 7:30	4	60	4	75	4	60	4	68
7:30 to 8	4	47	4	61	4	57	4	48
8 to 8:30	4	80	4	59	4	52	4	61
8:30 to 9	4	41	4	68	4	43	4	60

**TABLE 6.—Average weight in pounds of mail separated per man per hour during the afternoon and evening for four consecutive days in the month of February, 1923, by a group of clerks in both the dispatching and delivery divisions of the New York City Hall post office.**

Group.	Feb. 13.	Feb. 14.	Feb. 15.	Feb. 16.	Mean for February.
<b>DISPATCHING DIVISION, MEZZANINE FLOOR (34 SEPARATIONS), 7.7 FOOT-CANDLES.</b>					
Afternoon (8 clerks).....	35.6	23.2	30.4	32.0	30.8
Evening (8 clerks).....	35.2	41.7	28.9	31.4	35.1
Both groups together.....	35.4	35.7	29.6	31.6	33.6
<b>DELIVERY DIVISION, FIRST FLOOR (50 SEPARATIONS) 4.3 FOOT-CANDLES.</b>					
Afternoon (8 clerks).....	18.2	16.9	17.6	15.3	16.9
Evening (8 clerks).....	14.9	15.4	14.0	14.7	14.8
Both groups together.....	15.6	15.9	15.1	14.9	15.4

**TABLE 7.—Weight of mail separated each half hour during four consecutive days under 7.5 foot-candles in the dispatching division (34 separations), mezzanine floor of the New York City Hall post office, June 11-14, 1923.**

Time, p. m.	June 11.		June 12.		June 13.		June 14.	
	Man-hours.	Weight in pounds.	Man-hours.	Weight in pounds.	Man-hours.	Weight in pounds.	Man-hours.	Weight in pounds.
(8 clerks.)								
1 to 1:30.....	2:25	61	2:30	89	1:58	78	1:47	62
1:30 to 2.....	2:30	79	2:30	97	1:58	78	1:47	85
2 to 2:30.....	2:25	81	2:30	104	2:24	95	2:28	76
2:30 to 3.....	2:30	78	2:40	76	2:24	70	2:28	92
3 to 3:30.....	2:30	88	2:30	69	2:13	93	2:28	78
3:30 to 4.....	2:25	69	2	79	1:55	116	1:38	101
(8 clerks.)								
4 to 4:30.....	2:25	79	3:18	98	1:52	65	2:56	83
4:30 to 5.....	2:35	89	3:40	127	4	210	4	117
5 to 5:30.....	2:45	108	3:35	125	4	142	3:50	141
5:30 to 6.....	2:40	103	3:34	153	4	127	4	136
6 to 6:30.....	2:45	102	3:30	156	3:50	108	3:48	125
6:30 to 7.....	2:50	104	3:28	135	3:35	105	4	133
7 to 7:30.....	2:35	92	3:40	113	4	92	3:28	117
7:30 to 8.....	3	105	3:35	116	4	111	4	113
8 to 8:30.....	2:50	103	3:50	109	4	107	4	114
8:30 to 9.....	2:50	108	3:50	96	4	104	3:31	132

TABLE 8.—*Weight of mail separated each half hour during four consecutive days under 4.3 foot-candles, in the delivery division (50 separations), first floor of the New York City Hall post office, June 11-14, 1923.*

Time, p. m.	June 11.		June 12.		June 13.		June 14.	
	Man-hours.	Weight in pounds.	Man-hours.	Weight in pounds.	Man-hours.	Weight in pounds.	Man-hours.	Weight in pounds.
(8 clerks.)								
1 to 1:30.....	3:15	77	3:40	64	3	56	3:25	58
1:30 to 2.....	2:10	42	3:45	66	3:20	58	3:05	53
2 to 2:30.....	1:55	41	3:50	70	3:25	59	3:25	55
2:30 to 3.....	3	61	3:50	68	3:20	56	3:30	57
3 to 3:30.....	2:50	55	3:47	66	3:30	56	3:50	62
3:30 to 4.....	2:45	44	3:23	52	3:40	62	3:30	60
(8 clerks.)								
4 to 4:30.....	2:30	42	3:25	56	3:50	61	3:55	65
4:30 to 5.....	3:05	53	3:15	50	3:30	50	3:50	61
5 to 5:30.....	3:10	54	3:15	54	3:30	51	3:48	67
5:30 to 6.....	3:15	53	3:25	56	3:05	43	3:45	63
6 to 6:30.....	4	65	3:45	63	3:25	55	3:52	61
6:30 to 7.....	3:45	50	4	66	3:30	52	3:55	66
7 to 7:30.....	4	58	3:50	62	3:25	55	3:50	62
7:30 to 8.....	4	52	3:40	65	2:20	33	3:48	60
8 to 8:30.....	3:50	50	3:45	67	3	48	3:55	67
8:30 to 9.....	2:40	42	3:20	52	1:30	27	3:52	63

TABLE 9.—*Average weight in pounds of mail separated per man per hour during the afternoon and evening for four consecutive days in the month of June, 1923, by a group of clerks in both dispatching and delivery divisions of the New York City Hall post office.*

Group.	June 11.	June 12.	June 13.	June 14.	Mean for June.
DISPATCHING DIVISION, MEZZANINE FLOOR, 34 SEPARATIONS, 7.5-FOOT CANDLES.					
Afternoon (8 clerks) .....	30.9	35.0	41.2	39.2	36.3
Evening (8 clerks) .....	36.4	34.1	31.1	32.8	33.5
Both groups together .....	34.5	34.4	33.9	34.4	34.2
DELIVERY DIVISION, FIRST FLOOR, 50 SEPARATIONS, 4.3-FOOT CANDLES.					
Afternoon (8 clerks) .....	20.1	17.3	17.1	16.6	17.7
Evening (8 clerks) .....	15.2	16.6	15.3	16.5	15.9
Both groups together .....	16.7	16.9	16.0	16.5	16.5

**TABLE 10.**—*Weight of mail separated each half hour during three consecutive days under an illumination of 7.2-foot candles, in the dispatching division (34 separations) on the mezzanine floor of the New York City Hall post office, September 10-12, 1923.*

Time, p. m.	Sept. 10.		Sept. 11.		Sept. 12.	
	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.
(6 clerks.)						
1 to 1:30.....	2:55	144	2:55	98	3	92
1:30 to 2.....	3	127	2:50	96	2:55	99
2 to 2:30.....	2:56	130	2:54	118	2:55	91
2:30 to 3.....	2:50	165	2:55	101	2:54	89
3 to 3:30.....	2:55	131	3	86	3	121
3:30 to 4.....	3	147	2:50	108	2:50	127
(8 clerks.)						
4 to 4:30.....	3:56	112	3:55	96	4	100
4:30 to 5.....	3:54	122	3:55	114	3:50	97
5 to 5:30.....	4	124	3:50	88	3:55	116
5:30 to 6.....	3:52	116	3:56	140	4	141
6 to 6:30.....	4	142	3:53	126	4	138
6:30 to 7.....	3:55	139	3:55	131	3:55	112
7 to 7:30.....	4	126	4	104	3:55	122
7:30 to 8.....	4	124	4	91	3:55	151
8 to 8:30.....	3:54	123	4	92	4	129
8:30 to 9.....	3:55	126	4	131	4	141

**TABLE 11.**—*Weight of mail separated each half hour during three consecutive days under an illumination of 4.6-foot candles in the delivery division (50 separations) on the first floor of the New York City Hall post office, September 10-12, 1923.*

Time, p. m.	Sept. 10.		Sept. 11.		Sept. 12.	
	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.
(8 or 9 clerks.)						
1 to 1:30.....	2:40	72	2:40	43	2:35	70
1:30 to 2.....	3:20	41	3:20	41	2:33	66
2 to 2:30.....	2:56	45	3	37	2:27	60
2:30 to 3.....	3:02	58	3:10	40	2	46
3 to 3:30.....	2:40	42	2:55	35	2:05	47
3:30 to 4.....	3:04	39	3:06	39	2:10	43
(8 clerks.)						
4 to 4:30.....	3:20	41	3:20	43	3:20	55
4:30 to 5.....	2:40	34	2:24	30	1:47	30
5 to 5:30.....	3:44	46	2:54	46	1:55	46
5:30 to 6.....	2:55	44	3:04	48	2:10	34
6 to 6:30.....	3:44	48	3:04	46	3:04	48
6:30 to 7.....	2:40	40	3:04	48	3:04	43
7 to 7:30.....	3:04	37	3:04	55	3:04	50
7:30 to 8.....	3:04	46	3:04	40	2:11	40
8 to 8:30.....	3:04	47	2:40	43	1:47	26
8:30 to 9.....	2:24	44	2:16	32	2:16	46

TABLE 12.—Average weight in pounds of mail separated per man per hour during the afternoon and evening for three consecutive days in the month of September, 1923, by a group of clerks in both the dispatching and delivery divisions of the New York City Hall post office.

Group.	Sept. 10.	Sept. 11.	Sept. 12.	Mean for September.
<b>DISPATCHING DIVISION, MEZZANINE FLOOR, 34 SEPARATIONS, 7.2-FOOT CANDLES.</b>				
Afternoon (6 clerks).....	47.4	34.9	35.2	39.2
Evening (6 clerks).....	31.8	28.2	31.6	30.5
Both groups together.....	36.6	30.3	32.7	33.2
<b>DELIVERY DIVISION, FIRST FLOOR, 50 SEPARATIONS, 4.6-FOOT CANDLES.</b>				
Afternoon (8 or 9 clerks).....	16.8	12.9	24.1	17.4
Evening (8 clerks).....	13.9	14.7	17.4	15.3
Both groups together.....	15.0	14.1	19.8	16.5

TABLE 13.—Weight of mail separated each half hour during three consecutive days under an illumination of 6.5 foot-candles, in the dispatching division (34 separations) on the mezzanine floor of the City Hall post office, New York, Nov. 12-14, 1923.

Time, p. m.	Nov. 12.		Nov. 13		Nov. 14.	
	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.
(4 clerks.)						
1 to 1:30.....	1:50	74	2	68	2	53
1:30 to 2.....	2	49	2	80	1:55	63
2 to 2:30.....	1:55	82	1:55	72	2	70
2:30 to 3.....	1:50	69	2	61	2	65
3 to 3:30.....	2	40	1:55	54	2	45
3:30 to 4.....	2	70	1:55	70	1:50	80
(4 clerks.)						
4 to 4:30.....	1:55	40	2	33	1:55	55
4:30 to 5.....	2	43	2	44	2	93
5 to 5:30.....	2	63	1:50	71	2	85
5:30 to 6.....	1:50	64	2	64	2	76
6 to 6:30.....	2	91	2	77	2	67
6:30 to 7.....	1:55	87	1:55	59	1:50	77
7 to 7:30.....	1:55	58	1:55	53	2	62
7:30 to 8.....	2	65	2	84	1:55	66
8 to 8:30.....	2	89	2	77	1:55	52
8:30 to 9.....	1:55	56	1:50	86	2	62

**TABLE 14.**—*Weight of mail separated each half hour during three consecutive days under an illumination of 4.5 foot-candles, in the delivery division (50 separations) on the first floor of the New York City Hall post office, Nov. 12-14, 1923.*

Time, p. m.	Nov. 12.		Nov. 13.		Nov. 14.	
	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.
(8 clerks.)						
1 to 1:30.....	2:55	36	2	5	1:08	14
1:30 to 2.....	3:04	40	2:24	54	3:04	68
2 to 2:30.....	2:46	45	2:30	41	2:24	24
2:30 to 3.....	3:04	21	3:04	45	2:10	45
3 to 3:30.....	3	31	3:02	51	2:18	54
3:30 to 4.....	2:40	6	2:04	16	2	10
(8 clerks.)						
4 to 4:30.....	3	50	2	30	4	71
4:30 to 5.....	3	38	2	29	3	40
5 to 5:30.....	4	66	4	96	3	55
5:30 to 6.....	4	106	2	24	4	63
6 to 6:30.....	4	76	4	116	3	55
6:30 to 7.....	3	36	4	72	4	85
7 to 7:30.....	4	61	4	65	4	66
7:30 to 8.....	4	61	3	51	4	61
8 to 8:30.....	4	77	4	85	3	31
8:30 to 9.....	4	77	4	82	4	109

**TABLE 15.**—*Average weight in pounds of mail separated per man per hour during the afternoon and evening for three consecutive days in the month of November, 1923, by a group of clerks in both the dispatching and delivery divisions of the New York City Hall post office.*

Group.	Nov. 12.	Nov. 13.	Nov. 14.	Mean for November.
<b>DISPATCHING DIVISION, MEZZANINE FLOOR, 34 SEPARATIONS, 6.5 FOOT-CANDLES</b>				
Afternoon (4 clerks).....	33.1	34.3	31.9	33.1
Evening (4 clerks).....	33.6	32.2	35.5	34.1
Both groups together.....	33.4	33.6	34.1	33.7
<b>DELIVERY DIVISION, FIRST FLOOR, 50 SEPARATIONS, 4.3 FOOT-CANDLES</b>				
Afternoon (8 clerks).....	10.2	14.0	16.4	12.2
Evening (8 clerks).....	17.5	19.7	17.7	18.2
Both groups together.....	15.2	17.9	17.3	16.5



**TABLE 16.**—*Weight of mail separated each half hour during three consecutive days under an illumination of 3.8 foot-candles, in the dispatching division (34 separations), on the mezzanine floor of the New York City Hall post office, Dec. 10-12, 1923.*

Time, p. m.	Dec. 10.		Dec. 11.		Dec. 12.	
	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.
(4 clerks.)						
1 to 1:30.....	1:57	58	1:35	79	2	79
1:30 to 2.....	2	64	1:40	65	1:50	54
2 to 2:30.....	2	64	2	60	2	56
2:30 to 3.....	2	58	1:48	59	1:55	72
3 to 3:30.....	2	52	1:42	47	1:55	55
3:30 to 4.....	1:55	96	2	58	2	133
(4 clerks.)						
4 to 4:30.....	1:50	44	1:40	46	2	53
4:30 to 5.....	1:52	58	1:38	62	2	61
5 to 5:30.....	1:45	69	2	96	1:50	81
5:30 to 6.....	1:50	69	2	61	2	72
6 to 6:30.....	2	72	2	81	1:46	36
6:30 to 7.....	2	56	2	44	2	62
7 to 7:30.....	2	63	2	49	1:50	94
7:30 to 8.....	2	58	2	48	1:55	45
8 to 8:30.....	2	47	2	60	2	37
8:30 to 9.....	2	45	2	66	2	34

**TABLE 17.**—*Weight of mail separated each half hour during three consecutive days under an illumination of 5.9 foot-candles in the delivery division (50 separations) on the first floor of the New York City Hall post office, December 10-12, 1923.*

Time, p. m.	Dec. 10.		Dec. 11.		Dec. 12.	
	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.	Man hours.	Weight in pounds.
(8 clerks.)						
1 to 1:30.....	2:25	48	3:02	49	2:40	51
1:30 to 2.....	2:05	39	2:56	68	3:02	61
2 to 2:30.....	2:25	18	3:04	40	2:56	60
2:30 to 3.....	2:25	17	2:48	28	2:44	44
3 to 3:30.....	2:25	29	2:35	37	2:24	40
3:30 to 4.....	2:25	19	2:50	34	2:18	42
(8 clerks.)						
4 to 4:30.....	3:20	53	3:20	62	3:20	69
4:30 to 5.....	3:20	52	3:20	54	3:20	67
5 to 5:30.....	3:20	57	3:20	65	3:20	64
5:30 to 6.....	3:20	55	3:20	63	3:20	66
6 to 6:30.....	3:20	74	3:20	67	3:20	62
6:30 to 7.....	3:20	49	3:20	60	3:20	52
7 to 7:30.....	3:20	67	3:20	64	3:20	61
7:30 to 8.....	3:20	57	3:20	61	3:20	65
8 to 8:30.....	3:20	57	3:20	66	3:20	63
8:30 to 9.....	3:20	76	3:20	60	3:20	57

**TABLE 18.**—Average weight in pounds of mail separated per man per hour during the afternoon and evening for three consecutive days in the month of December, 1923, by a group of clerks in both the dispatching and delivery divisions of the New York City Hall post office.

