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THE USE OF SEMI-LOGARITHMIC PAPER IN PLOTTING DEATH RATES.

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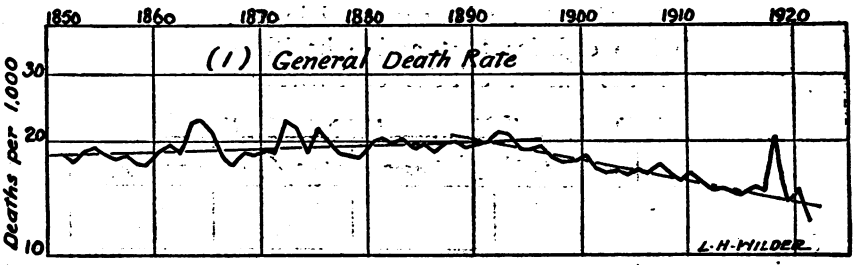
The use of semi-logarithmic paper for plotting death rates is not new, but its advantages have never been forcibly brought to the attention of health officers. It may be worth while, therefore, to give a few examples of its use.

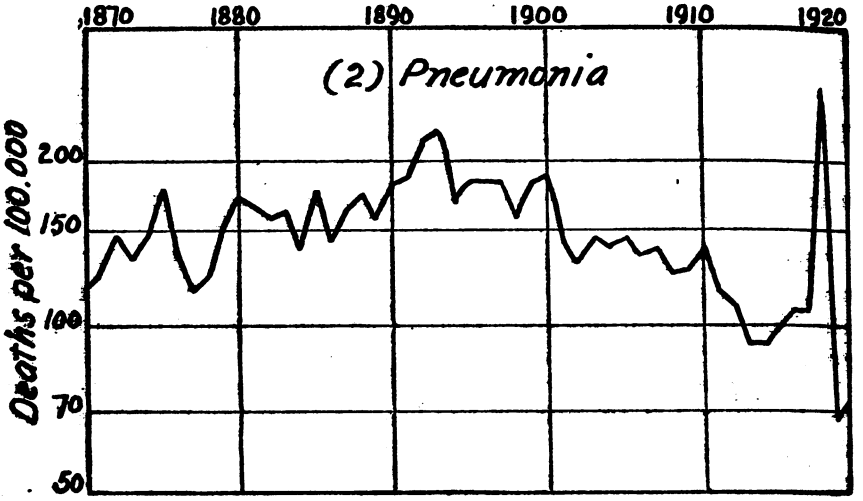
Semi-log paper has a vertical scale based on the logarithms of the numbers from 1 to 10, with subdivisions, and these repeat themselves, the distances between 1 and 10, 10 and 100, 100 and 1,000 being equal. The horizontal scale is arithmetical, i. e., uniform. The



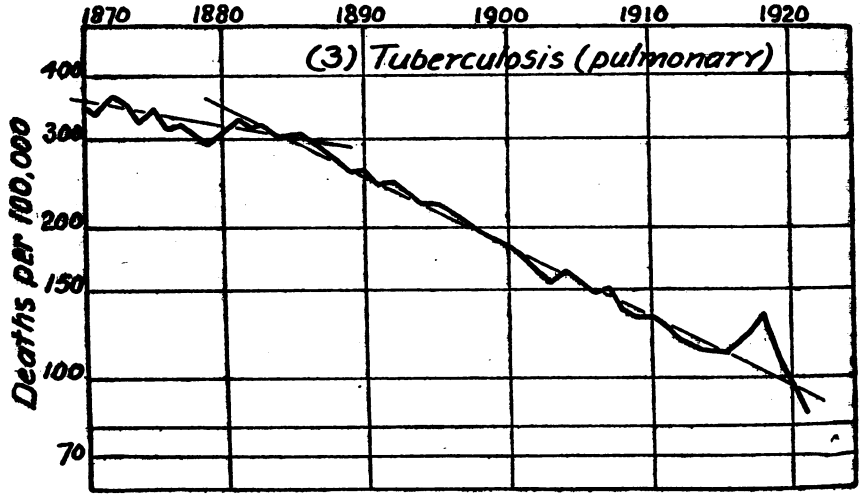
peculiarity of this combination of scales is that plotted data which have a constant rate of change produce a straight line. Money growing at compound interest, population growing at a geometrical rate, produce straight lines; and if plotted death rates yield a straight line sloping downward, it indicates that the rate of decrease is constant. It is especially useful for long-time records. When falling death rates produce a curve, as they often do on ordinary cross-section paper, it is difficult for the eye to detect differences in curvature; but when the plotted points fall upon a straight line for a time and the line changes abruptly in direction, one may more easily detect the time when the change began. A change in the direction of the line means that the rate of change has altered.

Referring to the graphs, (1) shows the general, or crude, death rates for Massachusetts during the last 70 years. From 1851 to

about 1890 the death rate rose very slowly from 18 to nearly 20 per 1,000. Then it began to go down and continued this decline, with some ups and downs, until 1921, when it reached 12 per 1,000. The rise during 1918, the influenza year, was conspicuous. What caused



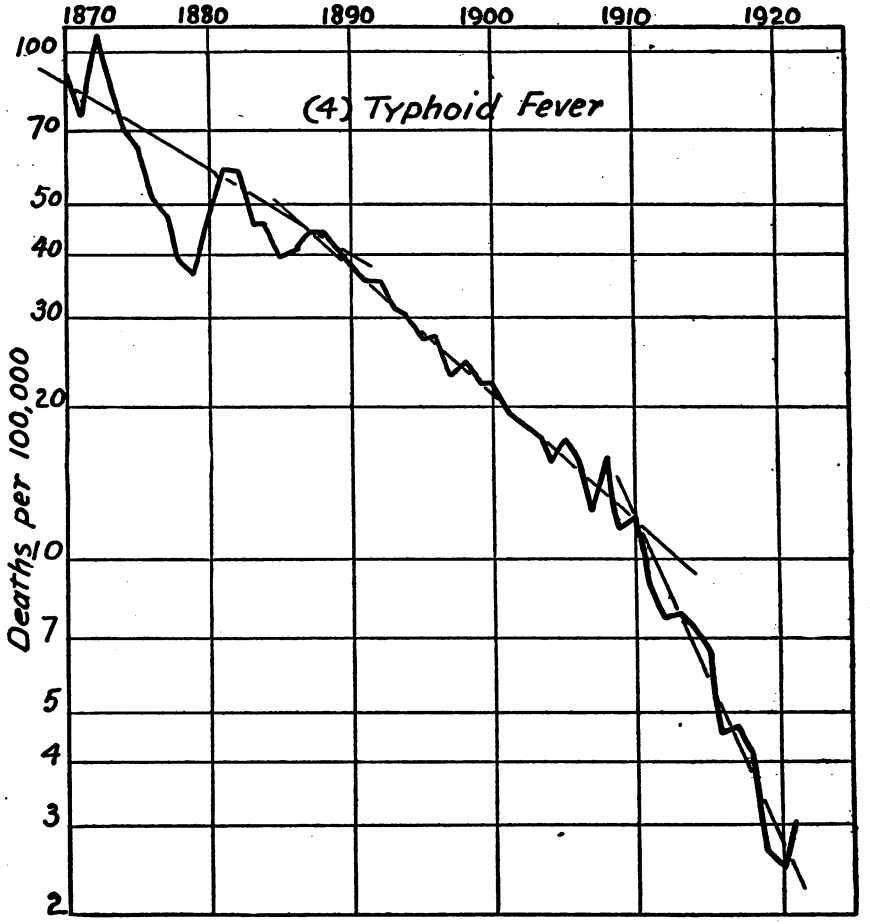
the change in 1890? It can be answered in a word—bacteriology. It was in the late eighties that active health-protective measures growing out of the earlier studies of Pasteur and his successors



began to be put actively into execution. It was at that time that the water-purification and sewage-disposal studies were made at Lawrence, while soon afterwards came the free distribution of diphtheria antitoxin by the State and the establishment of tuberculosis dispen-

saries and sanatoria. Later came other health measures, the pasteurization of milk (about 1910) being of especial importance.

An inspection of the plottings of various diseases is interesting. Graph 2 shows an increase in pneumonia between 1870 and 1893, then a steady decrease except for the influenza year. A few more years may show that the apparent break about 1912 was a real one.

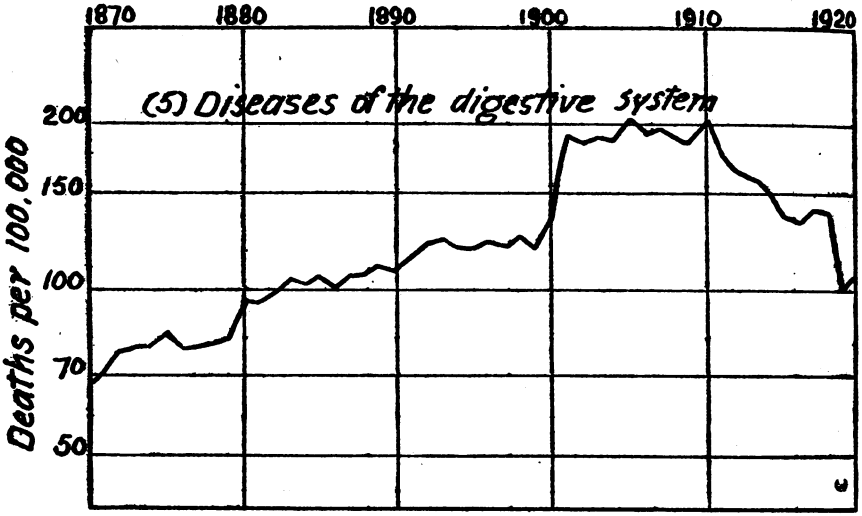


The high rate in 1893 and the drop after that year evidently had a marked influence on the general death rate.

Tuberculosis (3) has been steadily falling. A change in rate occurred about 1885; but since then it has had a steady decline, except for the influenza years. In the case of this disease, one may almost venture to predict its future death rate by extending the curve as a straight line. If the present decline continues, the death rate will be 38 in 1950, whereas now it is 82 per 100,000. This is a

much more conservative estimate than several estimates which have recently been made. Semi-log paper is better than ordinary cross-section paper for this purpose, because straight lines can be extended forward more accurately than curves.

Typhoid fever (4) has shown two breaks—one about 1888–1890, when the activities of the State board of health in the study of purification and sewage treatment were at their height, and another about 1910, when the pasteurization of milk was adopted extensively. There have been no sudden changes in the quality of the water supplies of the State, but a steady improvement due more to protective measures than to water purification or chlorination. Diseases of the digestive system (5) show a similar break about 1910. The increase about 1900 was due to changes in classification.