Group	Dec. 10.	Dec. 11.	Dec. 12.	Mean for December.
<b>DISPATCHING DIVISION, MEZZANINE FLOOR, 34 SEPARATIONS, 3.8 FOOT-CANDLES.</b>				
Afternoon (4 clerks) .....	32.9	34.1	38.5	35.2
Evening (4 clerks) .....	30.1	31.8	29.1	30.0
Both groups together .....	31.2	32.6	32.7	32.1
<b>DELIVERY DIVISION, FIRST FLOOR, 50 SEPARATIONS, 5.9 FOOT-CANDLES.</b>				
Afternoon (8 clerks) .....	12.0	14.9	17.9	15.0
Evening (8 clerks) .....	17.9	18.5	18.8	18.4
Both groups together .....	16.1	17.3	18.5	17.3

**TABLE 19.**—Summary of tests made to determine the relation of the rate of production to the intensity of illumination in the dispatching division (34 separations) on the mezzanine floor in the New York City Hall post office, during the year 1923.

Date of test.	Wattage of lamps.	Illumination in foot-candles.	Average rate of production in pounds per man per hour.	Probable error of the average rate of production.
Jan. 16-19 .....	Old system.	3.3	30.1	0.67
<b>NEW LIGHTING UNITS INSTALLED.</b>				
Feb. 13-16 .....	200	7.7	33.6	.62
June 11-14 .....	200	7.5	34.2	.61
<b>LAMPS CHANGED JULY 25 AND WALLS AND CEILINGS REPAINTED.</b>				
Sept. 10-12 .....	150	7.2	33.2	.68
Nov. 12-14 .....	150	6.5	33.7	.74
<b>LAMPS CHANGED NOV. 15.</b>				
Dec. 10-12 .....	100	3.8	32.1	.92

TABLE 20.—Summary of tests made to determine the relation of the rate of production to the intensity of illumination in the delivery division (50 separations) on the first floor in the New York City Hall post office, during the year 1923.

Date of test.	Wattage of lamps.	Illumination in foot-candles.	Average rate of production in pounds per man per hour.	Probable error of the average rate of production.
Jan. 16-19.....	Old system.	3.3	14.4	0.23
NEW LIGHTING UNITS INSTALLED.				
Feb. 13-16.....	150	4.3	15.4	.25
June 11-14.....	150	4.3	16.5	.15
LAMPS CHANGED JULY 25, AND WALLS AND CEILINGS REPAINTED.				
Sept. 10-12.....	100	4.6	16.5	.41
Nov. 12-14.....	100	4.3	16.5	.56
LAMPS CHANGED NOV. 15.				
Dec. 10-12.....	150	5.9	17.3	.35

TABLE 21.—Comparison of the values of the rate of production obtained from the experimental curve and those calculated from the formula  $P = P_c (1 - e^{-kt})$ .

Illumination in foot-candles.	Production rate in pounds per man per hour.			
	For curve 1.		For curve 2.	
	Values taken from experimental curve.	Values calculated for $P_c = 33.9$ , $k = 0.69$ .	Values taken from experimental curve.	Values calculated for $P_c = 18.6$ , $k = 0.46$ .
3.....	29.7	29.7	13.9	13.9
4.....	31.9	31.8	15.7	15.6
5.....	32.9	32.9	16.7	16.7
6.....	33.4	33.4	17.4	17.4
7.....	33.6	33.7		
8.....	33.8	33.8		

## INDIA CENSUS OF 1921 AND INFLUENZA EPIDEMIC OF 1918-19.

The London correspondent of the Journal of the American Medical Association, reporting recently on the fifth uniform census of India taken in 1921, states that the outstanding fact of the final report is the small increase shown in the population—1.2 per cent—in the decade elapsing since the next preceding census, which showed an increase of more than 7 per cent. Owing to the enormous task involved in compiling the data, the completed report for 1921 was not issued until this year.

The principal cause of the difference between the increases in population shown for the two intercensal periods is stated to be the influenza epidemic of 1918-19, which, in the course of a few months,

was known to have been responsible for 6,000,000 deaths in India. The census has established the fact that double the number—or 4 per cent of the vast population of that country—died during the epidemic. According to the 1921 census, the population amounts to 319,000,000. The case mortality of the epidemic was placed at about 10 per cent, on which basis it is estimated that 125,000,000 people, or two-fifths of the whole population, were affected. The scourge is said to have come at a time when the economic power of the people had been greatly reduced by a succession of bad seasons.

As regards the occupational distribution of the population, India is predominantly agricultural, no less than 73 per cent of the people being engaged in agricultural and pastoral pursuits. Industry supports about one-tenth of the population.

Some decline in the number of child marriages is shown. Forty years ago only 481 females per 10,000 between the ages of 10 and 15 years were unmarried, whereas the proportion shown in 1921 was 601. Between the ages of 5 and 10, the number of unmarried females increased during the same period from 874 to 907 per 10,000.

### DEATHS DURING WEEK ENDED NOVEMBER 1, 1924.

*Summary of information received by telegraph from industrial insurance companies for week ended November 1, 1924, and corresponding week of 1923. (From the Weekly Health Index, November 4, 1924, issued by the Bureau of the Census, Department of Commerce.)*

	Week ended Nov. 1, 1924.	Corresponding week, 1923
Policies in force.....	57, 542, 323	53, 887, 831
Number of death claims.....	10, 116	8, 786
Death claims per 1,000 policies in force, annual rate	9. 2	8. 5

*Deaths from all causes in certain large cities of the United States during the week ended November 1, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923. (From the Weekly Health Index, November 4, 1924, issued by the Bureau of the Census, Department of Commerce.)*

City.	Week ended Nov. 1, 1924.		Annual death rate per 1,000 corresponding week, 1923.	Deaths under 1 year.		Infant mortality rate, week ended Nov. 1, 1924. <sup>3</sup>
	Total deaths.	Death rate. <sup>1</sup>		Week ended Nov. 1, 1924.	Corresponding week, 1923.	
Total (65 cities).....	6, 174	12. 0	11. 7	729	755	-----
Akron.....	33	-----	-----	5	4	53
Albany.....	32	14. 1	14. 7	5	4	114
Atlanta.....	81	18. 5	16. 4	9	7	-----
Baltimore.....	203	13. 5	13. 3	30	28	89
Birmingham.....	53	13. 8	13. 6	2	1	-----
Boston.....	171	11. 5	13. 8	22	23	61
Bridgeport.....	27	-----	-----	2	4	32
Buffalo.....	105	10. 0	12. 6	17	11	72
Cambridge.....	23	10. 7	10. 8	3	2	52
Camden.....	18	7. 4	14. 7	5	9	82
Canton.....	23	11. 7	6. 3	5	3	109

<sup>1</sup> Annual rate per 1,000 population.

<sup>2</sup> Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1923. Cities left blank are not in the registration area for births.

<sup>3</sup> Data for 63 cities.

<sup>4</sup> Deaths for week ended Friday, October 31, 1924.

Deaths from all causes in certain large cities of the United States during the week ended November 1, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923—Continued.

City.	Week ended Nov. 1, 1924.		Annual death rate per 1,000 corresponding week, 1923.	Deaths under 1 year.		Infant mortality rate week ended Nov. 1, 1924.
	Total deaths.	Death rate.		Week ended Nov. 1, 1924.	Corresponding week, 1923.	
Chicago <sup>4</sup> .....	564	10.0	10.3	81	85	76
Cincinnati.....	134	17.1	14.5	16	9	100
Cleveland.....	153	8.7	9.3	17	24	43
Columbus.....	74	14.5	13.4	13	8	123
Dallas.....	54	15.0	9.7	12	3	-----
Dayton.....	43	13.2	16.4	4	5	67
Denver.....	60	-----	-----	5	5	-----
Des Moines.....	29	10.4	9.6	2	5	-----
Detroit.....	221	-----	-----	35	46	65
Duluth.....	18	8.7	5.9	1	2	22
Erie.....	29	-----	-----	2	6	41
Fall River <sup>4</sup> .....	32	13.8	10.3	5	4	70
Flint.....	11	-----	-----	2	3	35
Fort Worth.....	21	7.4	10.5	3	4	-----
Grand Rapids.....	20	7.6	12.1	1	3	16
Houston.....	53	-----	-----	8	1	-----
Indianapolis.....	89	11.9	9.4	9	4	66
Jacksonville, Fla.....	45	22.9	16.7	8	9	-----
Jersey City.....	61	10.2	13.3	12	9	85
Kansas City, Kans.....	23	10.2	15.8	2	3	39
Kansas City, Mo.....	85	12.3	14.4	9	12	-----
Los Angeles.....	213	-----	-----	25	21	78
Louisville.....	57	11.5	14.4	6	9	56
Lowell.....	31	14.0	12.2	3	2	54
Lynn.....	15	7.5	9.6	1	1	25
Memphis.....	69	20.9	15.9	1	8	-----
Milwaukee.....	96	10.2	7.3	21	10	100
Nashville <sup>4</sup> .....	37	15.6	18.3	4	3	-----
New Bedford.....	31	12.2	8.0	2	4	31
New Haven.....	36	10.7	11.8	6	5	79
New Orleans.....	131	16.7	20.0	11	16	-----
New York.....	1,341	11.6	10.0	141	133	57
Bronx Borough.....	158	9.5	8.5	12	8	42
Brooklyn Borough.....	419	9.9	9.4	45	46	48
Manhattan Borough.....	623	14.4	11.4	70	68	71
Queens Borough.....	96	9.0	9.0	10	8	50
Richmond Borough.....	45	18.0	9.8	4	3	73
Newark, N. J.....	90	10.5	9.2	11	8	52
Norfolk.....	43	13.7	10.2	6	4	107
Oakland.....	44	9.3	10.9	8	8	100
Oklahoma City.....	20	10.0	-----	2	-----	-----
Omaha.....	45	11.3	8.7	4	4	43
Paterson.....	36	13.3	12.5	1	2	17
Philadelphia.....	460	12.3	13.7	57	80	73
Pittsburgh.....	204	17.0	15.0	19	29	64
Portland, Oreg.....	57	10.7	11.6	5	3	52
Providence.....	68	14.5	13.3	6	12	40
Richmond.....	49	13.9	14.1	10	6	121
Rochester.....	65	10.4	-----	4	-----	32
St. Louis.....	217	13.9	12.5	18	25	-----
St. Paul.....	49	10.5	12.1	2	3	17
Salt Lake City <sup>4</sup> .....	39	15.8	18.2	2	3	40
San Antonio.....	59	16.1	15.0	15	14	-----
San Francisco.....	142	13.5	13.1	8	7	46
Schenectady.....	13	6.7	8.4	2	1	59
Seattle.....	61	-----	-----	4	4	39
Somerville.....	22	11.4	8.4	1	3	27
Spokane.....	26	-----	-----	4	2	88
Springfield, Mass.....	34	11.9	14.1	4	3	68
Syracuse.....	42	11.6	15.8	4	9	50
Tacoma.....	22	10.6	8.2	2	0	48
Toledo.....	44	8.3	11.0	4	8	38
Trenton.....	36	14.5	16.0	6	8	100
Utica.....	19	9.4	8.1	4	2	82
Washington, D. C.....	131	14.0	14.0	23	26	132
Waterbury.....	13	-----	-----	1	2	23
Wilmington, Del.....	32	13.9	11.5	3	5	67
Worcester.....	46	12.8	13.0	5	10	61
Yonkers.....	24	11.4	5.8	1	1	22
Youngstown.....	32	10.8	12.1	3	4	41

<sup>4</sup> Deaths for week ended Friday, October 31, 1924.

# PREVALENCE OF DISEASE.

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

## UNITED STATES.

### CURRENT WEEKLY STATE REPORTS.

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

#### Reports for Week Ended November 8, 1924.

ALABAMA.		Cases.	ARKANSAS—continued.		Cases.
Chicken pox.....	37		Smallpox.....	11	
Diphtheria.....	59		Tuberculosis.....	10	
Dysentery.....	1		Typhoid fever.....	24	
Influenza.....	35		Whooping cough.....	10	
Malaria.....	53				
Measles.....	9		CALIFORNIA.		
Mumps.....	4		Cerebrospinal meningitis:		
Ophthalmia neonatorum.....	1		Fresno.....	1	
Pellagra.....	5		Oakland.....	1	
Pneumonia.....	44		San Francisco.....	1	
Scarlet fever.....	36		Diphtheria.....	211	
Smallpox.....	16		Influenza.....	15	
Tetanus.....	1		Lethargic encephalitis:		
Trachoma.....	1		Los Angeles.....	1	
Tuberculosis.....	21		Oakland.....	2	
Typhoid fever.....	20		Measles.....	27	
Whooping cough.....	14		Plague (pneumonic).....	2	
			Poliomyelitis:		
ARIZONA.			Los Angeles.....	4	
Chicken pox.....	3		Los Angeles County.....	1	
Diphtheria.....	3		Oakland.....	3	
Malta fever.....	1		San Diego County.....	1	
Mumps.....	21		Scarlet fever.....	131	
Poliomyelitis.....	1		Smallpox:		
Scarlet fever.....	18		Fresno County.....	17	
Smallpox.....	5		Los Angeles.....	18	
Tuberculosis.....	3		Los Angeles County.....	12	
Typhoid fever.....	1		Sacramento.....	8	
Whooping cough.....	4		Susanville.....	13	
			Scattering.....	38	
ARKANSAS.			Typhoid fever.....	27	
Chicken pox.....	11		Typhus fever—Los Angeles.....	2	
Diphtheria.....	19				
Hookworm disease.....	1		COLORADO.		
Influenza.....	66		(Exclusive of Denver.)		
Malaria.....	70		Cerebrospinal meningitis.....	1	
Measles.....	7		Chicken pox.....	83	
Mumps.....	4		Diphtheria.....	16	
Paratyphoid fever.....	2		Measles.....	2	
Pellagra.....	2		Mumps.....	5	
Scarlet fever.....	5				

## COLORADO—continued.

	Cases.
Paratyphoid fever.....	2
Pneumonia.....	8
Scarlet fever.....	25
Tuberculosis.....	141
Typhoid fever.....	6
Whooping cough.....	7

## CONNECTICUT.

Cerebrospinal meningitis.....	1
Chicken pox.....	35
Conjunctivitis (infectious).....	1
Diphtheria.....	67
German measles.....	3
Influenza.....	3
Lethargic encephalitis.....	1
Measles.....	5
Mumps.....	14
Pneumonia (lobar).....	31
Poliomyelitis.....	1
Scarlet fever.....	110
Septic sore throat.....	4
Smallpox.....	1
Tuberculosis (all forms).....	40
Typhoid fever.....	2
Whooping cough.....	93

## DELAWARE.

Chicken pox.....	2
Diphtheria.....	12
Pneumonia.....	1
Scarlet fever.....	4
Tuberculosis.....	3
Whooping cough.....	1

## DISTRICT OF COLUMBIA.

Chicken pox.....	14
Diphtheria.....	8
Influenza.....	2
Measles.....	2
Poliomyelitis.....	1
Scarlet fever.....	17
Tuberculosis.....	27
Typhoid fever.....	1
Whooping cough.....	8

## FLORIDA.

Diphtheria.....	14
Influenza.....	1
Malaria.....	8
Pneumonia.....	1
Scarlet fever.....	4
Trachoma.....	2
Typhoid fever.....	8

## GEORGIA.

Chicken pox.....	9
Diphtheria.....	14
Dysentery (bacillary).....	1
Hookworm disease.....	2
Influenza.....	2
Malaria.....	17
Mumps.....	8
Pneumonia.....	5
Scarlet fever.....	1
Smallpox.....	29
Tuberculosis.....	4
Typhoid fever.....	6
Whooping cough.....	11

## ILLINOIS.

Diphtheria:	Cases.
Cook County.....	93
Rock Island County.....	10
Sangamon County.....	9
Scattering.....	29
Influenza.....	10
Lethargic encephalitis—Cook County.....	3
Measles.....	63
Pneumonia.....	124
Poliomyelitis:	
Cook County.....	3
McHenry County.....	1
Peoria County.....	1
Scarlet fever:	
Cook County.....	103
Kankakee County.....	12
Scattering.....	95
Smallpox.....	15
Tuberculosis.....	125
Typhoid fever.....	32
Whooping cough.....	150

## INDIANA.

Chicken pox.....	110
Diphtheria:	
Allen County.....	17
Scattering.....	84
Influenza:	
Knox County.....	12
Scattering.....	3
Measles.....	22
Mumps.....	8
Pneumonia.....	16
Poliomyelitis.....	4
Scarlet fever:	
Allen County.....	12
Bartholomew County.....	10
Huntington County.....	11
St. Joseph County.....	12
Tippecanoe County.....	10
Wayne County.....	9
Scattering.....	74
Smallpox.....	23
Tuberculosis.....	25
Typhoid fever.....	25
Whooping cough.....	17

## IOWA.

Diphtheria.....	33
Poliomyelitis—Cedar Falls.....	2
Scarlet fever.....	50
Smallpox.....	26
Typhoid fever.....	1

## KANSAS.

Cerebrospinal meningitis.....	1
Chicken pox.....	94
Diphtheria.....	93
Influenza.....	19
Measles.....	3
Mumps.....	80
Pneumonia.....	19
Scarlet fever.....	324
Tuberculosis.....	46
Typhoid fever.....	16
Whooping cough.....	17

LOUISIANA.		Cases.	MICHIGAN.		Cases.
Diphtheria	.....	26	Diphtheria	.....	117
Hookworm disease	.....	3	Measles	.....	62
Influenza	.....	7	Pneumonia	.....	38
Malaria	.....	3	Scarlet fever	.....	189
Plague (bubonic)	.....	1	Smallpox	.....	35
Pneumonia	.....	30	Tuberculosis	.....	180
Scarlet fever	.....	13	Typhoid fever	.....	39
Smallpox	.....	7	Whooping cough	.....	82
Tuberculosis	.....	28			
Typhoid fever	.....	23			
MAINE.			MINNESOTA.		
Chicken pox	.....	30	Cerebrospinal meningitis	.....	1
Diphtheria	.....	6	Chicken pox	.....	135
Influenza	.....	1	Diphtheria	.....	94
Measles	.....	6	Measles	.....	11
Mumps	.....	30	Pneumonia	.....	2
Pneumonia	.....	10	Poliomyelitis	.....	3
Poliomyelitis	.....	6	Scarlet fever	.....	183
Scarlet fever	.....	35	Smallpox	.....	97
Tuberculosis	.....	14	Tuberculosis	.....	33
Typhoid fever	.....	6	Typhoid fever	.....	1
Whooping cough	.....	8	Whooping cough	.....	1
MARYLAND. <sup>1</sup>			MISSISSIPPI.		
Chicken pox	.....	53	Diphtheria	.....	40
Diphtheria	.....	56	Poliomyelitis	.....	1
Dysentery	.....	1	Scarlet fever	.....	16
German measles	.....	1	Smallpox	.....	13
Impetigo contagiosa	.....	1	Typhoid fever	.....	15
Influenza	.....	31			
Malaria	.....	1	MISSOURI.		
Measles	.....	6	Chicken pox	.....	15
Mumps	.....	9	Diphtheria	.....	109
Ophthalmia neonatorum	.....	1	Influenza	.....	11
Paratyphoid fever	.....	1	Malaria	.....	2
Pneumonia (all forms)	.....	42	Measles	.....	2
Poliomyelitis	.....	4	Mumps	.....	9
Scarlet fever	.....	58	Pellagra	.....	1
Septic sore throat	.....	2	Pneumonia	.....	13
Tetanus	.....	1	Poliomyelitis	.....	3
Tuberculosis	.....	55	Scarlet fever	.....	205
Typhoid fever	.....	30	Septic sore throat	.....	1
Vincent's angina	.....	1	Smallpox	.....	4
Whooping cough	.....	83	Tetanus	.....	1
			Trachoma	.....	3
			Tuberculosis	.....	33
			Typhoid fever	.....	19
			Whooping cough	.....	7
MASSACHUSETTS.			MONTANA.		
Anthrax	.....	2	Diphtheria	.....	18
Chicken pox	.....	152	Poliomyelitis:		
Conjunctivitis (suppurative)	.....	19	Belgrade	.....	1
Diphtheria	.....	152	Bozeman	.....	1
German measles	.....	7	Scarlet fever	.....	10
Influenza	.....	4	Smallpox	.....	2
Measles	.....	79	Typhoid fever	.....	1
Mumps	.....	47			
Ophthalmia neonatorum	.....	21	NEW JERSEY.		
Pneumonia (lobar)	.....	85	Cerebrospinal meningitis	.....	1
Poliomyelitis	.....	7	Chicken pox	.....	140
Scarlet fever	.....	196	Diphtheria	.....	85
Septic sore throat	.....	2	Influenza	.....	10
Tetanus	.....	2	Leprosy	.....	1
Trichinosis	.....	1	Measles	.....	34
Tuberculosis (all forms)	.....	134	Pneumonia	.....	106
Typhoid fever	.....	11	Scarlet fever	.....	127
Whooping cough	.....	78			

<sup>1</sup> Week ended Friday.



NEW JERSEY—continued.		Cases.	SOUTH DAKOTA—continued.		Cases.
Smallpox.....		1	Mumps.....		9
Typhoid fever.....		11	Scarlet fever.....		25
Whooping cough.....		153	Smallpox.....		2
<b>NEW MEXICO.</b>			Trachoma.....		2
Chicken pox.....		14	Typhoid fever.....		6
Diphtheria.....		3	Whooping cough.....		8
Measles.....		48	<b>TEXAS.</b>		
Mumps.....		1	Chicken pox.....		38
Pneumonia.....		4	Dengue.....		9
Scarlet fever.....		3	Diphtheria.....		66
Septic sore throat.....		1	Dysentery (epidemic).....		16
Tuberculosis.....		40	Influenza.....		183
Typhoid fever.....		15	Malta fever.....		9
Whooping cough.....		3	Measles.....		11
<b>NEW YORK.</b>			Mumps.....		13
(Exclusive of New York City.)			Ophthalmia neonatorum.....		4
Cerebrospinal meningitis.....		2	Paratyphoid fever.....		2
Diphtheria.....		130	Pellagra.....		25
Influenza.....		19	Pneumonia.....		18
Lethargic encephalitis.....		3	Poliomyelitis.....		2
Measles.....		114	Scarlet fever.....		52
Pneumonia.....		105	Smallpox.....		34
Poliomyelitis.....		18	Tetanus.....		1
Scarlet fever.....		254	Trachoma.....		12
Smallpox.....		77	Tuberculosis.....		141
Typhoid fever.....		35	Typhoid fever.....		84
Whooping cough.....		209	Typhus fever.....		4
<b>NORTH CAROLINA.</b>			Whooping cough.....		146
Chicken pox.....		101	<b>VERMONT.</b>		
Diphtheria.....		185	Chicken pox.....		9
German measles.....		6	Diphtheria.....		3
Measles.....		36	Measles.....		54
Scarlet fever.....		77	Mumps.....		4
Smallpox.....		11	Pneumonia.....		1
Typhoid fever.....		13	Scarlet fever.....		12
Whooping cough.....		102	Whooping cough.....		14
<b>OKLAHOMA.</b>			<b>WASHINGTON.</b>		
(Exclusive of Oklahoma City and Tulsa.)			Chicken pox.....		79
Diphtheria.....		33	Diphtheria.....		33
Smallpox.....		2	Measles.....		4
Typhoid fever.....		40	Mumps.....		27
<b>OREGON.</b>			Poliomyelitis:		
Chicken pox.....		36	Adams County.....		1
Diphtheria:			Benton County.....		1
Portland.....		26	Clarke County.....		1
Scattering.....		18	Cowlitz County.....		1
Measles.....		3	King County.....		8
Mumps.....		2	Pierce County.....		1
Pneumonia.....		17	Skagit County.....		1
Poliomyelitis.....		3	Snohomish County.....		2
Scarlet fever:			Stevens County.....		2
Portland.....		8	Thurston County.....		1
Union County.....		11	Yakima County.....		2
Scattering.....		13	Aberdeen.....		1
Smallpox.....		4	Seattle.....		2
Tuberculosis.....		8	Spokane.....		2
Typhoid fever.....		11	Tacoma.....		2
<b>SOUTH DAKOTA.</b>			Yakima.....		2
Chicken pox.....		7	Scarlet fever.....		58
Diphtheria.....		11	Smallpox.....		11
			Tuberculosis.....		45
			Typhoid fever.....		7
			Whooping cough.....		6

<sup>1</sup> Deaths.

WEST VIRGINIA.	Cases.
Diphtheria.....	26
Scarlet fever.....	13
Typhoid fever.....	5
<b>MILWAUKEE:</b>	
Chicken pox.....	60
Diphtheria.....	23
German measles.....	8
Influenza.....	1
Measles.....	21
Mumps.....	22
Ophthalmia neonatorum.....	1
Pneumonia.....	2
Scarlet fever.....	10
Tuberculosis.....	23
Whooping cough.....	19
Scattering:	
Cerebrospinal meningitis.....	2
Chicken pox.....	166
Diphtheria.....	41
German measles.....	1

WISCONSIN—continued.	Cases.
<b>Scattering—Continued.</b>	
Influenza.....	8
Measles.....	25
Mumps.....	31
Pneumonia.....	8
Poliomyelitis.....	9
Scarlet fever.....	94
Smallpox.....	13
Tuberculosis.....	14
Typhoid fever.....	2
Whooping cough.....	97
<b>WYOMING.</b>	
Chicken pox.....	12
German measles.....	1
Impetigo contagiosa.....	1
Mumps.....	10
Scarlet fever.....	7
Smallpox.....	4
Tuberculosis.....	1
Typhoid fever.....	1
Whooping cough.....	2

**Reports for Week Ended November 1, 1924.**

CALIFORNIA.	Cases.
Botulism—Oakland.....	1
Cerebrospinal meningitis:	
Los Angeles.....	3
San Jose.....	1
Diphtheria.....	146
Influenza.....	15
Lethargic encephalitis:	
Los Angeles.....	1
Palo Alto.....	1
San Francisco.....	1
Measles.....	19
Plague (bubonic)—Los Angeles.....	1
Plague (pneumonic)—Los Angeles.....	34
Poliomyelitis:	
Alamada.....	1
Alhambra.....	1
Benicia.....	1
Contra Costa County.....	3
Los Angeles.....	2
Los Angeles County.....	2
Oakland.....	1
San Diego.....	1
San Francisco.....	3
Sonoma County.....	1
Tuolumne County.....	1
Scarlet fever.....	92
Smallpox:	
Fresno.....	18
Los Angeles.....	21
Sacramento.....	10
Scattering.....	20
Typhoid fever.....	18
<b>DISTRICT OF COLUMBIA.</b>	
Chicken pox.....	5
Diphtheria.....	5
Scarlet fever.....	13
Tuberculosis.....	27
Typhoid fever.....	5
Whooping cough.....	3

INDIANA.	Cases.
Cerebrospinal meningitis.....	1
Chicken pox:	
Madison County.....	11
Scattering.....	41
Diphtheria:	
Clark County.....	11
Lake County.....	12
Scattering.....	70
Influenza.....	24
Measles.....	11
Mumps.....	13
Pneumonia.....	9
Poliomyelitis.....	4
Scarlet fever:	
Huntington County.....	25
Lake County.....	8
St. Joseph County.....	32
Scattering.....	65
Smallpox.....	18
Tuberculosis.....	25
Typhoid fever.....	32
Whooping cough.....	25
<b>MINNESOTA.</b>	
Chicken pox.....	97
Diphtheria.....	125
Measles.....	12
Pneumonia.....	2
Poliomyelitis.....	5
Scarlet fever.....	182
Smallpox.....	90
Tuberculosis.....	48
Typhoid fever.....	2
Whooping cough.....	19
<b>NEBRASKA.</b>	
Chicken pox.....	10
Diphtheria.....	36
Measles.....	1
Pneumonia.....	1

125 Deaths.

NEBRASKA—continued.		NORTH DAKOTA—continued.	
	Cases.		Cases.
Scarlet fever.....	19	Smallpox.....	4
Smallpox.....	16	Tuberculosis.....	2
Tuberculosis.....	1	Typhoid fever.....	1
Typhoid fever.....	1	Whooping cough.....	13
Whooping cough.....	2		
NORTH DAKOTA.		WYOMING.	
Chicken pox.....	14	Chicken pox.....	17
Diphtheria.....	5	Diphtheria.....	3
Influenza.....	1	Measles.....	4
Measles.....	12	Mumps.....	51
Pneumonia.....	3	Scarlet fever.....	2
Poliomyelitis.....	3	Smallpox.....	5
Scarlet fever.....	23	Typhoid fever.....	4
		Whooping cough.....	3

### SUMMARY OF MONTHLY REPORTS FROM STATES.

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

State.	Cerebro-spinal meningitis.	Diphtheria	Influenza.	Malaria.	Measles.	Pellagra.	Poliomyelitis.	Scarlet fever.	Smallpox.	Typhoid fever.
<i>September, 1924</i>										
California.....	5	527	24	12	49	2	17	247	222	98
Minnesota.....	3	321	1		36		32	440	102	27
North Carolina.....	4	871			93		1	155	43	208
Ohio.....	2	353	0	0	83	0	35	554	150	250
Utah.....	2	46			114		1	33	10	58
<i>October, 1924</i>										
Connecticut.....	4	173	6		24		19	247		29

### PLAGUE ON STEAMER ARRIVING AT NEW ORLEANS.

On October 28 a vessel arrived at New Orleans from Barcelona, Spain, via Oran, Algeria, having a case of bubonic plague on board. The patient was isolated and the vessel fumigated to destroy rodents. The diagnosis of plague in this patient has been confirmed by bacteriological examination. The last report stated that he had developed pulmonary symptoms and that plague bacilli were present in the sputum. Twenty-two rats were recovered after fumigation of the vessel and are being examined for plague infection. The personnel of the vessel are still under observation (November 8).

### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES.