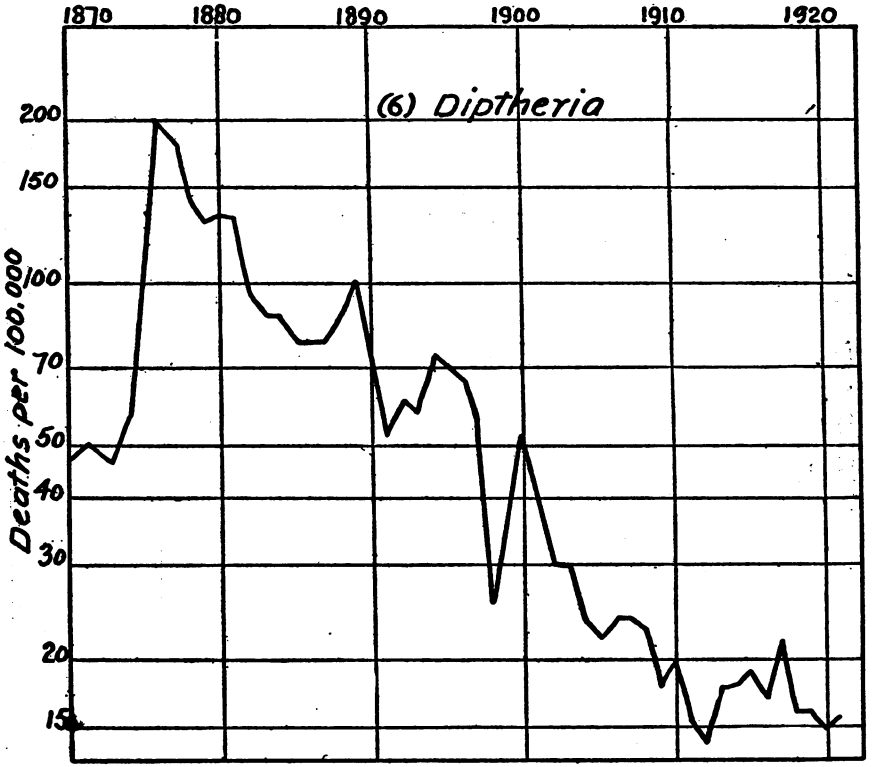


Diphtheria (6) shows a decline since 1876, when the rate stood at the very high figure of 200 per 100,000. The characteristic recurrences of this disease are evident, but their magnitude has lessened as time has gone on. For a long time the general downward trend was that of a straight line, but about 1910 the decrease began to slacken. Renewed efforts to control this disease will have to be taken or the death rate will decrease but little further. It is already quite low. This is likely to be the history of many of the communicable diseases—a decrease to some very low level, but no complete eradications; in other words, our public health efforts will result in effective control but not in extermination. When these low levels have been reached, efforts should be made, if possible, to reduce the cost of public health activities in so far as they relate to the disease in question, spending only enough money to keep them at a minimum. The law of diminishing returns here comes into play.

Scarlet fever (7) has decreased even more steadily than diphtheria in spite of the fact that the bacteriology of this disease is not well understood. The line differs from the diphtheria line in showing no reduction in the regular recurrences.

Graphs 8 and 9 show that measles and whooping cough have not yet been successfully controlled.

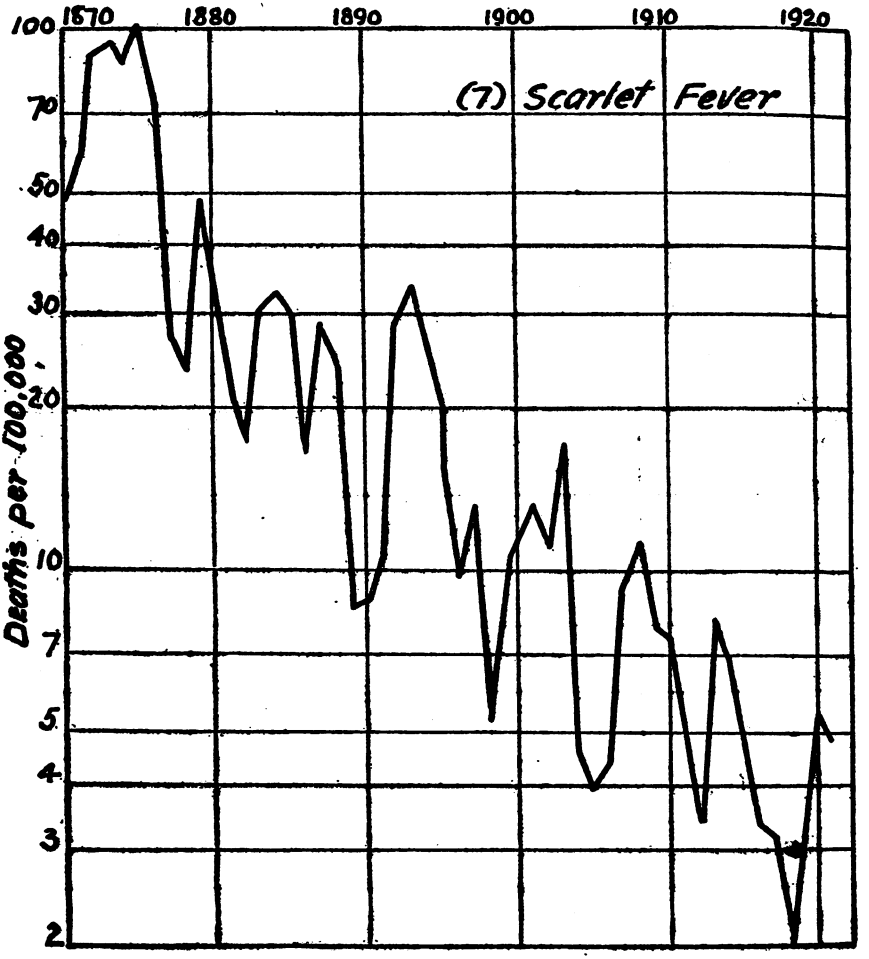
Infant mortality (10) maintained a level rate from 1870 to about 1890, save for a brief increase about 1872. Since 1890 infant mortality has fallen at a constantly increasing rate, the points falling on



a slight curve rather than a straight line. There appears to be a slight break in 1910, as well as in 1890, these two changes in rate reflecting improvements in the quality of water and milk supplies, respectively. General efforts in the direction of infant welfare have doubtless had their effect in causing the downward rate to accelerate, but sanitation seems to have been more effective than hygiene.

In contrast with these hopeful statistics we find that Bright's disease (11), cancer (12), and organic diseases of the heart (13) have been steadily increasing their death rates.

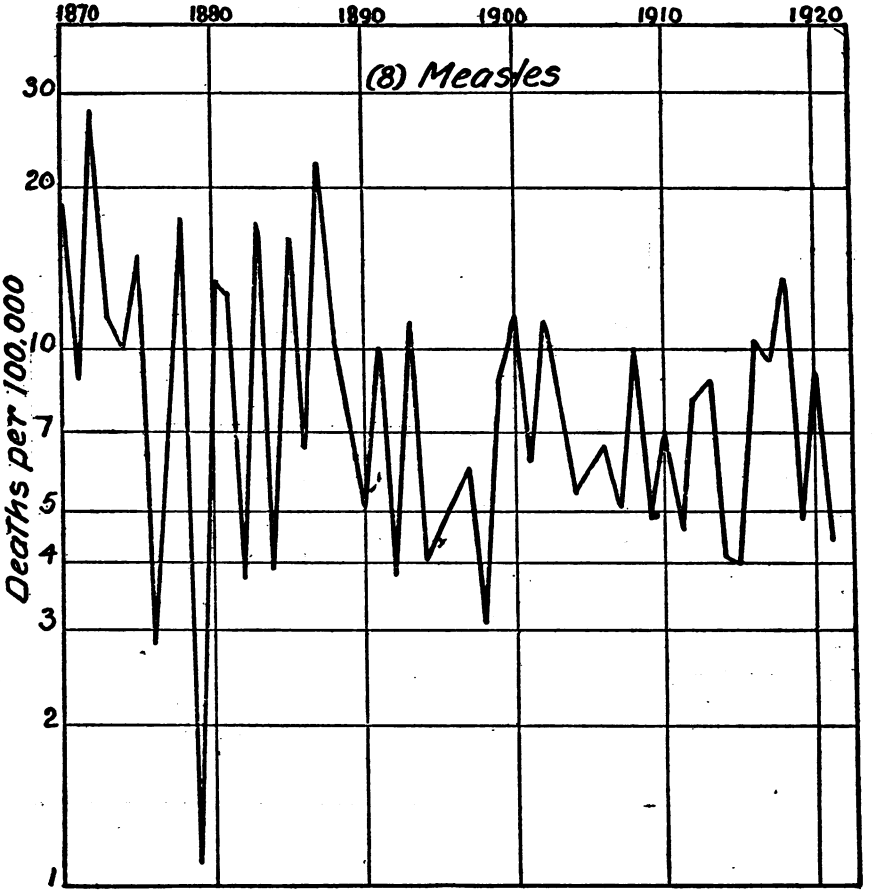
Suicide (14) also has steadily increased, with waves which are coincident with the years of financial panic. In spite of the increase in automobile accidents, the deaths from violent causes other than suicide (15) have not increased, but have kept a steady rate, with numerous fluctuations.



Deaths from alcoholism (16) are interesting in view of the recent prohibition amendment. There has been a marked decline since 1917. There was also a sharp decline after the Civil War and again in 1877. Even eliminating these low records, the death rates from this cause may be seen to have fallen gradually from 1880 to 1917.