*Diphtheria.*—For the week ended October 25, 1924, 35 States reported 2,162 cases of diphtheria. For the week ended October 27, 1923, the same States reported 3,226 cases of this disease. One hundred and two cities, situated in all parts of the country and having an aggregate population of more than 28,700,000, reported 984 cases of diphtheria for the week ended October 25, 1924. Last year, for the corresponding week, they reported 1,419 cases. The estimated expectancy for these cities was 1,425 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

**Measles.**—Thirty-two States reported 627 cases of measles for the week ended October 25, 1924, and 3,103 cases of this disease for the week ended October 27, 1923. One hundred and two cities reported 197 cases of measles for the week this year and 668 cases last year.

**Scarlet fever.**—Scarlet fever was reported for the week as follows: Thirty-five States—this year, 2,271 cases; last year, 2,339 cases. One hundred and two cities—this year, 932 cases; last year, 843 cases; estimated expectancy, 728 cases.

**Smallpox.**—For the week ended October 25, 1924, 35 States reported 448 cases of smallpox. Last year, for the corresponding week, they reported 316 cases. One hundred and two cities reported smallpox for the week as follows: 1924, 134 cases; 1923, 151 cases; estimated expectancy, 48 cases. These cities reported 10 deaths from smallpox for the week this year.

**Typhoid fever.**—Five hundred and twenty-six cases of typhoid fever were reported for the week ended October 25, 1924, by 34 States. For the corresponding week of 1923 the same States reported 530 cases. One hundred and two cities reported 133 cases of typhoid fever for the week this year, and 141 cases for the week last year. The estimated expectancy for these cities was 144 cases.

**Influenza and pneumonia.**—Deaths from influenza and pneumonia (combined) were reported for the week by 102 cities as follows: 1924, 494 deaths; 1923, 528 deaths.

*City reports for week ended October 25, 1924.*

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

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chick- en pox, cases re- ported.	Diphtheria.		Influenza.		Mea- sles, cases re- ported.	Mumps, cases re- ported.	Pneu- monia, deaths, re- ported.	Scarlet fever.	
		Cases, esti- mated expect- ancy.	Cases re- ported.	Cases re- ported.	Deaths re- ported.				Cases, esti- mated expect- ancy	Cases re- ported.
NEW ENGLAND.										
<b>Maine:</b>										
Lewiston.....	7	2	0	0	0	1	0	0	1	1
Portland.....	2	1	6	0	0	0	13	1	1	0
<b>New Hampshire:</b>										
Concord.....	0	0	0	0	0	0	0	1	0	2
Nashua.....	0	1	1	0	0	0	0	1	1	1
<b>Vermont:</b>										
Barre.....	0	0	0	0	0	0	3	0	0	0
Burlington.....	10	1	0	0	0	0	0	1	1	0
<b>Massachusetts:</b>										
Boston.....	16	59	42	1	0	18	3	13	27	70
Fall River.....	4	3	6	1	1	3	1	4	1	2
Springfield.....	1	5	2	0	0	4	4	0	5	11
Worcester.....	3	9	8	0	0	0	1	0	7	7

## City reports for week ended October 25, 1924.

Division, State, and city.	Chick- en pox, cases re- ported.	Diphtheria.		Influenza.		Meas- les, cases re- ported.	Mumps, cases re- ported.	Pneu- monia, deaths, re- ported.	Scarlet fever.	
		Cases, esti- mated expect- ancy.	Cases re- ported.	Cases re- ported.	Deaths re- ported.				Cases, esti- mated expect- ancy.	Cases re- ported.
<b>NEW ENGLAND—</b>										
continued.										
Rhode Island:										
Pawtucket.....	0	2	1	0	0	0	0	0	0	3
Providence.....	0	11	6	0	0	2	0	4	4	4
Connecticut:										
Bridgeport.....	0	10	10	0	0	0	0	0	4	6
Hartford.....	0	9	6	0	0	0	2	1	3	6
New Haven.....	1	6	2	0	0	4	0	3	4	10
<b>MIDDLE ATLANTIC.</b>										
New York:										
Buffalo.....		28	12	0	0	26		6	14	17
New York.....	0	153	88	10	5	15	8	138	67	72
Rochester.....	1	14	0	0	1	0	3	4	5	9
Syracuse.....	13	14	6	0	0	1	0	0	9	6
New Jersey:										
Camden.....	4	9	11	0	0	0	0	1	2	5
Newark.....	8	19	8	2	0	4	5	9	10	10
Trenton.....	0	6	4	0	1	0	0	4	0	0
Pennsylvania:										
Philadelphia.....	32	68	68		2	27	13	36	37	57
Pittsburgh.....	90	41	26	0	0	19	14	28	22	37
Reading.....	6	5	5	0	0	0	5	1	1	0
<b>E. NORTH CENTRAL.</b>										
Ohio:										
Cincinnati.....	15	25	9		1	1	1	3	12	10
Cleveland.....	37	50	18		2	2	1	8	24	18
Columbus.....	6	10	4	0	0	0	0	6	9	14
Toledo.....	10	18	14	0	0	3	2	1	11	6
Indiana:										
Fort Wayne.....	0	4	10	0	0	4	0	0	1	4
Indianapolis.....		25	7	0	0	2		3	10	7
South Bend.....	2	3	7	0	0	0	0	0	2	4
Terre Haute.....		5	3	0	0	1		0	2	3
Illinois:										
Chicago.....	98	175	42	5	2	29	23	35	99	70
Cicero.....	2	6	2	0	0	0	2	1	2	4
Springfield.....		2	7	0	0	2		1	3	1
Michigan:										
Detroit.....	38	84	38	0	0	7	11	14	57	44
Flint.....	0	14	2	0	0	0	1	1	8	9
Grand Rapids.....	4	9	7	0	0	0	1	1	7	8
Saginaw.....	12	3	1	0	0	1	0	0	2	1
Wisconsin:										
Madison.....	3	2	0	0	0	0	13	1	1	1
Milwaukee.....	46	29	18	3	1	7	11	0	25	10
Racine.....	2	4	2	0	0	0	0	3	7	4
Superior.....	1	1	0	0	0	0	0	0	2	3
<b>W. NORTH CENTRAL.</b>										
Minnesota:										
Duluth.....	17	6	2	0	0	0	0	4	3	27
Minneapolis.....	48	27	40	0	0	1	4	1	21	52
St. Paul.....		22	21	0	0	2		4	8	13
Iowa:										
Davenport.....	3	2	3	0		0	0		1	0
Des Moines.....	0	9	2	0		0	0		13	4
Sioux City.....	6	3	2	0		0	0		2	1
Waterloo.....	0	2	0	0		0	0		4	0
Missouri:										
Kansas City.....	3	19	11	0	0	0	0	4	8	13
St. Joseph.....	1	5	2	0	0	0	0	2	3	2
St. Louis.....	14	84	48	0	0	0	4		28	139
North Dakota:										
Fargo.....	3	0	0	0	0	0	0	1	2	1
Grand Forks.....	0	1	0	0		0	0		2	0
South Dakota:										
Aberdeen.....	5		0	0		0	0			1
Sioux Falls.....	0	1	2	0	0	0	0	0	1	0
Nebraska:										
Lincoln.....	2	3	10	0	0	0	0	0	1	0
Omaha.....	10	11	13	0	0	0	0	4	4	4
Kansas:										
Topeka.....	2	3	2	0	0	0	4	0	2	1
Wichita.....	2	7	6	0	0	0	2	0	4	0

## City reports for week ended October 25, 1924—Continued.

Division, State, and city.	Chicken pox, cases reported	Diphtheria.		Influenza.		Measles, cases reported.	Mumps, cases reported.	Pneumonia, deaths reported.	Scarlet fever.	
		Cases, estimated expectancy.	Cases reported.	Cases reported.	Deaths reported.				Cases, estimated expectancy.	Cases reported.
<b>SOUTH ATLANTIC.</b>										
Delaware:										
Wilmington.....		2	3	0	0	0		0	3	4
Maryland:										
Baltimore.....	36	31	37	1	0	1	11	17	14	11
Cumberland.....		1	2	1	0	0		0	1	0
Frederick.....		1	0	0	0	0		0	1	2
District of Columbia:										
Washington.....	3	20	11	0	0	0		14	12	20
Virginia:										
Lynchburg.....	1	1	10	0	0	0	13	2	1	3
Norfolk.....	0	4	2	0	0	0	5	1	1	1
Richmond.....	1	16	63	0	1	0	1	5	7	2
Roanoke.....		4	6	0	1	0		2	2	1
West Virginia:										
Charleston.....	7	6	3	0	0	0	0	0	1	0
Huntington.....	0	6	4	0	0	0	0	0	1	4
Wheeling.....	3	3	0	0	0	0		1	2	4
North Carolina:										
Raleigh.....	3	4	9	0	0	1	0	0	3	0
Wilmington.....	0	1	1	0	0	0	1	2	1	1
Winston-Salem.....	0	4	16	0	0	0	1	1	3	5
South Carolina:										
Charleston.....	0	2	1	0	0	0	0	4	1	2
Columbia.....	0	3	1	0	0	0	1	2	1	0
Greenville.....	0	1	0	0	0	0	0	1	1	0
Georgia:										
Atlanta.....	0	13	5	1	0	0	0	10	8	1
Brunswick.....	0	0	1	0	0	0	0	0	0	0
Savannah.....	0	5	1	0	0	0	0	2	1	0
Florida:										
St. Petersburg.....	0	0	0	0	0	0	0	1	0	0
Tampa.....	0	3	0	0	0	0	0	0	0	0
<b>EAST SOUTH CENTRAL.</b>										
Kentucky:										
Covington.....	0	4	1	0	0	0	0	0	2	1
Lexington.....	0	4	4	0	0	0	0	1	1	0
Louisville.....	0	15	9	0	0	0	0	2	4	3
Tennessee:										
Memphis.....		12	19	0	0	0		4	5	3
Nashville.....	1	8	3	0	0	0		2	4	1
Alabama:										
Birmingham.....	5	8	5	3	0	0	0	4	5	4
Mobile.....	0	3	1	0	0	0	0	1	1	2
Montgomery.....	2	3	3	0	0	0	0	0	1	0
<b>WEST SOUTH CENTRAL.</b>										
Arkansas:										
Fort Smith.....	0	2	0	0	0	0	4		1	3
Little Rock.....	0	3	1	0	0	0	0	1	2	3
Louisiana:										
New Orleans.....	0	12	16	2	0	0	0	5	4	1
Shreveport.....	0		1	0	0	0	0	3		2
Oklahoma:										
Oklahoma.....	0	5	0	0	0	0	0	4	3	0
Tulsa.....	1	6	4	0	0	0	0		4	1
Texas:										
Dallas.....	1	13	14	0	0	1	0	1	3	8
Galveston.....	0	2	1	0	0	0	0	3	0	0
Houston.....	0	4	1	0	0	0	0	2	1	0
San Antonio.....		2	2	0	0	0		2	0	0
<b>MOUNTAIN.</b>										
Montana:										
Billings.....	0	0	0	0	0	0	0	0	1	2
Great Falls.....	1	1	2	0	0	0	0	1	1	1
Helena.....		0	0	0	0	0	0	0	0	0
Missoula.....	0	0	8	0	0	0	0	1	1	0
Idaho:										
Boise.....	0	0	0	0	0	1	0	0	1	0

City reports for week ended October 25, 1924—Continued.

Division, State, and city.	Chick- en pox, cases re- ported	Diphtheria.		Influenza.		Meas- les, cases re- ported.	Mumps, cases re- ported.	Pneu- monia, deaths re- ported.	Scarlet fever.	
		Cases, esti- mated expect- ancy.	Cases re- ported.	Cases re- ported.	Deaths re- ported.				Cases, esti- mated expect- ancy.	Cases re- ported.
<b>MOUNTAIN—contd.</b>										
Colorado:										
Denver.....	33	15	6	0	0	1	1	11	6	6
Pueblo.....	4	5	1	0	0	0	2	0	2	1
New Mexico:										
Albuquerque.....		2	0	0	0	0		0	0	0
Utah:										
Salt Lake City.....	22	3	6	0	0	0	5	3	4	2
Nevada:										
Reno.....	0	0	0	0	0	0	0	0	0	1
<b>PACIFIC.</b>										
Washington:										
Seattle.....	25	6	5	0		1	1		7	6
Spokane.....	3	5	1	0		4	0		7	1
Tacoma.....	0	3	3	0		0	0		1	0
Oregon:										
Portland.....	26	7	15	0	0	4	1	5	7	2
California:										
Los Angeles.....	25	40	46	8	0	6	6	11	10	14
Sacramento.....	2	2	5	0	1	1	0	0	1	9
San Francisco.....	6	20	14	1	0	2	16	6	6	6

Division, State, and city.	Popula- tion July 1, 1923, estimated.	Smallpox.			Tubercu- losis, deaths re- ported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
<b>NEW ENGLAND.</b>										
Maine:										
Lewiston.....	33,790	0	0	0	0	1	0	0	0	7
Portland.....	73,129	0	0	0	0	1	0	1	3	21
New Hampshire:										
Concord.....	22,408	0	0	0	0	0	0	0	0	8
Nashua.....	29,234	0	0	0	0	0	0	0	0	5
Vermont:										
Barre.....	10,008	0	0	0	0	0	0	0	0	3
Burlington.....	23,613	0	0	0	0	0	0	0	0	11
Massachusetts:										
Boston.....	770,400	0	0	0	11	3	1	1	15	185
Fall River.....	120,912	0	0	0	1	1	0	0	0	32
Springfield.....	144,227	0	0	0	0	1	0	0	1	35
Worcester.....	191,927	0	0	0	3	1	0	0	4	46
Rhode Island:										
Pawtucket.....	68,799	0	0	0	1	0	0	0	0	17
Providence.....	242,378	0	0	0	2	1	2	0	2	45
Connecticut:										
Bridgeport.....	143,555	0	0	0	3	0	2	0	1	38
Hartford.....	138,036	0	0	0	0	0	0	0	2	30
New Haven.....	172,967	0	0	0	0	2	1	0	21	39
<b>MIDDLE ATLANTIC.</b>										
New York:										
Buffalo.....	536,718	0	4	0	6	1	0	1		118
New York.....	5,927,625	0	0	0	75	23	20	3	150	1,173
Rochester.....	317,867	0	0	0	2	1	1	0	3	58
Syracuse.....	184,511	0	0	0	0	1	0	1	2	38
New Jersey:										
Camden.....	124,157	0	1	0	0	2	0	1	2	30
Newark.....	438,699	0	0	0	10	3	2	0	33	90
Trenton.....	127,390	0	0	0	3	1	0	0	8	40
Pennsylvania:										
Philadelphia.....	1,922,788	0	0	0	26	10	15	0	76	424
Pittsburgh.....	613,442	0	0	0	12	2	2	1	10	193
Reading.....	110,917	0	0	0	3	1	0	0	10	31

<sup>1</sup> Population Jan. 1, 1920.

<sup>2</sup> Pulmonary only.

City reports for week ended October 26, 1924—Continued.

Division, State, and city.	Population July 1, 1923, estimated.	Smallpox.			Tuberculosis, deaths reported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
<b>EAST NORTH CENTRAL</b>										
<b>Ohio:</b>										
Cincinnati.....	406,312	1	1	0	13	1	0	0	0	122
Cleveland.....	888,519	1	0	0	5	2	2	1	17	116
Columbus.....	261,682	0	5	0	1	2	0	2	0	81
Toledo.....	268,338	1	5	0	9	2	3	1	10	55
<b>Indiana:</b>										
Fort Wayne.....	93,573	0	2	0	1	0	2	0	0	21
Indianapolis.....	342,718	1	1	0	4	1	0	0	0	90
South Bend.....	76,709	0	0	0	0	0	1	0	0	9
Terre Haute.....	68,939	0	0	0	1	1	0	0	0	16
<b>Illinois:</b>										
Chicago.....	2,886,121	1	1	0	53	8	6	2	63	513
Cicero.....	55,968	0	0	0	0	0	0	0	2	2
Springfield.....	61,833	0	0	0	0	1	2	0	0	21
<b>Michigan:</b>										
Detroit.....	995,668	2	4	2	19	6	0	1	24	195
Flint.....	117,968	1	1	0	2	1	0	0	1	22
Grand Rapids.....	145,947	1	2	0	3	0	0	0	0	25
Saginaw.....	69,754	0	0	0	0	1	0	0	0	9
<b>Wisconsin:</b>										
Madison.....	42,519	0	0	0	1	0	1	0	5	5
Milwaukee.....	484,595	3	0	0	7	1	0	0	15	77
Racine.....	64,393	0	3	0	0	1	0	0	7	8
Superior.....	139,671	1	0	0	1	0	0	0	0	7
<b>WEST NORTH CENTRAL</b>										
<b>Minnesota:</b>										
Duluth.....	106,289	1	0	0	1	0	0	0	0	12
Minneapolis.....	409,125	2	43	7	9	1	1	0	1	80
St. Paul.....	241,691	5	16	0	4	1	0	0	0	64
<b>Iowa:</b>										
Davenport.....	61,262	1	2	0	0	0	0	0	0	---
Des Moines.....	140,523	1	0	0	0	0	0	0	0	---
Sioux City.....	79,662	1	0	0	0	0	0	0	1	---
Waterloo.....	39,667	0	1	0	0	0	0	0	0	---
<b>Missouri:</b>										
Kansas City.....	351,819	1	0	0	6	2	0	0	3	80
St. Joseph.....	79,232	0	0	0	1	1	0	0	0	---
St. Louis.....	803,853	1	2	0	6	4	3	0	7	193
<b>North Dakota:</b>										
Fargo.....	24,841	0	0	0	0	0	0	0	0	7
Grand Forks.....	14,547	1	0	0	0	0	0	0	0	---
<b>South Dakota:</b>										
Aberdeen.....	15,829	0	0	0	0	0	0	0	0	---
Sioux Falls.....	29,206	0	0	0	0	0	0	0	0	2
<b>Nebraska:</b>										
Lincoln.....	58,761	0	0	0	0	0	0	0	0	9
Omaha.....	204,382	1	2	0	1	1	0	0	1	43
<b>Kansas:</b>										
Topeka.....	52,555	0	0	0	0	0	1	0	1	11
Wichita.....	79,261	1	0	0	0	0	0	0	9	18
<b>SOUTH ATLANTIC</b>										
<b>Delaware:</b>										
Wilmington.....	117,728	0	0	0	0	2	2	0	0	24
<b>Maryland:</b>										
Baltimore.....	773,580	0	0	0	14	7	4	1	39	203
Cumberland.....	32,361	0	2	0	0	1	0	0	0	12
Frederick.....	11,301	0	0	0	0	0	0	0	0	4
<b>District of Columbia:</b>										
Washington.....	1437,571	1	0	0	9	3	5	0	1	118
<b>Virginia:</b>										
Lynchburg.....	30,277	0	0	0	0	1	0	0	0	8
Norfolk.....	159,089	0	0	0	3	1	0	0	0	---
Richmond.....	181,044	0	0	0	2	1	0	0	1	50
Roanoke.....	55,502	0	0	0	0	1	1	0	0	15
<b>West Virginia:</b>										
Charleston.....	45,597	0	0	0	1	1	0	0	0	15
Huntington.....	57,918	0	0	0	0	0	0	0	0	---
Wheeling.....	56,208	0	0	0	0	1	2	0	0	12

<sup>1</sup>Population Jan. 1, 1920.



## City reports for week ended October 25, 1924—Continued.

Division, State, and city.	Popula- tion, July 1, 1923, estimated.	Smallpox.			Tubercu- losis, deaths re- ported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
<b>SOUTH ATLANTIC—continued.</b>										
North Carolina:										
Raleigh	29, 171	1	0	0	2	0	0	0	5	9
Wilmington	35, 719	0	0	0	0	0	0	0	0	8
Winston-Salem	56, 230	0	1	0	0	0	1	0	0	18
South Carolina:										
Charleston	71, 245	0	0	0	2	1	2	0	2	21
Columbia	39, 688	0	0	0	2	1	0	0	7	21
Greenville	25, 789	0	0	0	0	0	1	0	0	5
Georgia:										
Atlanta	222, 963	1	0	0	2	1	3	2	-----	66
Brunswick	15, 937	0	0	0	0	0	0	0	0	2
Savannah	89, 448	0	0	0	1	1	1	2	0	29
Florida:										
St. Petersburg	24, 403	0	0	0	0	0	0	0	0	6
Tampa	56, 050	0	0	0	2	0	0	0	-----	11
<b>EAST SOUTH CENTRAL.</b>										
Kentucky:										
Covington	57, 877	0	0	0	3	1	0	0	0	12
Lexington	43, 673	0	0	0	1	0	0	0	0	15
Louisville	257, 671	0	0	0	3	3	6	0	0	69
Tennessee:										
Memphis	170, 067	0	0	0	4	1	7	1	-----	51
Nashville	121, 128	0	0	0	4	3	4	1	3	54
Alabama:										
Birmingham	195, 901	1	11	0	4	1	4	0	2	59
Mobile	83, 858	0	0	0	4	1	0	0	-----	18
Montgomery	45, 383	0	0	0	0	0	0	0	0	11
<b>WEST SOUTH CENTRAL.</b>										
Arkansas:										
Fort Smith	30, 635	0	0	-----	-----	1	0	-----	0	-----
Little Rock	70, 916	0	0	0	5	1	4	0	0	-----
Louisiana:										
New Orleans	404, 575	1	0	0	13	3	3	1	4	112
Shreveport	54, 590	-----	0	0	1	-----	1	0	0	28
Oklahoma:										
Oklahoma	101, 150	0	0	0	0	1	1	0	0	15
Tulsa	102, 018	0	0	-----	-----	1	0	-----	0	-----
Texas:										
Dallas	177, 274	0	0	0	4	2	0	1	3	43
Galveston	46, 877	0	0	0	0	0	3	0	0	12
Houston	154, 970	0	2	0	0	1	1	0	0	38
San Antonio	184, 727	1	0	0	6	0	0	0	-----	39
<b>MOUNTAIN.</b>										
Montana:										
Billings	16, 927	0	0	0	0	0	0	0	0	6
Great Falls	27, 787	1	0	0	0	0	2	0	0	4
Helena	12, 037	0	0	0	0	0	0	0	-----	7
Missoula	12, 668	1	2	0	0	0	0	0	0	6
Idaho:										
Boise	22, 806	1	0	0	0	1	0	0	0	2
Colorado:										
Denver	272, 031	3	0	0	16	1	0	1	2	90
Pueblo	43, 519	0	0	0	0	1	0	0	-----	10
New Mexico:										
Albuquerque	16, 648	0	0	0	2	2	0	0	-----	5
Utah:										
Salt Lake City	126, 241	2	1	0	2	2	8	2	0	37
Nevada:										
Reno	12, 429	0	0	0	0	0	0	0	0	3
<b>PACIFIC.</b>										
Washington:										
Seattle	1315, 685	1	1	-----	-----	1	1	-----	4	-----
Spokane	104, 373	5	1	-----	-----	1	1	-----	1	-----
Tacoma	101, 731	1	1	-----	-----	0	1	-----	0	-----
Oregon:										
Portland	273, 621	3	0	0	1	2	2	1	0	-----
California:										
Los Angeles	666, 853	1	17	1	22	4	1	0	21	191
Sacramento	69, 950	0	7	0	1	1	1	0	0	14
San Francisco	539, 038	0	0	0	7	2	1	0	2	111

<sup>1</sup> Population Jan. 1, 1920.

## City reports for week ended October 25, 1924.—Continued.

Division, State, and city.	Cerebro-spinal meningitis.		Lethargic encephalitis.		Pellagra.		Poliomyelitis (infantile paralysis).			Typhus fever.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases estimated expectancy.	Cases.	Deaths.	Cases.	Deaths.
<b>NEW ENGLAND.</b>											
Massachusetts:											
Boston.....	0	0	1	0	0	0	2	5	0	0	0
Connecticut:											
New Haven.....	0	1	0	0	0	0	0	0	0	0	0
<b>MIDDLE ATLANTIC.</b>											
New York:											
Buffalo.....	0	0	0	0	0	0	1	3	0	0	0
New York.....	3	4	6	2	0	0	9	21	8	1	1
Syracuse.....	0	0	0	0	0	0	0	1	1	0	0
Pennsylvania:											
Philadelphia.....	0	1	1	1	0	0	1	2	0	0	0
<b>EAST NORTH CENTRAL.</b>											
Ohio:											
Cleveland.....	0	0	0	0	0	0	0	2	1	0	0
Columbus.....	0	0	1	0	0	0	0	0	0	0	0
Toledo.....	0	0	0	0	0	0	0	1	0	0	0
Indiana:											
Indianapolis.....	0	0	0	0	0	0	0	1	0	0	0
South Bend.....	0	0	0	0	0	0	0	1	1	0	0
Illinois:											
Chicago.....	0	0	1	0	0	0	4	1	0	0	0
Michigan:											
Detroit.....	0	1	0	0	0	0	0	15	1	0	0
Flint.....	0	0	0	0	0	0	1	0	1	0	0
Saginaw.....	0	1	0	0	0	0	0	0	0	0	0
<b>WEST NORTH CENTRAL.</b>											
Minnesota:											
St. Paul.....	1	0	0	0	0	0	0	0	0	0	0
Missouri:											
Kansas City.....	0	0	0	0	0	0	0	1	0	0	0
St. Louis.....	0	0	0	0	0	0	0	1	1	0	0
Kansas:											
Topeka.....	0	0	0	0	0	0	0	0	1	0	0
<b>SOUTH ATLANTIC.</b>											
Maryland:											
Baltimore.....	1	1	0	1	0	0	1	6	0	0	0
District of Columbia:											
Washington.....	0	0	0	0	0	0	0	2	0	0	0
South Carolina:											
Charleston.....	0	0	0	0	0	1	0	0	0	0	0
Columbia.....	0	0	0	0	0	1	0	0	0	0	0
Georgia:											
Atlanta.....	0	0	0	0	0	1	0	0	0	0	0
<b>WEST SOUTH CENTRAL.</b>											
Arkansas:											
Little Rock.....	0	0	0	0	0	1	0	0	0	0	0
Louisiana:											
New Orleans.....	0	0	0	0	1	1	0	0	0	0	0
Shreveport.....	0	0	0	0	0	1	0	0	0	0	0
<b>MOUNTAIN.</b>											
Montana:											
Helena.....	0	1	0	0	0	0	0	1	0	0	0
Missoula.....	0	0	0	0	0	0	0	1	0	0	0
<b>PACIFIC.</b>											
Washington:											
Seattle.....	0	0	0	0	0	0	1	0	0	0	0
Spokane.....	0	0	0	0	0	0	4	0	0	0	0
Tacoma.....	0	0	0	0	0	0	5	0	0	0	0
Oregon:											
Portland.....	0	0	0	0	0	0	1	2	0	0	0
California:											
Sacramento.....	0	0	1	1	0	0	0	0	0	0	0
San Francisco.....	0	0	1	1	0	0	1	1	0	0	0

The following table gives a summary of the reports from 105 cities for the 10-week period ended October 25, 1924. The cities included in this table are those whose reports have been published for all 10 weeks in the Public Health Reports. Eight of these cities did not report deaths. The aggregate population of the cities reporting cases was estimated at nearly 29,000,000 on July 1, 1923, which is the latest date for which estimates are available. The cities reporting deaths had more than 28,000,000 population on that date. The number of cities included in each group and the aggregate population are shown in a separate table below.

*Summary of weekly reports from cities, August 17 to October 25, 1924.*

DIPHTHERIA CASES.

	1924, week ended—									
	Aug. 23.	Aug. 30.	Sept. 6.	Sept. 13.	Sept. 20.	Sept. 27.	Oct. 4.	Oct. 11.	Oct. 18.	Oct. 25.
Total .....	494	480	455	521	643	779	757	883	936	988
New England .....	48	35	49	<sup>1</sup> 35	56	55	56	77	82	89
Middle Atlantic .....	189	167	139	139	177	255	198	209	259	228
East North Central .....	88	<sup>2</sup> 69	85	88	<sup>3</sup> 125	151	134	174	176	176
West North Central .....	49	50	47	91	90	92	116	126	136	149
South Atlantic .....	39	<sup>4</sup> 68	70	<sup>5</sup> 73	94	89	97	142	121	172
East South Central .....	9	8	7	7	13	22	20	28	42	41
West South Central .....	15	11	10	18	13	24	23	26	28	36
Mountain .....	14	16	19	12	15	18	24	14	18	23
Pacific .....	43	56	29	58	60	73	89	87	74	74

MEASLES CASES.

Total .....	136	121	109	102	94	104	134	130	103	197
New England .....	23	26	11	<sup>1</sup> 14	9	<sup>6</sup> 15	15	21	25	28
Middle Atlantic .....	46	41	56	40	36	<sup>6</sup> 38	65	56	97	92
East North Central .....	37	<sup>2</sup> 25	18	25	<sup>3</sup> 28	<sup>6</sup> 29	29	22	42	55
West North Central .....	4	9	3	4	2	<sup>6</sup> 7	9	5	7	3
South Atlantic .....	10	<sup>4</sup> 11	11	<sup>5</sup> 11	8	3	2	10	4	2
East South Central .....	5	1	1	1	0	<sup>6</sup> 2	1	2	1	0
West South Central .....	1	0	1	0	1	<sup>6</sup> 1	2	2	2	1
Mountain .....	1	4	2	4	0	<sup>6</sup> 3	2	0	5	2
Pacific .....	9	4	6	3	10	<sup>6</sup> 6	9	12	10	14

SCARLET FEVER CASES.

Total .....	291	307	253	359	455	586	570	774	795	938
New England .....	28	29	35	<sup>1</sup> 33	38	46	55	89	99	121
Middle Atlantic .....	55	69	50	48	97	128	129	154	168	213
East North Central .....	74	<sup>2</sup> 74	68	97	<sup>3</sup> 99	123	128	178	176	214
West North Central .....	75	58	48	104	142	172	148	218	227	253
South Atlantic .....	21	<sup>4</sup> 26	22	<sup>6</sup> 24	32	36	29	46	48	57
East South Central .....	13	9	2	6	14	17	13	21	11	14
West South Central .....	5	5	5	10	10	8	13	17	16	17
Mountain .....	4	17	3	10	9	16	18	15	19	13
Pacific .....	16	20	20	27	14	40	37	36	31	36

<sup>1</sup> Figures for Barre, Vt., estimated. Report not received at time of going to press.

<sup>2</sup> Figures for Cleveland, Ohio, estimated.

<sup>3</sup> Figures for Superior, Wis., estimated.

<sup>4</sup> Figures for Raleigh, N. C., estimated.

<sup>5</sup> Figures for Wilmington, Del., and Tampa, Fla., estimated.