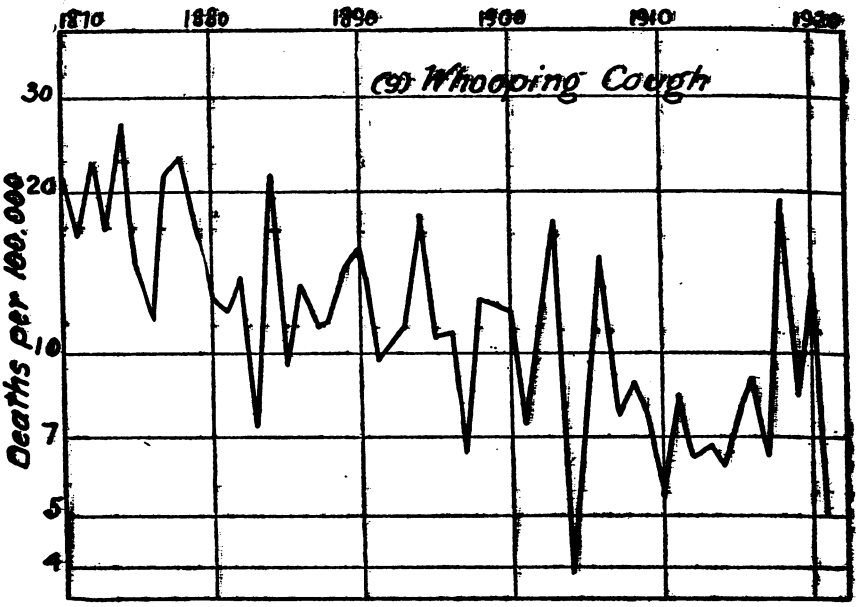
Graph 17 represents the specific death rates by age groups, plotted on semi-log paper. The noticeable observations are the accelerating downward rate of the "under 5" group; the rapid decline in groups

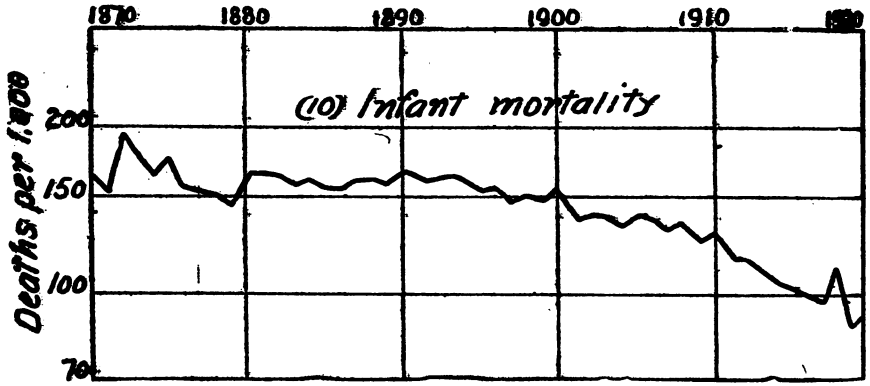
5–9, 10–14, and 15–19; the less rapid decline in groups 20–29, 30–39, 40–49; the almost steady rate for group 50–59; and the slightly increasing rates for the higher age groups. These observations are not new, but are well displayed by this method of plotting.

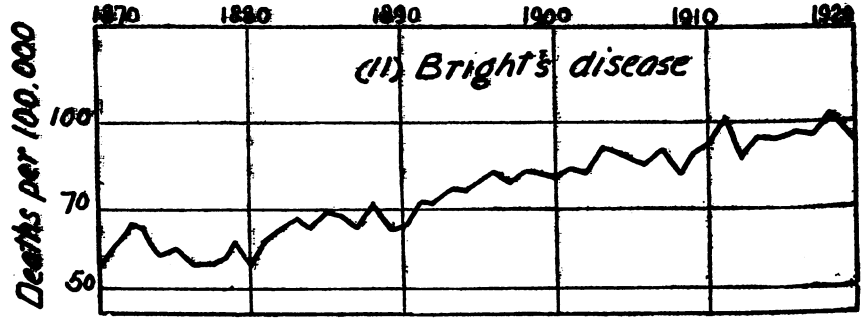


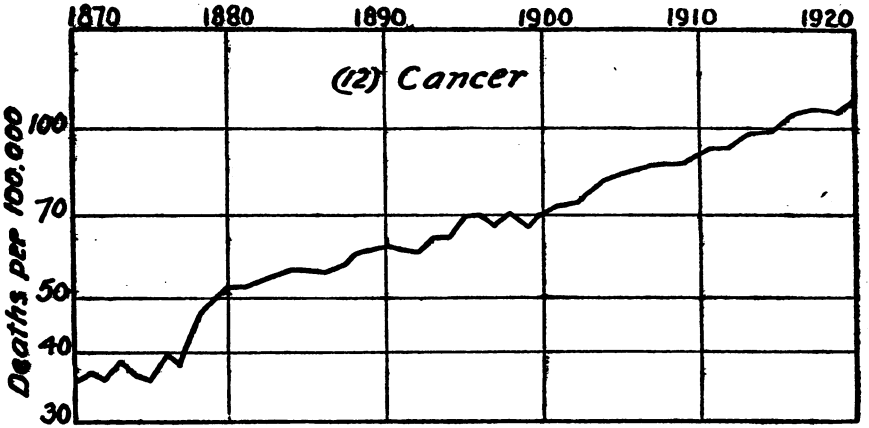
While semi-log paper is valuable for making comparisons of long-time records for purposes of study, health officers should not use it too freely in popular health instruction, because most people do not understand the logarithmic scale, with its irregular divisions, and do not appreciate the significance of the rate of change. It is not well adapted to plotting monthly changes in death rates, because in that case it is the actual seasonal change rather than the rate of change which is the important factor.

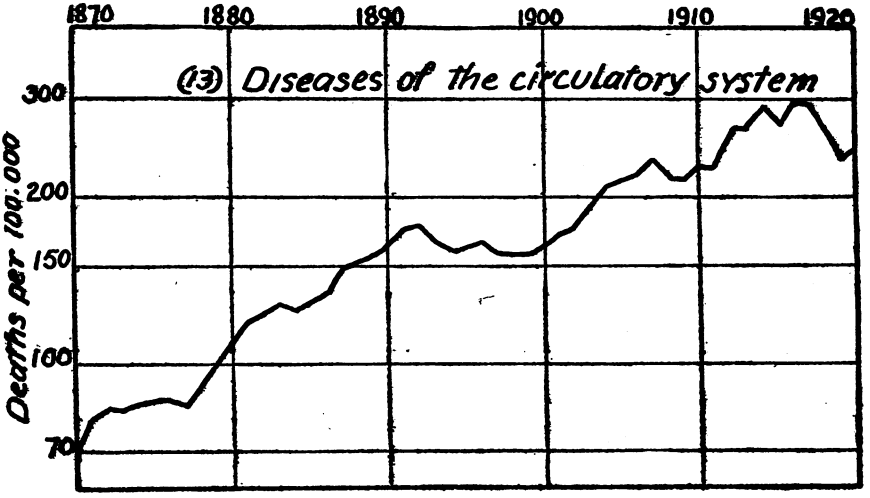
Semi-log paper, log-log paper, probability paper, and other kinds of plotting paper are of great assistance to epidemiologists in the

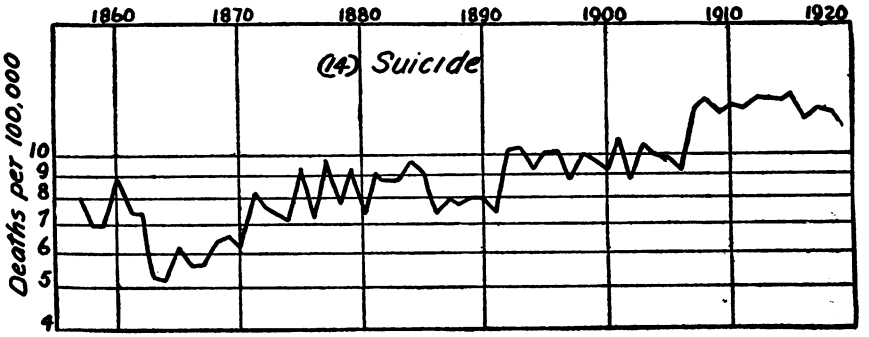

1870
1880
1890
1900
1910
(9) Whooping Cough
30
20
10
7
5
4
Deaths per 100,000

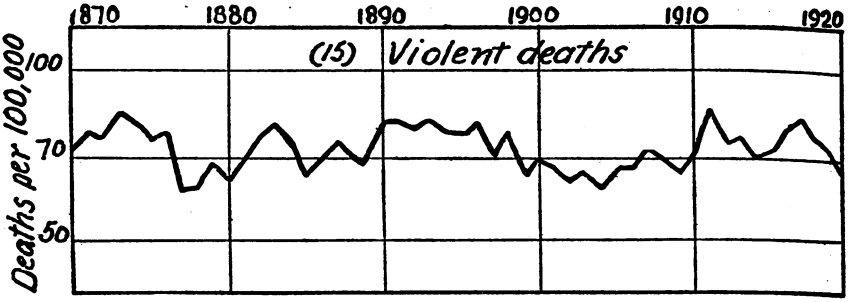

1870
1880
1890
1900
1910
(10) Infant mortality
200
150
100
70
Deaths per 1,000

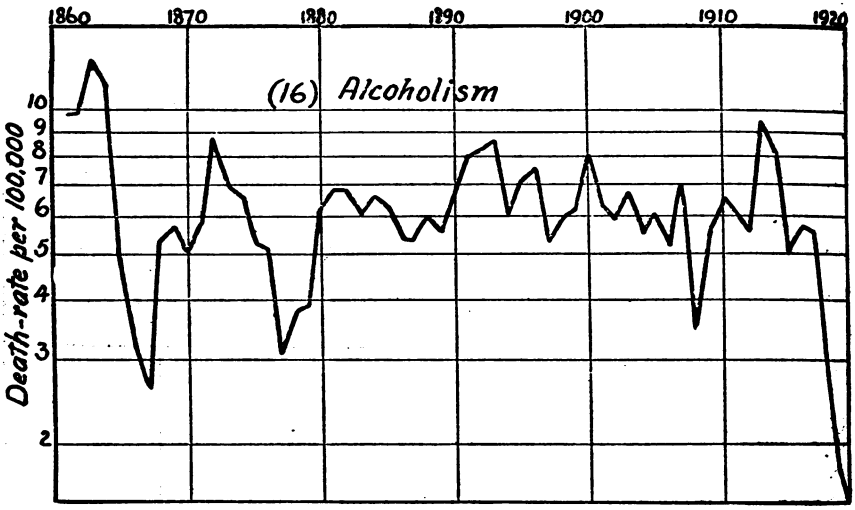

1870
1880
1890
1900
1910
(11) Bright's disease
100
70
50
Deaths per 100,000


1870
1880
1890
1900
1910
1920
(12) Cancer
Deaths per 100,000
100
70
50
40
30

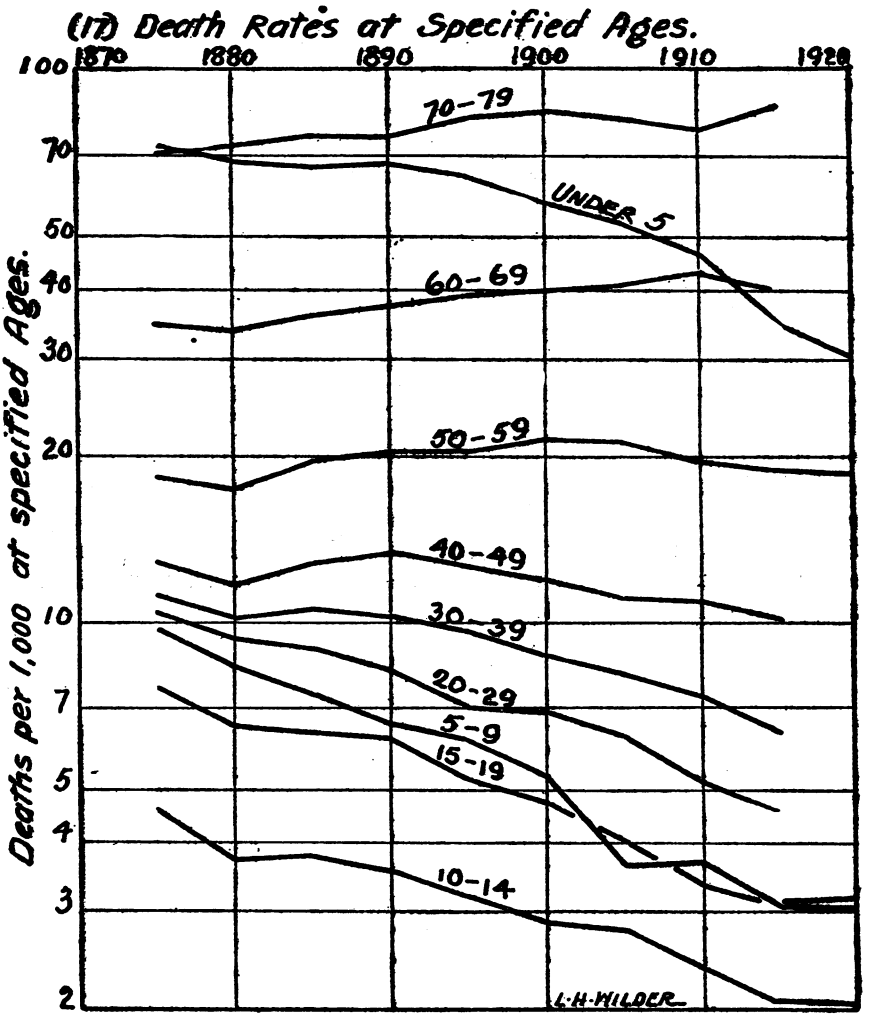

1870
1880
1890
1900
1910
1920
(13) Diseases of the circulatory system
Deaths per 100,000
300
200
150
100
70