<sup>6</sup> Corrected figure.

Summary of weekly reports from cities, August 17 to October 25, 1924—Continued.

SMALLPOX CASES.

	1924, week ended—									
	Aug. 23.	Aug. 30.	Sept. 6.	Sept. 13.	Sept. 20.	Sept. 27.	Oct. 4.	Oct. 11.	Oct. 18.	Oct. 25.
Total .....	71	88	66	64	86	84	86	72	99	134
New England.....	0	0	0	10	0	0	0	0	0	0
Middle Atlantic.....	3	11	4	2	3	6	8	3	0	5
East North Central.....	20	12	9	16	14	27	23	21	30	19
West North Central.....	5	25	9	11	23	19	15	21	27	64
South Atlantic.....	4	2	5	2	1	3	6	2	0	3
East South Central.....	14	13	16	3	8	5	6	2	15	11
West South Central.....	1	1	1	4	3	1	0	0	3	2
Mountain.....	2	2	0	0	2	1	1	0	2	3
Pacific.....	22	22	22	26	32	22	27	23	22	27

TYPHOID FEVER CASES.

Total .....	238	220	199	229	195	281	217	214	159	136
New England.....	8	12	6	19	12	11	9	16	8	6
Middle Atlantic.....	65	41	50	59	54	59	67	45	47	40
East North Central.....	22	22	27	31	25	39	25	15	17	14
West North Central.....	17	28	11	19	21	17	15	16	11	5
South Atlantic.....	35	34	36	47	32	50	35	23	20	22
East South Central.....	49	48	32	25	15	51	29	17	12	21
West South Central.....	29	25	10	15	15	17	7	15	12	12
Mountain.....	0	7	13	9	8	18	18	58	23	10
Pacific.....	13	3	14	15	13	19	12	9	9	6

INFLUENZA DEATHS.

Total .....	7	13	4	6	7	18	20	21	20	18
New England.....	0	1	0	10	1	1	0	1	1	1
Middle Atlantic.....	1	4	3	2	1	5	10	13	11	9
East North Central.....	2	13	0	3	10	2	4	4	3	5
West North Central.....	3	0	0	0	1	1	1	0	2	0
South Atlantic.....	0	2	1	1	1	3	1	1	1	2
East South Central.....	0	1	0	0	0	3	1	0	1	0
West South Central.....	1	2	0	0	3	1	1	1	1	0
Mountain.....	0	0	0	0	0	1	1	1	0	0
Pacific.....	0	0	0	0	0	1	1	0	0	1

PNEUMONIA DEATHS.

Total .....	251	315	313	306	308	372	438	494	497	479
New England.....	12	19	14	16	12	20	29	39	28	27
Middle Atlantic.....	102	136	152	120	125	152	178	217	221	227
East North Central.....	48	55	53	53	67	82	94	84	90	77
West North Central.....	13	18	9	23	22	18	16	25	23	20
South Atlantic.....	38	34	32	37	37	42	52	50	50	65
East South Central.....	5	12	17	15	9	14	22	15	19	13
West South Central.....	10	11	8	10	13	13	11	31	16	17
Mountain.....	10	13	11	10	8	11	11	15	22	18
Pacific.....	13	17	17	22	15	20	25	18	28	17

<sup>1</sup> Figures for Barre, Vt., estimated. Report not received at time of going to press.

<sup>2</sup> Figures for Cleveland, Ohio, estimated.

<sup>3</sup> Figures for Superior, Wis., estimated.

<sup>4</sup> Figures for Raleigh, N. C., estimated.

<sup>5</sup> Figures for Wilmington, Del., and Tampa, Fla., estimated.

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

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

## **FOREIGN AND INSULAR.**

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### **AUSTRALIA.**

#### **Typhus-Like Disease—Adelaide.**

Information received under date of September 16, 1924, shows the presence at Adelaide, Australia, of a typhus-like disease which has been under observation since the year 1917. The disease was stated to resemble mild typhus at its outset and in subsequent development and pathological findings. The Weil-Felix reaction was stated to be invariably found after the first week in dilutions as high as 1 in 2,000. No body-lice infestation was found.

### **BOLIVIA.**

#### **Communicable Diseases—La Paz—September, 1924.**

During the month of September, 1924, 36 cases of communicable diseases, with 37 deaths, were reported at La Paz, Bolivia, including six deaths from dysentery, seven cases of smallpox with nine deaths, one case of typhoid fever, and one death from typhus fever.

### **BRAZIL.**

#### **Government Administration of Hospitals—Pernambuco.**

According to information received under date of September 20, 1924, an agreement has been concluded between the directors of several hospitals and charitable institutions in the city of Pernambuco, Brazil, by which the government of the State of Pernambuco takes over the administration of the hospital for the insane, the isolation hospital, the tuberculosis hospital, and the Pasteur Institute, these institutions to be managed by the department of health of the State.

### **CANADA.**

#### **Communicable Diseases—Ontario—October 4-25, 1924 (Comparative).**

During the period October 4 to 25, 1924, communicable diseases were reported in the Province of Ontario, Canada, as follows:

Disease.	1924.		1923.	
	Cases.	Deaths.	Cases.	Deaths.
Cerebrospinal meningitis.....	7	6	-----	-----
Chancroid.....	2	-----	4	-----
Chicken pox.....	324	-----	196	-----
Diphtheria.....	396	24	286	13
Dysentery.....	6	-----	6	2
German measles.....	2	-----	1	-----
Gonorrhoea.....	146	-----	242	-----
Influenza.....	-----	4	22	9
Lethargic encephalitis.....	4	2	3	3
Measles.....	887	-----	208	-----
Mumps.....	307	-----	40	-----
Pneumonia.....	-----	137	-----	90
Poliomyelitis (infantile paralysis).....	20	3	-----	-----
Scarlet fever.....	397	3	517	8
Septic sore throat.....	1	-----	4	-----
Smallpox.....	73	-----	23	-----
Syphilis.....	85	-----	130	-----
Tetanus.....	4	3	-----	-----
Tuberculosis.....	165	73	187	90
Typhoid fever.....	125	8	137	16
Whooping cough.....	174	3	185	7

### COLOMBIA.

#### Measures Against Soil Pollution and Intestinal Infections.

Information received under date of September 19, 1924, shows that in February, 1920, an agreement was effected between the Colombian Government and the International Health Board for control of soil-pollution disease in the Republic. The agreement included the maintaining of scholarships in various schools in the United States for training in public-health methods. From June, 1920, to March, 1924, 257,633 persons were treated for various intestinal diseases in the departments of Antioquia, Cundinamarca, Boyaca, Huila, and Santander del Sur. The field covered 200 districts.

### ESTHONIA.

#### Communicable Diseases—August, 1924.

During the month of August, 1924, 27 cases of diphtheria, 18 of scarlet fever, 107 of tuberculosis, and 92 of typhoid fever were reported in the Republic of Esthonia. Population, 1,107,059.

### FINLAND.

#### Communicable Diseases—September, 1924.

During the month of September, 1924, communicable diseases were notified in Finland as follows:

Disease.	Cases.	Disease.	Cases.
Diphtheria.....	90	Poliomyelitis (infantile paralysis).....	2
Dysentery.....	52	Scarlet fever.....	63
Lethargic encephalitis.....	2	Typhoid fever.....	115
Paratyphoid fever.....	106		

Population, 3,402,593, estimated.

## HAWAII.

## Plague-Infected Rat—Vicinity of Honokaa.

A plague-infected rat was reported trapped at Paauhau Sugar Plantation, near Honokaa, Hawaii, October 11, 1924.

## INDIA.

## Communicable Diseases—Rangoon—Year 1923 (Comparative).

During the year 1923 certain communicable diseases were reported at Rangoon, India, as follows:

Disease.	Deaths.		Disease.	Deaths.	
	1923.	1922.		1923.	1922.
Beriberi.....	116	123	Malaria.....	350	406
Cerebrospinal meningitis.....	22	32	Plague.....	1,159	1,402
Cholera.....	48	264	Smallpox.....	363	72
Diphtheria.....	8	4	Tuberculosis.....	939	1,046
Influenza.....	137	236	Typhoid fever.....	47	43

<sup>1</sup> Greatest prevalence of plague was reported for the month of March; age period most affected was stated to be between 10 and 15 years; as regards race, the Hindu was stated to have been most affected. The total number of deaths from all causes was 11,918; population, 351,691.

Diarrheal diseases and dysentery caused 838 deaths in 1923 and 939 deaths in 1922. Respiratory diseases other than tuberculosis caused 2,131 deaths in 1923 and 2,198 deaths in 1922.

## Plague-Infected Rats.

During the year 1923, 496,987 rats were destroyed at Rangoon. Of these, 17,323 were examined and 120 found plague-infected.

## INDO-CHINA.

## Cholera—Plague—Smallpox—July, 1924 (comparative).

During the month of July, 1924, cholera, plague, and smallpox were reported in Indo-China as follows:

*Cholera.*—Cases, 20; deaths, 10; occurring in four Provinces. Corresponding period, 1923—cases, 42; deaths, 30.

*Plague.*—Cases, 26; deaths, 22; occurring in three Provinces. Corresponding period, 1923—cases, 34; deaths, 30.

*Smallpox.*—Cases, 119; deaths, 51; occurring in four Provinces. Corresponding period, 1923—cases, 268 (one European); deaths, 108 (one European).

## Influenza.

During the same period 25 cases of influenza were reported in Indo-China, occurring in two Provinces—Laos and Tonkin. Some unreported cases were stated to have occurred during the corresponding period of 1923.



**MADAGASCAR.****Plague—August 16-31, 1924.**

During the period August 16 to 31, 1924, 17 cases of plague with 16 deaths were reported in the island of Madagascar. Of these, 1 case, with 1 death (septicemic), was reported at the town of Tananarive. The remaining cases occurred at other localities in Tananarive Province and were reported as bubonic, pneumonic, and septicemic in type.

**MALTA.****Communicable Diseases—September, 1924.**

During the month of September, 1924, cases of certain communicable diseases were reported in the island of Malta as follows: Lethargic encephalitis, 8 cases; typhoid fever, 40; and Malta fever (undulant), 80 cases.

**MEXICO.****Vaccination—Antirabic Treatment—Merida.**

Information dated October 6, 1924, shows the vaccination of approximately 300 persons, the sale of vaccine to 400 applicants, and the administration of 450 antirabic treatments at Merida during the month of August, 1924.

**PANAMA CANAL.****Communicable Disease—September, 1924.**

Communicable diseases were reported in the Panama Canal Zone, Colon, and Panama, during the month of September, as follows:

Disease.	Canal Zone.	Colon.	Panama.	Nonresident.	Total.
Chicken pox.....	9		3		12
Diphtheria.....		2	7		9
Dysentery.....				1	1
Hookworm.....		7	36	33	76
Malaria.....	59	7	6	21	93
Measles.....	7	2	5	5	19
Meningitis.....			1		1
Mumps.....	5				5
Paratyphoid fever.....			1		1
Pneumonia.....		4	9		13
Poliomyelitis (infantile paralysis).....		1	1		2
Tuberculosis.....	4	4	12	5	25
Typhoid fever.....				1	1
Whooping cough.....	8	2			10

**SUMATRA.****Malaria—Batoe Bahra—June and July, 1924.**

Malaria has been reported at Batoe Bahra, island of Sumatra, as follows: Month of June, 1924, 251 cases with 14 deaths; month of July, 1924, 253 cases with 18 deaths.

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

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

**Reports Received During Week Ended November 14, 1924.<sup>1</sup>****CHOLERA.**

Place.	Date.	Cases.	Deaths.	Remarks.
India.....				Aug. 24-Sept. 6, 1924: Cases, 14,947; deaths, 11,657.
Madras.....	Sept. 21-27.....	15	8	
Indo-China.....				July 1-31, 1924: Cases, 20; deaths, 10. Corresponding period, 1923: Cases, 42; deaths, 30.
Province—				
Annam.....	July 1-31.....	3	1	
Cambodia.....	do.....	7	4	
Cochin-China.....	do.....	7	5	
Tonkin.....	do.....	3	1	
Siam:				
Bangkok.....	Sept. 14-20.....	1	1	

**PLAGUE.**

Hawaii:					
Honokaa.....					In vicinity, at Paauhau sugar plantation, Oct. 11, 1924: One plague rat (trapped).
India.....					Aug. 24-Sept. 6, 1924: Cases, 1,166; deaths, 726.
Madras.....	Sept. 21-Oct. 4.....	162	75		
Indo-China.....					July 1-31, 1924: Cases, 26; deaths, 22. Corresponding period, 1923: Cases, 34; deaths, 30.
Province—					
Annam.....	July 1-31.....	4	4		
Cambodia.....	do.....	9	9		
Cochin-China.....	do.....	13	9		
Java:					
East Java—					
Soerabaya.....	Aug. 31-Sept. 6.....	1	1		
West Java—					
Cheribon.....	Aug. 19-25.....		2		
Pekalongan.....	do.....		8		
Madagascar:					
Tananarive Province.....					Aug. 16-31, 1924: Cases, 17; deaths, 16
Tananarive.....	Aug. 16-31.....	1	1		Septicemic.
Other localities.....	do.....	16	15		Bubonic, pneumonic, septicemic.
Siam:					
Bangkok.....	Sept. 14-20.....	1	1		

**SMALLPOX.**

Bolivia:					
La Paz.....	Sept. 1-30.....	7	9		
Canada:					
Ontario.....					Sept. 28-Oct. 25, 1924: Cases, 73
Chatham Township.....	Sept. 28-Oct. 25.....	31			Corresponding period, 1923: Cases, 23.
Chatham.....	do.....	3			
Harwich Township.....	do.....	2			
Howard Township.....	do.....	14			
Macauley Township.....	do.....	1			
Toronto.....	do.....	1			
Whitney.....	do.....	21			Unorganized.
China:					
Amoy.....	Sept. 14-27.....				Present.
Foochow.....	Sept. 7-20.....				Do.
Nanking.....	Sept. 14-27.....				Do.
Gibraltar.....	Oct. 6-12.....	1			
India.....					
Madras.....	Sept. 21-Oct. 4.....	20	5		Aug. 24-Sept. 6, 1924: Cases, 1,433; deaths, 378.
Indo-China.....					July 1-31, 1924: Cases, 119; deaths, 51. Corresponding period, 1923: Cases, 268; deaths, 108.
Province—					
Annam.....	July 1-31.....	11	7		
Cambodia.....	do.....	28	13		
Cochin-China.....	do.....	73	31		
Tonkin.....	do.....	7	31		

<sup>1</sup>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 November 14, 1924—Continued.

### SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Java:				
East Java—				
Soerabaya .....	Aug. 31-Sept. 6...	159	42	
West Java—				
Cheribon .....	Aug. 19-25 .....	1		
Pekalongan Province .....	Aug. 19-25 .....	3		Aug. 19-25, 1924: Cases, 12; deaths, 2.
Pekalongan .....	Aug. 19-25 .....	3		
Pemalong .....	do .....	5	3	
Tegal .....	do .....	3		
Mexico:				
Cecilia .....	Oct. 11-17 .....	5	1	State of Tamaulipas.
Mexico City .....	Sept. 28-Oct. 4 .....	3		Including municipalities in Federal District.
Progreso .....	Oct. 19-25 .....		1	
Vera Cruz .....	do .....		2	
Siam:				
Bangkok .....	Sept. 7-13 .....	1		
Spain:				
Cadiz .....	Sept. 1-30 .....		37	
Madrid .....	do .....		5	
Malaga .....	Oct. 12-18 .....		19	
Valencia .....	Oct. 11-18 .....	2		
Switzerland:				
Lucerne .....	Sept. 1-30 .....	18		
Tunis:				
Tunis .....	Oct. 7-13 .....	10	2	
Turkey:				
Constantinople .....	Sept. 21-27 .....	1		
Union of South Africa:				
Cape Province .....	Sept. 14-20 .....			Outbreaks.

### TYPHUS FEVER.

Bolivia:				
La Paz .....	Sept. 1-30 .....		1	
Chile:				
Talcahuano .....	Sept. 28-Oct. 11 .....		8	About 20 cases present.
Valparaiso .....	Sept. 21-27 .....		4	
Mexico:				
Mexico City .....	Sept. 28-Oct. 12 .....	19		Including municipalities in Federal District.
Palestine:				
Jaffa .....	Sept. 23-29 .....	3		
Jerusalem .....	do .....	1		
Switzerland:				
Lucerne .....	Sept. 1-30 .....	1		
Turkey:				
Constantinople .....	Sept. 21-27 .....	2		
Union of South Africa:				
Cape Province .....	Sept. 14-20 .....			Outbreaks.
Orange Free State .....	do .....			Do.

Reports Received from June 28 to November 7, 1924.<sup>1</sup>

### CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Shanghai .....	Aug. 2-Sept. 6 .....	1		
India:				
Do .....				Apr. 20-June 28, 1924: Cases, 81,035; deaths, 56,740.
Bombay .....	May 4-10 .....	1		June 29-Aug. 23, 1924: Cases, 61,437; deaths, 36,124.
Do .....	June 29-Sept. 13 .....	43	23	
Calcutta .....	May 11-June 28 .....	293	259	
Do .....	June 29-Sept. 17 .....	182	150	
Madras .....	June 1-21 .....	7	6	
Do .....	June 29-Sept. 20 .....	29	17	
Rangoon .....	May 11-June 28 .....	98	76	
Do .....	June 29-Aug. 23 .....	24	22	

<sup>1</sup> From medical officers of the Public Health Service, American consuls, and other sources.

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

### Reports Received from June 28 to November 7, 1924—Continued.

#### CHOLERA—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Indo-China.....				Jan. 1-June 30, 1924: Cases, 107; deaths, 52.
Province—				Corresponding period 1923: Cases 57; deaths, 32.
Anam.....	June 1-30.....	4	1	June, 1923: 1 case.
Cambodia.....	do.....	7	4	June, 1923: Cases, 13; deaths, 4.
Cochin-China.....	do.....	9	6	June, 1923: Cases, 40; deaths, 28.
Saigon.....	Apr. 27-June 28.....	6	4	Including 100 square kilometers of surrounding country.
Do.....	June 29-Aug. 9.....	6	5	Do.
Tonkin.....	do.....	9	4	June, 1923: 3 cases.
Persia:				
Bushire.....	June 1-30.....	1	1	
Philippine Islands.....				June 15-28, 1924: 32 cases, 22 deaths, including suspects.
				June 28-July 5, 1924: 5 cases, deaths.
Manila.....	June 22-28.....	1		Suspect. Occurring in a non-resident.
Do.....	July 6-12.....	1	1	
Provinces—				
Batangas.....	July 1-12.....	4	3	
Bulacan.....	June 21.....	1	1	
Do.....	June 28-July 26.....	4	2	
Angat.....	July 20-26.....	1	1	
Malolos and Paombong.....	July 13-19.....	2	1	
Cagayan.....	Mar. 30-Apr. 5.....	1	1	
Laguna.....	May 18-24.....	1	1	
San Pablo.....	July 13-19.....	1	1	
Rizal.....	July 3.....	1	1	
Santo Tomas.....	July 6-12.....	1	1	
Russia.....				Summer of 1924: Cases, 9.
Don Province.....				7 cases at Rostov and Nakhichevan.
Kuban.....				1 case, Black Sea district.
Moscow Province.....				1 case in Kolomensky Uyezd.
Rostov-on-Don.....	Aug. 5-7.....	3		
Siam:				
Bangkok.....	May 4-June 28.....	21	18	
Do.....	June 29-Sept. 6.....	10	4	
Straits Settlements:				
Penang.....	June 1-7.....	1	1	
Singapore.....	June 15-28.....	9	6	
Do.....	June 29-July 5.....	2	1	
On vessel:				
S. S. Argalia.....		1		At Bassein, Lower Burma, India. Case in European member of crew. Case removed to hospital. Vessel left May 16, 1924, arrived June 8 at Durban, South Africa; left Durban June 10 for Trinidad and Cuba.

#### PLAGUE,

Algeria:				
Mostaganem.....	July 21-28.....	4		Seaport.
Argentina:				
Chaco Territory.....				April, 1924: Cases reported.
Brazil:				
Porto Alegre.....	July 6-12.....		1	
British East Africa:				
Kenya—				
Kisumu.....	July 13-Sept. 20.....	2	1	
Tanganyika Territory.....	Feb. 24-June 7.....	1	2	
Do.....	June 26-July 3.....	3	2	
Uganda.....				May 1-31, 1924: Cases, 28; deaths, 23. June 1-30, 1924: Cases, 97; deaths, 84.
Entebbe.....	Feb. 1-Apr. 30.....	59	54	
Canary Islands:				
Las Palmas.....	Sept. 8.....	1		
Tenerife—				
La Laguna.....	June 20.....	1		
Celebes:				
Macassar and Menando.....	July 27-Aug. 2.....			1 plague rat.

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

## Reports Received from June 28 to November 7, 1924—Continued.

### PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Ceylon:				
Colombo.....	May 11-June 28...	11	7	10 plague rodents.
Do.....	June 29-Sept. 13...	19	18	Plague-infected rodents, 17.
Chile:				
Antofagasta.....	June 1-16.....	4		
China:				
Amoy.....	June 15-28.....		4	
Do.....	June 29-Aug. 9.....		13	
Foochow.....	May 4-June 21.....		25	Cases not reported.
Nanking.....	July 20-Aug. 16.....			Present.
Ecuador:				
Eloy Alfaro.....	May 16-31.....	1		
Do.....	Sept. 16-30.....	1		
Guayaquil.....	May 16-June 30.....	5	1	Rats taken, 23,717; found infected, 107.
Do.....	July 1-Aug. 31.....	2		Rats taken, 44,489; found plague-infected, 188.
Posorja.....	July 1-15.....	1		
Puna.....	July 16-31.....	1		
Egypt:				
				July 2-Sept. 5, 1924; Cases, 19. Total, Jan. 1-Sept. 5, 1924—cases, 354; deaths, 177; corresponding period, preceding year—cases, 1,337.
City—				
Alexandria.....		1	1	First case, Apr. 2; last, Apr. 2.
Ismailia.....		1	1	First case, July 6; last, July 6.
Port Said.....		5	2	First case, Apr. 24; last, Aug. 26.
Suez.....		16	8	First case, Jan. 2; last, Sept. 23.
Province—				
Assiout.....		44	35	First case, Apr. 1; last, Aug. 27.
Behera.....		1	1	First case, Aug. 9; last, Aug. 9.
Beni-Suef.....		3	3	First case, June 21; last, June 21.
Charkieh.....		1	1	First case, Jan. 31; last, Jan. 31.
Fayoum.....		106	33	First case, Feb. 18; last, July 18.
Gharbia.....		3	2	First case, Apr. 21; last, Aug. 22.
Ghirga.....		10	3	First case, Jan. 17; last, May 13.
Kaloubiah.....		10	1	First case, Jan. 6; last, May 22.
Kena.....		44	26	First case, Apr. 9; last, May 17.
Menoufieh.....		49	32	First case, Jan. 2; last, June 28.
Minia.....		58	28	First case, Feb. 5; last, Aug. 1.
Greece:				
Kalamata.....				Reported July 15, 1924; Cases, 29; deaths, 6.
Patras.....	July 7.....	36		
Saloniki.....	July 3-4.....	2		
Symi, Island of.....				Reported present in August, 1924: Cases, 10; deaths, 2.
Hawaii.....				July 15, 1924: Near Kukuiahaele, Island of Hawaii, 1 plague rat.
Honokaa.....				Aug. 19-Sept. 10, 1924: 5 plague infected rodents found in vicinity.
India.....				Apr. 20-June 28, 1924: Cases, 102,874; deaths, 84,656.
Do.....				June 29-Aug. 23, 1924: Cases, 4,415; deaths, 3,705.
Bombay.....	May 4-June 21.....	50	44	
Do.....	June 29-Aug. 30.....	20	16	
Calcutta.....	May 11-June 14.....	10	10	
Karachi.....	May 18-June 21.....	16	13	
Do.....	Aug. 17-Sept. 20.....	7	7	
Madras Presidency.....	May 18-31.....	7	2	
Do.....	Aug. 3-Sept. 6.....	42	25	
Rangoon.....	May 11-June 28.....	77	72	
Do.....	June 29-Sept. 20.....	206	175	
Indo-China.....				Jan. 1-June 30, 1924: Cases, 734; deaths, 486.
Province—				
Anam.....	June 1-30.....	6	5	June, 1923: Cases, 11; deaths, 10.
Cambodia.....	do.....	18	18	June, 1923: Cases, 140; deaths, 121.
Cochin-China.....	do.....	4		June, 1923: Cases, 14; deaths, 10.
Saigon.....	May 4-June 28.....	10	2	Including 100 square kilometers of surrounding country.
Do.....	July 20-Aug. 9.....	3	1	Do.
Iraq:				
Bagdad.....	Apr. 20-June 28.....	125	62	
Do.....	June 29-Aug. 9.....	7	4	
Japan.....				July 1-31, 1924: 1 case, 1 death.
Shizuoka Prefecture—				Jan-July, 1924: Cases, 4; deaths, 3.
Higashi.....				To June 20, 1924: Cases, 2; death, 1.

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.****Reports Received from June 28 to November 7, 1924—Continued.****PLAGUE—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Java:</b>				
East Java—				
Soerabaya.....	June 8-21.....	14	14	
<b>Madagascar:</b>				
Diego Suarez.....	June 22-Aug. 28.....	43	37	Seaport.
Moramanga.....	June 1-30.....	1	1	Interior.
Tamatave.....	June 6-30.....	5	4	Bubonic.
Tananarive Province.....				Apr. 1-June 30, 1924: Cases, 138;
Tananarive Town.....	Apr. 1-June 30.....	12	12	deaths, 128; bubonic, pneu- monic, septicemic, July 1- Aug. 15, 1924: Cases, 74; deaths, 72.
Do.....	July 1-31.....	5	5	Bubonic and pneumonic.
Other localities.....	Apr. 1-June 30.....	105	97	
Do.....	July 1-31.....	48	48	Bubonic, pneumonic, and septi- cemic.
<b>Persia:</b>				
Abadan.....	May 1-31.....	20	12	
Bander Abbas.....	do.....	11	6	
Bushire.....	do.....	1	1	Landed at quarantine.
Mohammerah.....	do.....	111	78	
<b>Peru</b> .....				May 1-June 30, 1924: Cases, 9; deaths, 6.
Do.....				July 1-31, 1924: Cases, 6; deaths, 3.
Callao.....	June 1-30.....	1		
Do.....	July 1-31.....	2		
Huaral.....	June 1-30.....	1		
Do.....	July 1-31.....	1		
Lima (city).....	May 1-June 30.....	5	5	
Do.....	July 1-31.....	6	3	
Lima (country).....	May 1-June 30.....	1		
Do.....	July 1-31.....		1	
Mollendo.....	May 1-31.....	1	1	
<b>Russia:</b>				
Don Cossack Territory— Salsky District.....				Aug. 8, 1924: Reported present in marmots in 6 localities.
<b>Slam:</b>				
Bangkok.....	May 4-June 14.....	3	3	
Do.....	July 13-Aug. 2.....	2	2	
<b>South Nigeria (West Africa):</b>				
Lagos.....	Sept. 8.....			Present.
<b>Syria:</b>				
Beirut.....	July 10-Aug. 20.....	7		
<b>Tunis:</b>				
Tunis.....	Sept. 23-29.....	1	1	
<b>Union of South Africa</b> .....				Apr. 27-June 7, 1924: Cases, 28, deaths, 14. Dec. 16, 1923, to May 31, 1924: Cases, 347; deaths, 208 (white, 51 cases, 26 deaths; native, 269 cases, 182 deaths). July 1-Aug. 31, 1924: Cases, 5; deaths, 2.
Orange Free State.....				May 11-June 14, 1924: Cases, 21; deaths, 9. June 22-28, 1924: Plague-infected mouse found in Kroonstad District.
Philippolis District.....	Aug. 24-30.....	1	1	In natives on two farms.
Smithfield District.....	July 13-19.....	2		
<b>On vessel:</b>				
S. S. Amboise.....	July 10.....	1		At Marseille, France; removed to quarantine station. Case occurred in an Arab fireman embarked at Aden. Vessel left Yokohama May 20 and Co- lombo, Ceylon, June 22, 1924.

**SMALLPOX.**

<b>Arabia:</b>				
Aden.....	July 20-26.....		1	
<b>Bolivia:</b>				
La Paz.....	May 1-June 30.....	10	9	
Do.....	July 1-Aug. 31.....	21	12	
<b>Brazil:</b>				
Bahia.....	May 18-24.....	1		
Porto Alegre.....	May 18-June 28.....	1	2	
Do.....	July 6-Aug. 2.....		3	

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

Reports Received from June 28 to November 7, 1924—Continued.

## SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Brazil—Continued.</b>				
Rio de Janeiro	May 18-24	2		
Do.	July 20-Aug. 30	5		
<b>British East Africa:</b>				
<b>Kenya—</b>				
Mombasa	May 4-31	3		
Tanganyika Territory	June 15-21	1		
Do.	Aug. 17-23	1		
Uganda—				
Entebbe	Feb. 1-29	2		
<b>British South Africa:</b>				
Northern Rhodesia	May 6-June 30	74	1	Natives.
Do.	July 1-Sept. 8	49		
<b>Canada:</b>				
<b>British Columbia</b>				
Vancouver	Sept. 12-Oct. 18	29		
Do.	June 15-28	11		
Do.	June 29-Oct. 11	43		Not including suburbs.
Victoria	Aug. 3-9	4		
<b>Manitoba—</b>				
Winnipeg	July 13-Aug. 1	3		
<b>New Brunswick—</b>				
Restigouche County	June 1-30	7		
Do.	July 6-Sept. 6	21		
Westmoreland County	Aug. 17-23	1		
<b>Ontario</b>				June 1-30, 1924: Cases, 24; July 1-Sept. 27, 1924: Cases 20.
Sarnia	July 20-26	1		
Windsor	June 22-28	1		
<b>Quebec—</b>				
Montreal	June 8-14	1		
Do.	Sept. 14-20	1		
<b>Ceylon:</b>				
Colombo	July 6-12	1		
<b>Chile:</b>				
Antofagasta	June 11			Under treatment at lazaretto, 2 cases.
Do.	Aug. 24-30	1		
Valparaiso	June 1-7		1	This report covers the two principal districts of Valparaiso.
<b>China:</b>				
Amoy	May 11-June 28			Present.
Do.	June 29-Sept. 13		1	Do.
Antung	June 9-29	41	3	
Do.	July 7-13	4		
Chungking	May 11-June 28			Do.
Do.	June 29-Sept. 13			Do.
Foochow	May 18-June 28			Do.
Do.	July 6-Aug. 29			Do.
Hongkong	May 4-June 28	30	24	
Do.	June 29-July 12	3	3	
<b>Manchuria—</b>				
Dairen	May 12-June 28	22	7	
Do.	June 29-Aug. 3	5	1	
Harbin	May 13-June 23	2		
Nanking	May 18-June 28			Do.
Do.	July 6-Sept. 13			Do.
Shanghai	May 25-31		1	
Tientsin	May 4-June 28	11	1	British municipality.
<b>Chosen:</b>				
Fusan	May 1-31	1		
Do.	July 25-31	1		
<b>Colombia:</b>				
Barranquilla	Aug. 3-9		1	
<b>Cuba:</b>				
Matanzas	Sept. 1-30	1		
<b>Czechoslovakia</b>				
State—				Apr. 1-June 30, 1924: Cases, 7; deaths, 2.
Bohemia	Apr. 1-June 30	6	2	
Russinia	do.	1		
<b>Denmark:</b>				
Copenhagen	May 18-31	3	1	
<b>Dominican Republic:</b>				
La Romana	Aug. 24-30	2		
<b>Egypt:</b>				
<b>City—</b>				
Alexandria	June 4-10	1		
Do.	Sept. 3-9	1		
Cairo	Feb. 19-June 24	163	45	
Do.	June 25-Aug. 5	15	2	
Port Said	June 18-24	1	2	
Do.	June 25-Sept. 9	4		

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

## Reports Received from June 28 to November 7, 1924—Continued.

### SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
<b>France:</b>				
Limoges.....	Apr. 1-May 31		2	
Marseille.....	May 1-31		1	
Paris.....	May 21-31	2		
Gibraltar.....	July 21-Sept. 21	8		
<b>Great Britain:</b>				
England and Wales.....				
Counties—				
Derby.....	May 25-June 23	159		
Do.....	June 29-Oct. 4	159		
London.....	June 29-Aug. 30	3		
Northumberland.....	May 25-June 28	61		
Do.....	June 29-Oct. 4	134		
Nottingham.....	May 25-June 28	29		
Do.....	June 19-Oct. 4	103		
Yorks (North Riding).....	May 25-June 28	54		
Do.....	June 29-Oct. 4	118		
Yorks (West Riding).....	May 25-June 28	5		
Do.....	June 29-Oct. 4	44		
Liverpool.....	Aug. 28	1		Mild. Admitted to port hospital from Lower Bebington district, 2 miles from docks.
<b>Greece:</b>				
Saloniki.....	Apr. 21-June 29	7	21	
Do.....	June 30-Oct. 4		41	
<b>Haiti:</b>				
Port au Prince.....	July 6-12	2		Developed at Cape Haitien.
<b>Hungary:</b>				
Budapest.....	July 20-Aug. 2	11		
<b>India:</b>				
Do.....				Apr. 20-June 28, 1924: Cases, 28,396; deaths, 6,753.
Bombay.....	May 4-June 28	432	299	June 29-Aug. 23, 1924: Cases, 8,735; deaths, 2,228.
Do.....	June 29-Sept. 13	196	126	
Calcutta.....	May 11-June 28	36	32	
Do.....	July 6-Sept. 27	78	63	
Karachi.....	May 18-June 28	51	18	
Do.....	June 29-Sept. 13	35	16	
Madras.....	May 18-June 28	32	10	
Do.....	June 29-Sept. 20	144	47	
Rangoon.....	May 11-June 28	53	21	
Do.....	June 29-Sept. 20	31	12	
<b>Indo-China</b>				
Province—				
Anam.....	June 1-30	23	2	Jan. 1-June 30, 1924: Cases, 4,934; deaths, 1,413.
Cambodia.....	do	35	21	June, 1923: Cases, 2
Cochin-China.....	do	145	55	June, 1923: Cases, 156.
Saigon.....	Apr. 27-June 28	145	79	June, 1923: Cases, 70; deaths, 35. Including 100 square kilometers of surrounding country.
Do.....	June 29-Aug. 23	55	23	Do.
Tonkin.....	do	31	2	June, 1923: Cases, 18.
<b>Iraq:</b>				
Bagdad.....	Apr. 20-May 24	8	1	
Do.....	July 27-Aug. 2	1		
<b>Italy:</b>				
Messina.....	May 26-June 1	1		
<b>Jamaica</b>				
Kingston.....	June 1-28	6		June 1-28, 1924: Cases, 141; June 29-Sept. 13, 1924: Cases, 217. (Reported as alastrim.)
Do.....	June 29-Sept. 13	20		Reported as alastrim.
<b>Japan</b>				
Kobe.....	May 26-June 21	3		July 1-31, 1924: Cases, 51; deaths, 9; Jan. 1-July 31, 1924: Cases, 1,693; deaths, 264.
Nagoya.....	June 8-14	2		
Tokyo.....	do	1		
<b>Java:</b>				
East Java—				
Madoera Residency—				
Sampang.....	May 22			Epidemic.
Malang.....	May 25-31	5	1	
Paseroean Residency.....				
Rembang.....	July 4-Sept. 2	7		Epidemic in some localities.
Soerabaya.....	Aug. 29-Sept. 2			Do.
Do.....	Apr. 13-June 28	501	143	
Do.....	June 29-Sept. 2	610	75	Epidemic Aug. 10, 1924, in 4 localities.
West Java—				
Batavia.....	May 31-June 27	3		
Do.....	July 6-Aug. 22	6		Province.



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

Reports Received from June 28 to November 7, 1924—Continued.

## SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Latvia				Apr. 1-June 30, 1924: Cases, 3; July 1-31, 1924: Case, 1.
Mexico:				
Durango	June 1-30		2	
Do.	Sept. 1-30		1	
Guadalajara	May 1-June 30	9	4	
Do.	July 8-14		1	
Mexico City	May 4-June 28	96		Including municipalities in Federal District.
Do.	June 29-Sept. 20	72		Do.
Salina Cruz	May 25-31	1	1	
Tampico	June 14-20	2		
Do.	July 1-Aug. 20	8	7	
Tuxtepec	July 3-18	3	1	State of Oaxaca.
Vera Cruz	Sept. 21-Oct. 19		2	
Palestine				June 17-23, 1924: 20 cases in northern districts.
Samaria Province— Samak	May 27-June 2	1		
Paraguay:				
Asuncion	June 2			Present.
Encarnacion	do			Many cases reported.
Persia:				
Bushire	June 1-30	2		
Peru:				
Arequipa	Jan. 1-June 30		5	
Poland				Mar. 30-June 28, 1924: Cases, 299; deaths, 27.
Do.				June 29-July 27, 1924: Cases, 25; deaths, 5.
Portugal:				
Lisbon	May 25-June 28	7	2	
Do.	June 29-Sept. 28	28	5	
Oporto	May 11-June 28	18	16	
Do.	June 29-Oct. 11	21	25	
Russia				Jan. 1-31, 1924: 2,243 cases.
Moscow	July 27-Aug. 9	37		
Siam:				
Bangkok	Apr. 27-June 14	3	5	
Spain:				
Barcelona				Year 1923: Cases, 160.
Do.	August-September	23	2	
Cadiz	June 1-30		5	
Do.	July 1-Aug. 31		77	
Madrid	Aug. 1-31	1	1	
Malaga	June 29-Oct. 11	8	57	Oct. 6, 1924: Increase in prevalence reported.
Santander	Aug. 24-30		4	
Valencia	June 8-21	3		
Do.	July 13-Sept. 27	2	1	
Vigo	Aug. 17-23		1	
Straits Settlements:				
Singapore	May 4-24	2	1	
Sumatra:				
Medan	Jan. 1-31	5		
Switzerland:				
Berne	May 25-June 28	22		
Do.	June 29-Sept. 27	13		
Lucerne	Aug. 1-31	12		
Syria:				
Damascus	May 28-June 12	12		
Do.	Aug. 7-13	6		
Tunis:				
Tunis	May 27-June 30	17	4	
Do.	July 1-Oct. 6	12	17	
Turkey:				
Constantinople	June 1-7	1		
Do.	Aug. 17-23	1		
Union of South Africa				Mar. 1-June 30, 1924: Cases, 167 (white, 15; native, 152). July 1-31, 1924: 3 cases (white): 12 deaths (native).
Cape Province	May 4-31			Outbreaks.
Do.	July 20-Aug. 23			Do.
East London	July 27-Aug. 2	1		
Orange Free State	May 4			Do.
Do.	Aug. 24-Sept. 13			Do.
Transvaal	May 4-31			Do.
Do.	July 20-Aug. 23			Do.
Johannesburg	July 6-12	1		

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

### Reports Received from June 28 to November 7, 1924—Continued.

#### SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Yugoslavia.....				January-June, 1924. Cases, 308; deaths, 62.
Belgrade.....	July 28-Aug. 3.....	1		
On vessels:				
S. S. Dront.....	Sept. 14-20.....	1		At Pernambuco, Brazil. Case removed to hospital. Vessel left Cadiz, Spain, Aug. 20, 1924.
S. S. Karoa.....	May 7.....	1		At Durban, South Africa, from Bombay, India. Vessel left Bombay Apr. 16, 1924. Patient, European.
S. S. Mount Evans.....	July 8.....	1		At Key West, Fla., from Manchester, England.

#### TYPHUS FEVER.

Algeria:				
Algiers.....	May 1-June 30.....	24	9	Year 1923: Cases, 1,166, of which 27 were in the military population.
Do.....	July 1-Sept. 30.....	3		
Bolivia:				
La Paz.....	do.....		1	
Brazil:				
Porto Alegre.....	June 1-7.....		1	
Bulgaria:				
Sofia.....	Aug. 17-23.....		1	
Chile:				
Antofagasta.....				June 16, 1924: 2 cases in Lazaretto.
Concepcion.....	May 20-26.....		3	
Do.....	July 8-21.....		3	
Iquique.....	June 22-28.....		1	
Talcahuano.....	May 25-31.....	2		
Do.....	June 29-Oct. 4.....	28	35	Aug. 30, 1924: 53 cases reported present. Sept. 6, 1924: About 45 cases in vicinity.
Valparaiso.....	May 25-June 21.....		11	
Do.....	June 29-Sept. 20.....		33	
China:				
Antung.....	June 2-16.....	6		Present.
Chungking.....	May 11-June 14.....			
Manchuria— Harbin.....	Sept. 17-23.....	2		
Chosen:				
Chemulpo.....	May 1-June 30.....	10		
Do.....	July 1-31.....	6	2	
Seoul.....	May 1-June 30.....	43	5	
Do.....	July 1-31.....	2		
Czechoslovakia:				
State— Slovakia.....	Apr. 1-June 30.....	4		Apr. 1-June 30, 1924: Cases, 6.
Egypt:				
Alexandria.....	June 25-Aug. 26.....	5	1	
Cairo.....	Feb. 19-June 24.....	58	16	
Do.....	June 25-Aug. 5.....	5	4	
Port Said.....	July 24-Aug. 5.....	3		
Estonia.....				Apr. 1-June 30, 1924: Cases, 37. July 1-31, 1924: Cases, 2.
Germany:				
Coblenz.....	July 13-19.....	2		
Great Britain— England— St. Helens.....	July 13-Sept. 20.....	8	3	One suspect case: July 10, 1924. Locality, vicinity of Liverpool.
Ireland— Dublin.....	June 8-14.....	1		
Do.....	July 13-19.....	1		
Lismore.....	July 19.....	1		
Longford.....	do.....	1		
Greece:				
Saloniki.....	Apr. 20-May 4.....	6		
Do.....	Aug. 10-Sept. 27.....	2	2	
Iraq:				
Bagdad.....	Apr. 27-May 10.....	2		
Do.....	Aug. 3-9.....	1		
Japan.....				July 1-31, 1924: Cases, 2. Jan. 1-July 31, 1924: Cases, 8; deaths, 1. Apr. 1-June 30, 1924: Cases, 106.
Latvia:				
City— Riga.....	June 1-30.....	1		

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

## Reports Received from June 28 to November 7, 1924—Continued.

### TYPHUS FEVER—Continued.

Place.	Date	Cases.	Deaths.	Remarks.
<b>Mexico:</b>				
Durango.....	July 1-31.....		2	
Guadalajara.....	May 1-June 30.....	2	2	
Mexico City.....	May 4-June 28.....	59		Including municipalities in Federal District.
Do.....	June 29-Sept. 20.....	93		
Torreon.....	July 1-Aug. 31.....		4	Do.
<b>Palestine:</b>				
Acre.....	Aug. 19-25.....	1		
Jaffa.....	June 17-23.....	1		
Do.....	July 8-Aug. 25.....	2		
Jerusalem.....	July 1-Sept. 8.....	6		
Kantara.....	July 15-21.....	1		
Khulde.....	Aug. 17.....	1		
Safad.....	Aug. 26-Sept. 1.....	1		
Tiberias.....	Aug. 19-25.....	1		
<b>Peru:</b>				
Arequipa.....	Jan. 1-June 30.....		4	
Do.....	July 1-Aug. 31.....		3	
<b>Poland:</b>				
Do.....				Mar. 30-June 28, 1924: Cases, 2,947; deaths, 277.
				June 29-July 27, 1924: Cases, 332; deaths, 23.
<b>Portugal:</b>				
Oporto.....	June 15-21.....		1	
<b>Russia:</b>				
Moscow.....	July 27-Aug. 9.....	4		Jan. 1-31, 1924: Cases, 14,275.
<b>Spain:</b>				
Barcelona.....	July 10-16.....		1	
Malaga.....	Sept. 6-Oct. 11.....		2	
<b>Syria:</b>				
Aleppo.....	June 8-14.....	1		
Damascus.....	July 14-20.....	1		
<b>Tunis:</b>				
Tunis.....	May 27-June 9.....	4		
<b>Turkey:</b>				
Constantinople.....	May 18-June 21.....	7	2	
Do.....	July 6-Sept. 13.....	10	13	
<b>Union of South Africa:</b>				
Cape Province.....				
Do.....				Mar. 1-June 30, 1924: Cases, 418; deaths, 45. July 1-Aug. 31, 1924: Cases, 212; deaths, 31. (Colored, 203 cases; white, 9 cases.)
Do.....				Mar. 1-June 30, 1924: Cases, 249; deaths, 23.
Do.....				July 1-Aug. 31, 1924: Cases, 122; deaths, 16.
Natal.....				
Durban.....	Apr. 20-June 8.....	2		Mar. 1-June 30, 1924: Cases, 27; deaths, 5. July 1-Aug. 31, 1924: Cases, 12; deaths, 1 (colored).
Orange Free State.....				
Transvaal.....				
Johannesburg.....	May 11-24.....	2		Mar. 1-May 31, 1924: Cases, 39; deaths, 5. July 1-Aug. 31, 1924: Cases, 29 (colored); deaths, 2. Aug. 17-23, 1924: Outbreaks.
Do.....	June 29-Sept. 13.....	3		Mar. 1-May 31, 1924: Cases, 39; deaths, 5. July 1-Aug. 31, 1924: Cases, 29 (colored); deaths, 2. Aug. 17-23, 1924: Outbreaks.
<b>Yugoslavia:</b>				
Zagreb.....	Sept. 7-13.....	1		January-June, 1924: Cases, 252; deaths, 14.

### YELLOW FEVER.

<b>Brazil:</b>				
Pernambuco.....	May 11-17.....	2	1	
<b>Salvador:</b>				
San Salvador.....	June 10-Aug. 25.....			Present in San Salvador and vicinity.