1860
1870
1880
1890
1900
1910
1920
(14) Suicide
Deaths per 100,000
10
9
8
7
6
5
4





study of population and vital records, as well as in all sorts of biological and engineering studies. Vital statistics will soon pass out of its present elementary stage, and demography will come forth as a well-developed science—the science of the human generation, growth, decay, and death.



LIFE TABLES FOR STATES AND CITIES, 1920.

The Department of Commerce announces that abridged life tables based upon the 1920 United States Census will soon be issued showing conditions in 24 States and 14 large cities, also in the Territory of Hawaii.

Altogether these tables cover 74 per cent of the total population of the United States. They show for these States and cities taken as an aggregate that the expectation of life at birth is 55.23 for white males and 57.41 for white females.

According to these tables Kansas ranks highest, the expectation of life at birth in Kansas being 59.73 for white males and 60.89 for white females. Wisconsin ranks next with 58.77 years for white

males and 60.70 for white females. If a record as a standard of comparison be desired, it may be found in the figures for females in the county of West Sussex, England, whose expectation of life, the highest ever published officially by any country, was 63.05 in 1911–12.

Washington, D. C., outranks all other of the 14 cities with 53.83 years as the expectation of life for white males and 59.83 for white females. Pittsburgh comes at the foot of the list with 47.16 years for white males and 50.42 for white females.

For negro males in the large cities the expectation of life is 37.96 as compared with 51.55 for white males, a difference of 13.63 years. For negro females the figure is 40.28 and for white females 54.77.

For purposes of comparison and to indicate progress a table is included covering the census years 1910 and 1920. This, however, is restricted to the "original registration States," which include the six New England States, New York, New Jersey, Indiana, Michigan, and the District of Columbia, since figures for other States are not available as far back as 1910. Within this area the expectation of life for white males has advanced from 50.23 in 1910 to 53.98 in 1920, an increase of 3.75; and for females it has advanced from 53.62 to 56.33, an increase of 2.71.

Expectation of life.

[Original registration States.]

Year.	Age 0.	Age 32.	Age 62.
White males:			
1920	53.98	34.93	13.38
1910	50.23	33.33	12.85
Difference	3.75	1.60	.53
White females:			
1920	56.33	36.12	14.01
1910	53.52	35.40	13.70
Difference	2.71	.72	.31
Negro males:			
1920	40.14	28.50	11.42
1910	34.05	26.16	10.88
Difference	6.09	2.34	.54
Negro females:			
1920	42.16	28.82	12.12
1910	37.67	28.33	11.96
Difference	4.49	.49	.16

For those males who have reached the age of 32 the expectation of life is 34.93 years, and for those who have reached the age of 62 it is 13.38. For white females it is 36.12 at the age of 32, and 14.01 at the age of 62. These life tables show a marked improvement in mortality conditions among all classes between 1910 and 1920, except at certain ages between 17 and 32, these exceptions being due to the influenza epidemic.

While the various mortality conditions show that the chances of living are much more favorable among whites than among negroes, the improvement among negroes between 1910 and 1920 was slightly greater than that among whites. Had it not been for the influenza epidemics of 1919 and 1920 the expectation of life shown for 1920 would have been considerably greater for both whites and negroes.

The following table shows the various areas ranked according to the complete expectation of life at birth for each sex.

Complete expectation of life at birth, 1920.

WHITE (EXCEPT IN HAWAII).

Rank.	Area.	Males.	Rank.	Area.	Females.
1	Kansas	59.73	1	Kansas	60.89
2	Wisconsin	58.77	2	Wisconsin	60.70
3	Minnesota	58.54	3	Minnesota	60.58
4	Tennessee	58.49	4	Washington	60.44
5	Oregon	57.82	5	Oregon	60.34
	Washington		6	Washington, D. C.	59.83
6	Kentucky	57.61	7	Missouri	59.25
7	North Carolina	57.55	8	Tennessee	58.62
8	Indiana	56.84	9	Utah	58.41
9	Virginia	56.75	10	Virginia	58.35
10	Missouri	56.74	11	California	58.32
11	Ohio	56.18	12	Ohio	58.27
12	South Carolina	55.76	13	North Carolina	57.67
13	Utah	55.31	14	Illinois	57.57
14	Aggregate	55.29	15	Kentucky	57.53
15	Michigan	55.07	16	Los Angeles	57.51
16	Illinois	55.01		South Carolina	
17	California	54.36	17	Indiana	57.45
18	Massachusetts	54.00	18	Aggregate	57.41
19	Original registration States [1]	53.98	19	Connecticut	56.76
20	Connecticut	53.94	20	Massachusetts	56.50
21	Washington, D. C.	53.83		San Francisco	
22	New Jersey	53.77	21	New Jersey	56.47
23	Maryland	53.57	22	Original registration States [1]	56.33
24	Los Angeles	53.35	23	St. Louis	56.14
25	Pennsylvania	53.16	24	Michigan	55.94
26	New York	52.74	25	Cleveland	55.85
27	St. Louis	52.46		Pennsylvania	
28	Cleveland	52.44	26	Maryland	55.82
29	Chicago	52.19	27	New York	55.66
30	Philadelphia	52.08	28	Chicago	55.33
31	Detroit	52.03	29	Philadelphia	54.83
32	San Francisco	51.68	30	Aggregate in cities	54.77
33	Aggregate in cities	51.55	31	New York City	52.72
34	New York City	51.32	32	Baltimore	54.24
35	Baltimore	51.11	33	New Orleans	54.01
36	Boston	50.55	34	Detroit	53.43
37	Buffalo	49.53	35	Boston	53.32
38	New Orleans	49.39	36	Buffalo	52.98
39	Japanese in Hawaii	49.30	37	Pittsburgh	50.42
40	Hawaii (all races)	47.60	38	Japanese in Hawaii	47.70
41	Pittsburgh	47.16	39	Hawaii (all races)	47.31

NEGRO.

42	States with more than 5 per cent Negro population	46.25	40	States with more than 5 per cent Negro population	45.38
43	States with less than 4 per cent Negro population	40.14	41	States with less than 4 per cent Negro population	42.46
	Original registration States [1]		42	Original registration States [1]	42.16
44	Large cities	37.96	43	Large cities	40.28

[1] Original registration States include the New England States, Indiana, Michigan, New Jersey, New York, and the District of Columbia.

DIPHTHERIA.

ITS PREVENTION AND CONTROL.[1]

By J. W. SCHERESCHEWSKY, Assistant Surgeon General, United States Public Health Service. Revised by R. E. DYER, Passed Assistant Surgeon, United States Public Health Service.

Introduction.

Diphtheria is justly regarded as one of the most dreaded of the diseases of childhood. It has come down to us from antiquity under such names as "Egyptian sore throat," "Syrian ulcer," "malignant" or "putrid sore throat," "gangrenous ulcer," and the like, until its present name was given the disease by the great French physician Bretonneau in the first part of the nineteenth century. Membranous croup is another name for diphtheria.

Until the fruitful discoveries of Klebs, Loeffler, Behring, and others gave us the cause and the methods for the cure and control of diphtheria, few diseases had presented such high mortality, and there had been few before the march of which we were so helpless. An outbreak of diphtheria in a community caused a shudder of horror, for the old records are full of instances where all the children of a family were swept away in spite of all that the medical knowledge of that time could do.

Thanks, however, to our modern discoveries, there are few diseases about which we know as much as diphtheria. Its prevention and control are feasible, provided we have the intelligent cooperation of the sanitary authorities, the medical profession, and last but not least, the general public.

Before proceeding to discuss the cause, symptoms, control, and prevention of diphtheria, we ought to refer briefly to the "habits" of the disease, namely, its seasonal prevalence, where it is found, the ages at which it is most prevalent, and similar facts in relation to its spread.

Climate and season.—Diphtheria is a disease of temperate climates. It seems to be comparatively rare in the Tropics. So far as seasonal prevalence is concerned, while present the whole year round, it is decidedly more common in the colder months, June, July, and August showing the least number of cases. However, an epidemic once started may run its course uninfluenced by the season of the year.

Geographical distribution.—Formerly diphtheria seems to have been confined to more or less restricted regions. Its spread over the whole civilized world, however, has gone hand in hand with the development of modern transportation facilities. In cities in the Temperate Zone the disease is always more or less prevalent. In rural communities it is more likely to occur in epidemics.

[1] Originally issued as Supplement No. 14, to Public Health Reports, April 17, 1914.

Age and diphtheria.—Statistics tell us that the deaths from diphtheria occur chiefly among children less than 5 years old. In general, there are two factors operating to produce this result, namely, the fact that natural immunity to diphtheria is more rare during the early years of life, and the tendency of diphtheria to involve the larynx and windpipe in young children. The accompanying chart (Chart No. 1), based on studies made by the New York City Department of Health, shows the increase in susceptibility to diphtheria during the first two years of life and the development of immunity thereafter.

The mortality statistics of the United States Census Bureau show that in the year 1919 about 56 per cent of all deaths from diphtheria in the registration area for deaths occurred in children under 5 years of age.

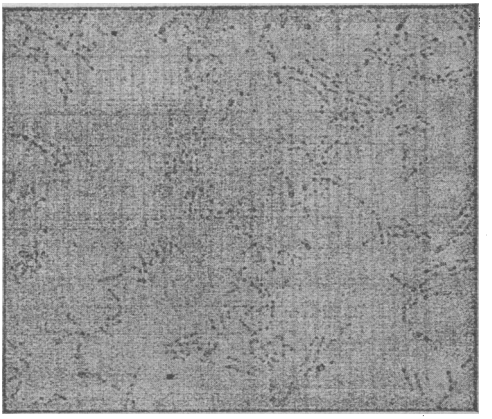


FIG. 1.—Diphtheria germs stained and highly magnified.

The Cause of Diphtheria.

The diphtheria germ.—Diphtheria is caused by the growth, usually in the throat, nose, or windpipe, of a germ known as the diphtheria bacillus or Klebs-Loeffler bacillus, discovered by Klebs and first studied by Loeffler. The appearance of this germ, magnified many times by the microscope, is shown in the accompanying cut.

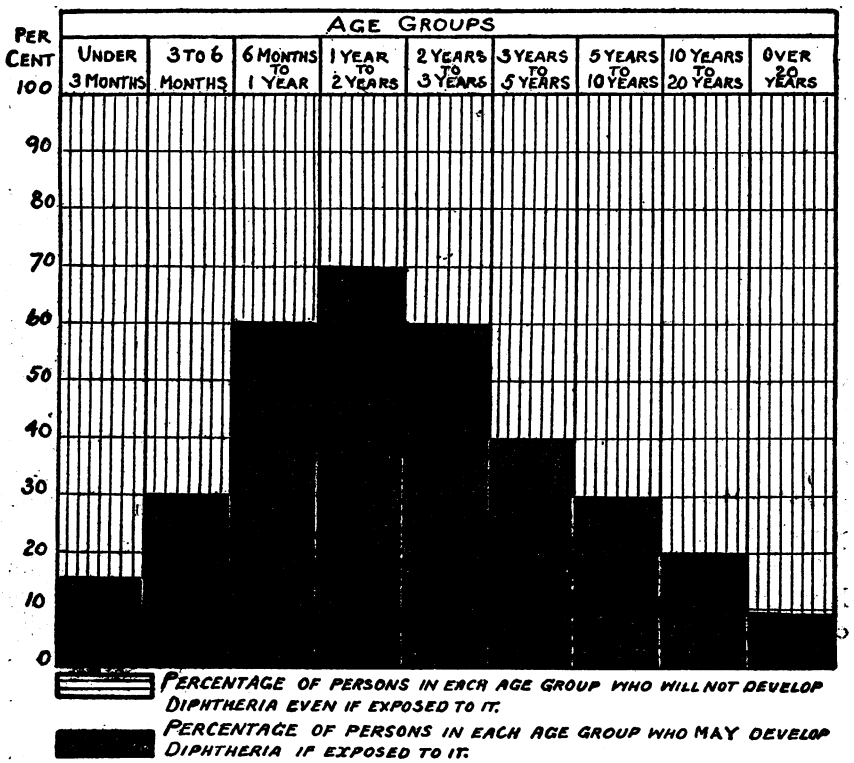
The form of this germ is quite distinctive, so that trained observers have little difficulty in distinguishing diphtheria germs from the ordinary germs found in the throat.

The diphtheria germ is constantly found, in all persons suffering from diphtheria, at the spot where the disease process is going on, and also, occasionally, in the throats of healthy persons, to whom, apparently, it may do no damage, but who, nevertheless, are capable of giving the disease to others. These are the so-called "diphtheria bacillus carriers," to be considered more fully later.

The presence of the diphtheria germ in the affected part causes the formation of a greyish membrane. The germ multiplies in the membrane and at the same time throws off a powerful poison or "toxin," which can cause death when absorbed by the body in sufficient quantities, and which is the chief cause of the symptoms of the disease.

How the presence of the diphtheria germ is detected in cases of diphtheria.—Most of our knowledge of the form and properties of the various germs arises from the fact that, aside from finding them in the bodies of the sick, they may be grown artificially, in the laboratory, on various substances given the general name of "culture media." These media are broths and jellies of various compositions, often especially adapted to the needs of the germs it is desired to grow. As a result of a great deal of experimenting, a culture medium has been found upon which the diphtheria germ outgrows the other

CHART No. 1.—Showing the early increase in susceptibility to diphtheria, followed by the development of a natural immunity.



ordinary germs which are always present in the throat, mouth, and nose. If, then, we suspect that a person is suffering from diphtheria, a sterilized cotton swab is rubbed over whatever spot seems to be affected and then passed gently over the surface of the proper culture medium for the diphtheria bacillus contained in a test tube. If the diphtheria germs are present some will cling to the swab and some of these are rubbed off onto the surface of the culture medium.

The tube is then kept in a warm place, such as in an incubator maintained at body heat, for 8 to 12 hours, at the end of which time

a growth of the diphtheria germs will appear on the surface of the culture medium. A particle of the growth is taken, rubbed up with a little water on a glass slide, dried, stained with an analine color, and examined under a microscope. The expert can often, however, make a diagnosis by examining microscopically some of the material rubbed directly from the swab onto a glass slide and stained. Most cities maintain laboratories where physicians can have examined the cultures which are taken from persons suspected of having diphtheria, and many State boards of health maintain similar laboratories where cultures may be sent from communities in which no laboratory is located.

Vitality of the diphtheria germ.—Fortunately for us, the diphtheria germ is rather frail. It is easily killed by ordinary disinfectant solutions, such as 1: 1,000 solution of bichloride of mercury (two 7½-grain tablets to a quart of water) or 2 per cent solution (5 teaspoonfuls to the quart of water) of phenol (carbolic acid). Under ordinary circumstances the germ is rather easily killed by drying; but when it is contained in pieces of membrane, such as are frequently coughed up in the course of diphtheria, it may live for some time. (Instances are on record of the germs preserving their vitality for months when such pieces of membrane remained in damp and dark basements or cellars.) It has also been found that diphtheria germs, dried on such objects as a child's building blocks, may remain alive for several months. Heat quickly destroys the diphtheria germ, but temperatures as low as freezing are not fatal to it.

How diphtheria is "caught."—Each new case of diphtheria is derived from a previous case or from a "diphtheria bacillus carrier" (i. e., an apparently well person who harbors the diphtheria germ in his nose, throat, or mouth). The spread of the disease from infected persons to relatives, friends, schoolmates, attendants, or to other persons who come in close contact as in crowds, street cars, and theaters, may take place by direct contact, as by kissing, or through sneezing or coughing. In sneezing and coughing, minute droplets are thrown out a distance of several feet. These droplets contain germs that were in the mouth, nose, or throat, and are carried along by the force of the cough. These germ-laden droplets may lodge in the mouths of others or be breathed in with the inspired air or, having lodged on the hands, may be carried to the mouth in eating. Indirectly the germs may be transferred through the agency of various objects such as pencils, apples, candy, eating utensils, drinking cups, and the like, which have been placed in the mouth or sprayed with the nose, mouth, or throat discharges of persons infected with the diphtheria germ.

The underlying principle which governs the transmission of the disease is the freedom with which exchanges of the mouth and throat fluids take place between human beings. A very little watching is enough to convince us of the many times during the day that the hands are carried to the mouth and then used to handle objects in common use. The greater tendency in children to place objects in the mouth and the closer contact of children with each other and with adults is perhaps one reason why children take diphtheria more frequently.

With the exception of the part played by milk in the spread of the disease, to which reference is made later, modes of infection other than those already mentioned are unimportant. The old belief that diphtheria can be spread through sewer gas, polluted soil, rotting refuse, or through the air, is unsupported.

Diphtheria "bacillus carriers."—By the term "bacillus carrier," we mean a seemingly well person who harbors bacilli or germs of a disease in his body. Such a person, or "carrier," may infect others with the germ of some communicable disease, such as diphtheria, typhoid fever, cholera, cerebrospinal meningitis, and the like.

It was early noticed that the germs of diphtheria might be found in the nose, mouth, or throats of apparently healthy persons and, furthermore, that such germs might be virulent, i. e., capable of giving the disease to others. Persons who have been in contact with those suffering from diphtheria are especially likely to be "carriers;" yet a certain percentage of the population of any community will be found harboring the diphtheria germs, although unaware of having been exposed to any case of diphtheria. This percentage of the population varies, being greater when there is much diphtheria in the community. The diphtheria germs found on the examination of "carriers" vary in "virulence," or ability to cause the disease. The majority of the diphtheria germs harbored by well persons, although indistinguishable by the microscope from the germs taken from diphtheria cases, are not virulent; that is, do not have the power or strength to cause symptoms of diphtheria. A certain percentage of "carriers," however, harbor virulent diphtheria germs, but do not develop symptoms of diphtheria on account of their natural immunity or resistance to the diphtheria germ.

When diphtheria is only ordinarily prevalent in a community, probably from 1 to 2 per cent of the population will be found to be carriers of the germ, and of these carriers only about 1 in 10 harbors virulent diphtheria bacilli. In time of epidemics, however, and especially among the inmates of institutions where there are outbreaks, the proportion of "carriers" may be greatly increased.

There seems to be a relation between the frequency with which the diphtheria germ is found in the throats of persons in whose house there is a case of diphtheria and the care taken in isolation of the

sick. When care has been taken in isolation about 10 per cent of the other members of the household have been found to be "carriers." In families where they have been careless in the matter of isolation the number of "carriers" has been found to be much higher.

Milk-borne diphtheria.—The germ of diphtheria grows freely in milk, and as this food undergoes so much handling during production the germs of diphtheria must often have an opportunity to get into milk unless due care is taken. Widespread outbreaks of diphtheria have occurred in which the finding of diphtheria germs in the milk has proved that this food was acting as the vehicle of transmission for the infection. The germs get into the milk at the farm or the dairy or through careless handling by the distributors, either because of the presence of a case of diphtheria or because some person concerned with the production of the milk has been a diphtheria "carrier."

The Symptoms of Diphtheria.

Period of incubation and duration.—The period of incubation of diphtheria, i. e., the time which elapses between receiving the infection and the appearance of the first symptoms of the disease is short, being from 2 to 7 days in cases in which this has been traced. The duration of the disease is variable, being from a few days to weeks or even months, especially in cases of nasal diphtheria. On the other hand, the disease may be so severe from the outset that death occurs within 24 hours.

Local symptoms.—The symptoms of diphtheria may best be understood by keeping in mind the fact that it is a disease showing local manifestations on the mucous membranes, usually of the respiratory tract (nose, mouth, throat, windpipe, and even lungs), and general symptoms of sickness caused by the absorption by the body of the poison that is produced by the diphtheria germs. The local manifestations occur at the site where the germs have gained a foothold and are multiplying in great numbers. Most frequently this occurs on the tonsils and back of the throat, but may occur in the nose alone or in the windpipe or in the larynx (beginning of the windpipe). Where the germs are at work, there is formed a "membrane" which is usually grayish white in color. In diphtheria of the throat the child may complain of difficulty in swallowing even before the membrane begins to form. If the throat is examined at the time, it will be seen to be reddened, and the tonsils will probably show some swelling. Within a short time the membrane begins to form, usually on the tonsils. It will appear as a grayish white patch, which will increase in size with varying degrees of rapidity. Several patches may be noticed at first which later grow together, or a single patch of membrane may spread till it covers both tonsils, the soft palate, and the back of the throat. The neck becomes swollen and tender,

and lumps may be felt on the outside. These lumps are swollen lymph glands. Swallowing may become almost impossible. As long as the membrane is confined to the visible parts there is usually little difficulty in breathing. When extension of the membrane downward into the larynx occurs, there is a huskiness or hoarseness of the voice which may increase until the voice is lost altogether. Difficulty in breathing sets in, caused by the mechanical blocking of the air passages by the membrane and by the swelling of the parts affected. Breathing becomes more and more difficult, and there is blueness of the finger nails and of the lips. Later the face may become dusky as the supply of air is gradually cut off. Death may occur from suffocation or from action of the diphtheria poison which has been absorbed.

General symptoms.—The general symptoms of diphtheria are caused chiefly by the absorption of the poison which is produced by the diphtheria germs, and usually vary in severity with the severity of the local manifestations described above. The onset may be gradual, with slight indisposition for a day or two and with a moderate degree of fever. In other cases the disease may begin abruptly with headache, prostration, high fever, and rapid pulse. After the disease is well established, there is marked prostration and muscular weakness, the surface of the body may be covered with a cold perspiration, the pulse is rapid and feeble and, at times, irregular. There may be dullness and apathy but, usually, on account of the discomfort of the local symptoms and the difficulty in breathing, there is great restlessness and excitement. The systemic poisoning may be so severe as to cause death before difficulty in breathing has become marked. Heart failure from the action of the poison on the heart may occur early or late in the disease or even after convalescence has begun.

Varying degrees of severity are seen in diphtheria cases, from mild cases in which only a small amount of membrane is formed and the general symptoms are so mild that it is difficult to keep the child in bed, to cases so severe that death occurs within 24 to 48 hours of the onset of symptoms. Fortunately such severe cases are rare.

Other sites of diphtheria infection.—While the usual seat of the diphtheritic process is the mucous membrane of the throat, such is not always the case. The infection may have its starting point in other places, as, for instance, the nose, within which a thick diphtheritic membrane may be developed. Nasal diphtheria is justly dreaded, not only because of the fatality in acute cases, but because the disease in this situation tends to become chronic. As the symptoms of nasal diphtheria may, at first, be only those of an ordinary "cold" in the nose, and because it is much more difficult to see into the nose than into the throat, the disease under such circumstances may readily escape detection. For this reason, if

for no other, the taking of nasal swabs for culturing should be as much a matter of routine in the diagnosis of suspected cases as the taking of swabs from the throat.

Diphtheria may also begin in the larynx and windpipe, instead of the throat, thus giving rise to laryngeal diphtheria or "membranous croup," the most serious of all forms of the disease. As already pointed out, extension of the membrane from the throat into the windpipe during the course of the disease is also a frequent and dangerous complication of throat diphtheria. The membrane may even extend down into the lungs and cause pneumonia.

Besides the nose, throat, and windpipe, diphtheria infection can spread from the throat to the mouth, so that even the lips become involved, or the ear may become infected through the canal (the Eustachian tube) by which it opens into the throat. The delicate lining membrane of the eyelid or conjunctiva may become infected, causing diphtheritic conjunctivitis. Instances have been observed of the growth of the membrane in the intestines. Wounded surfaces, too, may become involved, giving rise to wound diphtheria.

Diphtheritic paralysis.—A common complication of diphtheria is the paralysis of one or more groups of muscles which takes place either in the course of the disease or during convalescence, even from mild attacks. The muscles chiefly affected are those of the palate, the throat, and the eye. Other muscles, however, may also suffer.

Heart failure may occur during the height of the disease or even a considerable time after the local symptoms have disappeared and the patient is considered well enough to be out of danger. Failure of the heart may be the result of paralysis of the nerves of the heart or changes caused in the heart muscle by the diphtheria poison.

The Treatment of Diphtheria.

The poison or "toxin".—A few words as to the poison generated by the diphtheria germ will aid in understanding the treatment of the disease. The germs themselves multiply chiefly at the site of membrane formation which, as a rule, is in the throat, windpipe, or all three in extensive diphtheritic infections. The poison they produce, however, is readily absorbed or taken up by the body and penetrates the system. The poison seems to be especially injurious to the heart, blood vessels, nerves, and kidneys. It is due to the action of the poison that we get the somolence, listlessness, small and rapid pulse, the ashy color of the face, the restlessness, the inflammation of the kidneys, the paralyses, and the ominous symptoms of bleeding from the nose or from the diphtheritic membrane, and the discoloration of the skin in the course of diphtheria.

The poison of diphtheria is no imaginary product invented to account for the symptoms caused by the disease. It can be readily manufactured in the laboratory from diphtheria germs and is so powerful that extremely small amounts injected under the skin will produce death in animals.

Diphtheria antitoxin.—Scientific medicine achieved one of its greatest triumphs when it placed in our hands the specific remedy for diphtheria—diphtheria antitoxin. Were it possible to apply this remedy in sufficient dose and early enough in all cases, the mortality from diphtheria would almost vanish. As it is, the disease has been robbed of much of its former terror.

It has been found that animals injected with slowly increasing doses of diphtheria poison, or "toxin" (which as has already been stated can be readily made in the laboratory), gradually became immune to its effects, so that they stand without harm what would be a many times fatal dose when first the injections are begun. This ability to withstand the poison is due to an antidote or antitoxin manufactured by the animal's body. This antitoxin combines with the injected toxin and renders the latter powerless. The antitoxin is produced in such large quantities that the blood is full of it and this blood retains its antitoxic properties, even though drawn from the immunized animal and injected into another animal. In practice we take the blood of an animal that has been immunized by repeated doses of diphtheria toxin, allow it to clot, and draw off the clear serum in which the clot floats. This serum contains antitoxin and, if injected into a human being, this antitoxin will combine with any diphtheria toxin that may be present and neutralize it, thus protecting the individual.

Manufacture of diphtheria antitoxin.—Diphtheria antitoxin is made commercially from the blood serum of horses, because the horse reacts to the poison when injected by producing a very large amount of antitoxin in its blood, and can be bled in large amounts without permanent injury. Only perfectly healthy horses, shown to be free from tuberculosis and glanders, and protected by tetanus antitoxin against lockjaw, are used in its manufacture. All establishments for the manufacture of vaccines, antitoxins, and similar products used in interstate commerce are licensed, their laboratories inspected, and their products tested for purity by the United States Public Health Service, so that the general public can be assured of the purity of their output. Diphtheria antitoxins are tested for potency as well.

Potency of antitoxin.—The curative power of diphtheria antitoxin, or its "potency," is measured in "antitoxin units." The antitoxin unit involves a number of theoretical considerations and is difficult to define briefly. Essentially, however, it is the power of a certain

amount of a standard diphtheria antitoxin to neutralize diphtheria toxin. The United States Public Health Service furnishes this standard antitoxin with which all other diphtheria antitoxins manufactured in the United States and used in interstate commerce are compared. A strong diphtheria antitoxin should contain from 800 to 1,200 of these units to each cubic centimeter (1 cubic centimeter is equal to approximately 15 drops).

Results of the use of antitoxin.—For each of the seven years prior to the introduction of antitoxin (1887 to 1893), the number of deaths from diphtheria in each 10,000 population unit in New York City was 14.5, whereas in the five years after the use of antitoxin became general, the number of deaths occurring yearly among each 10,000 people dropped to 6.3. In the year 1920 the diphtheria death rate per 10,000 population in the registration area of the United States had dropped to 1.53. Furthermore, prior to the use of antitoxin, 35 to 45 per cent of diphtheria cases died, whereas at the present time (1921) this fatality rate has dropped to about 9 per cent. That the fatality is not still further reduced is due to the fact that not every case of diphtheria receives the antitoxin treatment, or that it is not employed soon enough, or that the dose has been insufficient.

Influence of antitoxin on the local symptoms of diphtheria.—The most marked influence of the antitoxin treatment of diphtheria upon the local symptoms of the disease consists in hindering the spread and causing the rapid disappearance of the membrane. If the dose of antitoxin has been given in time and in sufficient quantity, the membrane begins to loosen usually within 24 hours from the time of injection. The action of antitoxin in preventing the spread of the membrane is of the greatest importance, especially in those cases in which there is a tendency for the membrane to spread to the windpipe, or, when the windpipe is already affected, to extend downward toward the lungs.

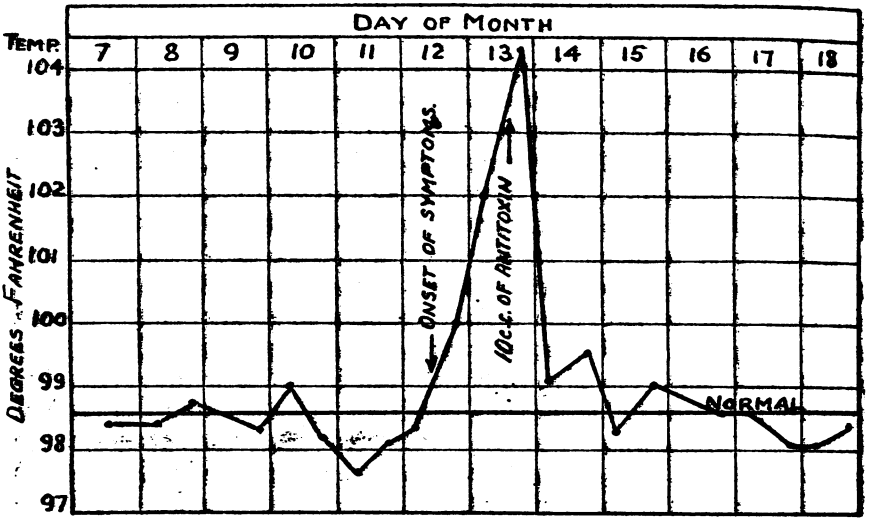
Effects of antitoxin upon the general symptoms of diphtheria.—With an improvement in the local symptoms, there goes hand in hand betterment of the general symptoms. The swelling of the glands of the neck diminishes, the fever drops, the appetite commences to return, the patient feels better in every way. Chart No. 2 shows the striking effect of a dose of antitoxin on the fever in diphtheria.

Limitations of antitoxin.—The success of the antitoxin treatment of diphtheria depends on the neutralization of the diphtheria poison by the antitoxin before the poison has opportunity to injure the body cells. Once the poison has injured the cells of any part of the body, as the heart, nerves, or kidneys, the antitoxin is powerless to repair that injury. This fact will explain in large measure the failure of antitoxin given late in the course of the disease to prevent paralysis

or death. The element of time and the amount of poison which has been taken up by the body are important considerations. The larger the dose of poison present in the system, the less time there is to lose if we are to save the patient. Fortunately, the appearance of the first symptoms of poisoning does not necessarily indicate that a fatal dose has been absorbed, so that, even in apparently desperate cases the patient may get well if antitoxin in sufficient amount be given.

Importance of the early use of antitoxin.—We learn from the foregoing the important fact that antitoxin must be given as early as

CHART NO.2.—Showing the effect of an injection of antitoxin early in a case of diphtheria.



Typical effect of an injection of antitoxin at the outset of a case of diphtheria. (After Kolle and Hetsch.)

possible in the course of the disease. The accompanying chart shows the striking differences in the fatality from diphtheria accordingly as antitoxin is administered early or late in the disease.

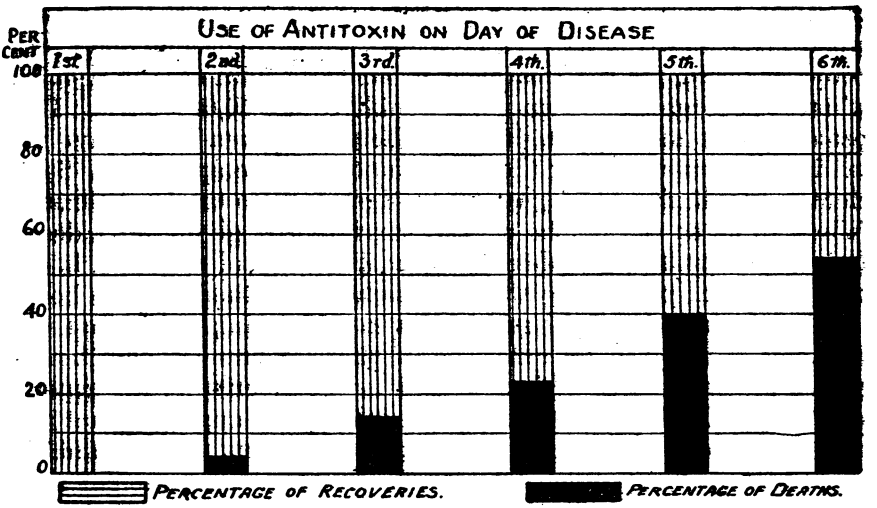
An examination of Chart No. 3 shows, in the large series of cases upon which it is based, that when antitoxin could be given on the first day of the disease there were no deaths. When the administration was delayed to the second day after about 5 per cent died. Administration on third, fourth, fifth, and sixth days showed the progressively increased fatality of 12.5 per cent, 22 per cent, 39 per cent, and 50 per cent, respectively.

We also find a relation between the early use of antitoxin and the frequency with which the crippling paralyses, so frequent in diphtheria, occur. The earlier the use of antitoxin, the less likelihood

there is of the subsequent development of paralysis. The overwhelming importance of the time element in the antitoxin treatment for diphtheria can not be too strongly emphasized. A few hours lost in beginning treatment may mean all the difference between life on the one hand and death or crippling on the other. When the general public realizes that in the treatment of diphtheria no time is so precious as that lost at the outset, and that the energetic, early use of antitoxin creates mastery of the situation, many valuable lives will be saved which are now wasted by timidity and procrastination.

Methods of use and dose of antitoxin.—While the administration of the antitoxin treatment of diphtheria is necessarily in the hands of

CHART NO. 3.—Shewing how the chances of recovery from diphtheria are increased by the early use of antitoxin.



Curative action of antitoxin on different days of the disease. (After Kolle and Hetsch.)

the attending physician, a few remarks as to its use and the proper dose will not be out of place.

Antitoxin is placed on the market by the manufacturers in sterile containers, usually in syringes, ready for use, with the potency in antitoxin units per cubic centimeter plainly stated on the label.

There are three methods of administering antitoxin—by injecting the remedy directly under the skin, into the muscles, or into a vein. Whatever method is used, the skin over the site chosen for the injection is first cleansed with care and disinfected. The choice of method to be used depends largely upon the needs of the case. When injection is made into the muscles, absorption takes place in about one-third of the time required when the injection is made directly under the skin. If given into a vein, the antitoxin is immediately available

for use in neutralizing the poison already absorbed. Since time is all important in the treatment of diphtheria, it follows that injection directly under the skin should be used only when giving the treatment early in the course of mild cases. Choice between injecting into the muscles or into a vein depends upon the severity of the disease and the time that has passed since the first symptoms appeared. In general it may be stated that severe cases seen after symptoms of poisoning have appeared should receive the antitoxin by injection into a vein.

In selecting the dose to be given in any case we must be guided by the time that has elapsed since the onset of the disease, the age of the patient, the severity of the case, and the method of administration. Children require less antitoxin than adults, mild cases less than severe ones, and early cases less than those seen late. More antitoxin is required when the remedy is given under the skin than when given into the muscles or veins. Three thousand units may prove sufficient for the treatment of an early mild case in a child, whereas a severe case in an adult would require 50,000 units. It is probable that at least 10,000 units should be given in all save the mild cases seen soon after the first symptoms have appeared. Sufficient antitoxin should be given at the first dose, as time lost through failure to do so can not be entirely retrieved by giving later doses. It is important to remember that the liberal use of antitoxin is our only means for preventing the extension of diphtheria in the body.

All cases showing by huskiness or a whispering voice that the windpipe is involved by extension of the membrane should be regarded as severe cases without regard to the severity of the general symptoms. If, from the facts in the case, it is apparent that the patient has been sick for more than three days, we must regard his life as having already been endangered. While severe poisoning may result with only trifling local symptoms, the state of the affected parts is a fairly good index of the amount of poisoning likely to ensue. A rapidly spreading membrane, fetid breath, great swelling of the glands of the neck, a blood-stained discharge from the mouth and nose are signs that the case is severe and dangerous, and symptoms of poisoning are to be expected unless averted by a big dose of antitoxin. The presence of kidney involvement, somnolence, listlessness, a fretful, peevish voice, a small rapid or irregular pulse are to be regarded as symptoms of poisoning.

Harmful effects of antitoxin.—Following the administration of antitoxin a number of disagreeable symptoms sometimes develop. These symptoms are manifestations of "serum sickness" and may last some 8 or 10 days. This sickness comes on from two days to two weeks after the injection of antitoxin and is due not to the antitoxin itself, but to the fact that the serum containing the antitoxin is from another

class of living beings, viz, the horse. There is slight reddening of the site of injection and swelling of the neighboring lymphatic glands. The next symptom is an eruption, most intense at the spot where the antitoxin was injected and the surrounding skin, which belongs to the group of nettle rashes. The eruption soon spreads over the whole body and may be very itchy. The eruption may resemble measles or scarlet fever. On the other hand, the eruption may be scanty or transient. Some fever is usually present. In addition to the above there are often localized swellings of the skin, knuckles, or conjunctiva. More infrequently there are pains in the joints which may give great discomfort and difficulty in handling the patient. Recovery always ensues.

Hypersensitiveness.—Occasionally individuals are found in whom the injection of antitoxin is followed by severe collapse and even death. This is not due to the antitoxin, but is because horse serum is poisonous to a very small number of individuals. Fortunately, such persons are very rare. About one death has occurred to each fifty or seventy-five thousand persons injected. The tendency to be poisoned by horse serums seems peculiarly marked in persons who suffer from bronchial affections and asthma. Some individuals are so sensitive that they can not work in the vicinity of horses without being subject to asthmatic attacks.

When it is necessary to give antitoxin to persons subject to asthma, it is better to give it in divided doses. One-tenth of a cubic centimeter every 15 or 20 minutes can usually be given with safety.

The Care of Diphtheria Patients.

Home care.—Proper care of the diphtheria patient is important in the control and prevention of diphtheria. It is here that the private citizen, if he does his full duty, becomes an efficient unit in the campaign against preventable disease. The communicability of diphtheria and the fact that "carriers" of the germ result from contact with persons sick of the disease, render imperative the strict isolation of diphtheria patients.

The sick room.—The first rule in the care of diphtheria in the home is to place the patient in a separate room. This room should, if practicable, be on the floor of the house the least in use, though its adaptability as a sick room should be taken into account. All unnecessary furniture should be removed. What furniture is left should be of a kind which may be readily cleansed.

There is no need for fancied attempts at purifying the air by means of hanging sheets wet with disinfectants and the like. If possible, the mattress should be completely covered with a rubber sheet which can be washed from time to time with a disinfectant solution.

Separate linen, bedclothing, etc.—Separate towels, bed clothing, nightgowns, eating utensils, and drinking vessels should be provided for the patient's exclusive use. These should always be kept free from contact with those used by the rest of the family. After being used by the patient, they are to be placed in one of the disinfectant solutions given below or boiled in water.

Attendant for the patient.—The patient should be provided with an attendant who remains with the patient and holds no communication with the other members of the family. This attendant should be the only person caring for the patient or coming in contact with him apart from the attending physician.

Use of disinfectants.—A tub of good disinfectant solution should be at hand for soaking articles which have been used by the patient. A basin of disinfectant should also be provided for cleansing the hands of the attendant. Proper disinfectant solutions are:

(*a*) Two per cent solution of phenol (carbolic acid).

(*b*) Two per cent solution of liquor cresolis compositus U. S. P. (compound solution of cresol).

A 2 per cent solution is made by adding 3 ounces (6 tablespoonfuls) of the disinfectant to 1 gallon of water.

All surfaces soiled by discharges from diphtheria patients should be mopped or flooded with the disinfectant solution.

All articles used by the patient should be soaked for two or more hours in one of the disinfectant solutions or thoroughly boiled. Discharges from the nose and throat of the patient are to be received into pieces of cotton gauze, or old, clean squares of cloth, which are then placed immediately after use into the solution of disinfectant or burned. Partially eaten food is also disposed of by burning.

Care of the attendant's hands.—It is important to remember that the hands are extremely likely to become infected with diphtheria germs when caring for diphtheria patients and that these germs may then be carried to the mouth. Unnecessary handling of the patient should therefore be avoided. Whenever handling is necessary, the hands should be immediately cleansed in disinfectant solution and then washed with soap and water. This precaution must always be taken by the attendant before eating.

Other precautions for the attendant.—A loose gown or a wrapper should be provided to protect the attendant's clothing. This covering should always be regarded as infected and not sent out of the room until it has been soaked in disinfectant. In the case of female attendants, the hair should be completely covered by a cloth or hood when engaged in caring for the patient. The patient may cough violently in the attendant's face, thus spraying the attendant with the mouth and throat discharges and, possibly, bits of membrane. If this happens the face should be washed at once in disinfectant

solution, including the hair if it has been left uncovered. If the hair has been covered, the covering should be placed in the disinfectant solution.

Gowns and head coverings should also be provided for the attending physician. These are kept outside of the room and are soaked in the disinfectant after being used.

Gowns, headdresses, and the like may be thoroughly boiled in water or soapsuds instead of being soaked in a disinfectant solution.

Cleansing the room.—The room should be thoroughly aired two to three times a day. In cold weather the patient should be protected from draft at such times. No sweeping should be done, but the floor and furniture should be wiped with cloths dampened in disinfectant solution. After use the cloths should be soaked in disinfectant or boiled.

Bath after recovery.—After recovery the patient's entire body, including the hair, should be bathed. The patient should then be removed from the sick room and dressed in clean clothes which have not been in the room during the sickness.

Subsequent treatment of the room.—The subsequent cleansing and disinfection of the room after the patient's recovery will, in cities, be covered by the regulations of the local board of health. When the householder must follow his own initiative in this matter, the following measures should be carried out:

The room should be thrown open freely to air and sunshine. All bed linen, towels, nightgowns, and the like are to be disinfected either by soaking in a disinfectant or by boiling in water. Books and toys used by the patient should be burned. The floors, woodwork, and furniture should be wiped with cloths soaked in disinfectant. Mattresses are best disinfected with steam; otherwise they should be burned. If, however, they have been thoroughly protected by a rubber sheet, after removal of the latter they may be sunned on both sides for a number of successive days.

Duration of isolation in diphtheria.—Persons suffering from diphtheria should be isolated until cultures taken from the throat and nose on at least two successive occasions fail to show the presence of diphtheria germs or until the germs present are shown to be "avirulent" (not able to cause the disease).

Reporting the case.—The efficient control of diphtheria depends upon exact knowledge of its prevalence. It is therefore the public duty of all citizens to report cases of diphtheria to the sanitary authorities and to have the houses in which such cases exist placarded.

It is similarly the duty of the householder scrupulously to observe all regulations made by the local health department with respect to the quarantine of diphtheria cases. All cases of sore throat, especially if occurring in more than one member of a family, should be isolated

and steps should be taken to have nose and throat cultures sent to health office for examination.

Protection of food supplies.—When a household in which there is a case of diphtheria is engaged in any occupation having to do with the handling of food, such as the grocery business, dairying, and the like, such occupation should be discontinued until recovery of the patient from diphtheria and virulent diphtheria germs are found to be absent from the recovered case and from the nose and throat of each member of the family. Should the patient be removed to a hospital for contagious diseases, business may be resumed when it is shown that none of the other members of the family is harboring virulent diphtheria germs, and the necessary cleansing and disinfecting of the premises have been done.

Hospitalization.—From the foregoing discussion of the care necessary for the proper treatment of diphtheria in the home and the precautions required to prevent the spread to other members of the same family, it is quite evident that not all homes are equipped to give this care or render possible the exercise of the proper precautions. Could all cases of diphtheria be promptly hospitalized upon occurrence, we could expect a definite decrease in the percentage of diphtheria cases which end fatally. Furthermore, investigations of diphtheria have definitely shown that the removal of cases of diphtheria to isolation hospitals has a marked effect in reducing the occurrence of other cases in the same family. With the exception of those homes where excellent isolation can be carried out under the care of a trained attendant, hospital treatment is to be recommended. The decision as to hospitalization must be left in the hands of the local sanitary authorities.

Immunity to Diphtheria.

Immunity to diphtheria, or the ability to resist infection with the diphtheria germs even though exposed to them, is divided into two classes—natural immunity and acquired immunity.

Natural immunity.—By referring to Chart No. 1 it will be seen that a certain number of persons in each age group have a natural resistance or immunity to diphtheria. These persons are immune because they have in their bodies enough antitoxin to prevent the development of symptoms of diphtheria even if exposed to infection. Such immune persons may harbor the germs of diphtheria on the mucous membrane of the nose or throat and by so doing act as "carriers" although they will not develop the disease themselves.

Acquired immunity.—By injecting diphtheria antitoxin under the skin, the individual receiving the injection is rendered immune to diphtheria for as long a time as the antitoxin remains in the body. This varies from two to four weeks. However, if at the same time

the antitoxin is injected, a small amount of diphtheria toxin or poison is also injected, the resulting immunity will be of slower onset but of much longer duration, probably lasting throughout the age of susceptibility and possibly for life. When the antitoxin and poison or toxin are given together the mixture is spoken of as toxin-antitoxin.

Unlike some of the other contagious diseases, such as measles and smallpox, one attack of diphtheria does not protect the individual against a second or even third attack, in all instances.

Determination of immunity.—By use of a test known as the Shick test, so called after the man who discovered it, it is possible to determine what individuals possess immunity to diphtheria, and likewise those who are likely to catch the disease if exposed to it. This test is carried out by injecting a very small amount of diphtheria toxin into the skin of the forearm. If there is no antitoxin in the blood, the skin around the site of injection becomes reddened in a few days, showing that the individual being tested is not immune to diphtheria. This person may then be rendered immune by injecting a mixture of toxin and antitoxin as mentioned in the preceding paragraph.

The Prevention of Diphtheria.

Diagnosis of cases.—We readily understand from the foregoing that the correct diagnosis of diphtheria plays a very important part in its control. Not only does the safety of the community depend upon the detection and isolation of cases of diphtheria, but the early recognition of the disease diminishes the mortality because treatment is also earlier. It may be well to emphasize at this point that the taking of cultures from the nose is quite as important in the detection of cases and "carriers" as the taking of throat cultures. Both should invariably be taken.

As 24 hours of valuable time must elapse before the laboratory diagnosis can be surely made, in time of diphtheria prevalence suspected cases of diphtheria should be given the antitoxin without waiting for bacteriological diagnosis. This is especially true in the treatment of young children. The antitoxin should be given and nose and throat cultures taken at the same time. If the result of examination is negative, no harm has been done, whereas if the illness is diphtheria, just so much time has been gained and possibly a life has been saved. Much could be accomplished in limiting the spread of communicable diseases if it were the rule in every household to isolate all children as soon as they become sick, until the nature of their illness has been determined, especially when such illness is accompanied by sore throat, running nose, or huskiness of the voice.

Diagnosis and treatment of "carriers."—When a case of diphtheria develops in a family, nose and throat cultures should be taken from the other members of the family and from those with whom the person

suffering from diphtheria has recently come in contact. In the diagnosis of "carriers" it is quite as important to take cultures from both the nose and throat as in the diagnosis of diphtheria cases. Examinations of large numbers of cultures taken from apparently healthy persons has shown that, in times of normal diphtheria prevalence, from 1 to 2 per cent of the population are "carriers" of the diphtheria germ. Further investigation has shown that in only about 1 in 10 of these "carriers" are the diphtheria germs possessed of enough strength or virulence to cause diphtheria. In carriers resulting from recent exposure to a case of diphtheria, as in the other children of a family where a case of diphtheria exists, the diphtheria germs are more likely to be virulent. In such instances the same care should be taken to prevent the spread of the germs from the "carriers" as from a case of the disease.

There can be no doubt as to the propriety of excluding children who are carriers of virulent diphtheria germs from schools or of prohibiting "carriers" who have to do with the handling of foodstuffs from engaging in their occupation until they are free from virulent diphtheria germs. In outbreaks of diphtheria in institutions "carriers" should be isolated until free from germs or until the germs present are shown to be avirulent.

All children who have been found to be carriers of diphtheria germs should be given the Shick test to determine their ability to resist the development of diphtheria, and if found susceptible they should be rendered immune by injection of the toxin-antitoxin mixture.

Protection of those exposed to diphtheria cases.—When a case of diphtheria has developed in a household, the question immediately arises as to the methods to be employed in protecting the other members of the family. Children who have been exposed to the case should be given the Shick test to determine the possibility of their developing the disease. Those who are shown by this test to be susceptible to diphtheria should be given a preventive dose of diphtheria antitoxin. The amount given should be from 500 to 1,000 units, and the injection should be made into the tissues immediately under the skin. In the case of exposed children it is often advisable to give a preventive dose of antitoxin without waiting for the results of the Shick test.

Protection of school children.—As already pointed out, we have means of preventing deaths from diphtheria after the disease has developed and a means of preventing the development of cases of diphtheria. We also have, in the Shick test, a way to determine what members of the whole population may develop diphtheria on exposure. Extensive use of the Shick test has been made in several cities of this country, notably New York, and in many institutions.

After this test has shown which children are not protected naturally against diphtheria, the toxin-antitoxin mixture is given and complete immunity conferred in almost all instances. The simplicity of the Shick test and the harmlessness of the toxin-antitoxin, together with the high degree of protection given, will appeal to many parents who have children below the school age. It is to be hoped that it will be employed in school work as extensively as has vaccination against smallpox. Considering the number of diphtheria carriers normally present in the whole population, the extensive use of toxin-antitoxin seems the only method we now have of controlling the occurrence of diphtheria.

Organization for the public control of diphtheria.—The following are necessary for the efficient public control of diphtheria:

1. A properly organized health department with a competent health officer at the head.
2. The prompt notification of all cases of diphtheria.
3. A laboratory for the bacteriological diagnosis of diphtheria.
4. A sufficient corps of public health nurses for the visiting and control of reported cases.
5. A contagious disease hospital, to which persons suffering from diphtheria can be moved, when, from an inspection of their premises, it is evident that they can not remain at home without danger to others.
6. The free distribution of antitoxin.
7. Maintenance of the quarantine of persons suffering from diphtheria until at least two successive nose and throat cultures fail to show the presence of the diphtheria germs.
8. A sufficient number of stations at convenient points at which outfits for making diphtheria cultures can be obtained.
9. An adequate system of physical supervision of school children.
10. Public spirited cooperation on the part of the health department, the medical profession, and the public.
11. Education of the public as to the use of the Shick test, and the protection conferred by the toxin-antitoxin mixture.

DEATHS DURING WEEK ENDED AUGUST 5, 1922.

Summary of information received by telegraph from industrial insurance companies for week ended August 5, 1922, and corresponding week, 1921. (From the Weekly Health Index, August 8, 1922, issued by the Bureau of the Census, Department of Commerce.)

	Week ended Aug. 5, 1922.	Corresponding week, 1921.
Policies in force	49,054,506	46,068,087
Number of death claims	7,303	7,386
Death claims per 1,000 policies in force, annual rate	7.8	8.4

Deaths from all causes in certain large cities of the United States during the week ended August 5, 1922, infant mortality, annual death rate, and comparison with corresponding week of 1921. (From the Weekly Health Index, August 8, 1922, issued by the Bureau of the Census, Department of Commerce.)

City.	Estimated population July 1, 1922.	Week ended Aug. 5, 1922.		Annual death rate per 1,000, corresponding week 1921.	Deaths under 1 year.		Infant mortality rate, week ended Aug. 5, 1922.[2]
		Total deaths.	Death rate.[1]		Week ended Aug. 5, 1922.	Corresponding week 1921.	
Total	28,041,678	5,575	10.4	10.4	863	970	.....
Akron, Ohio	[3] 208,435	28	7.0	5.7	4	8	42
Albany, N. Y.	116,223	23	10.3	11.3	3	1	67
Atlanta, Ga.	220,047	62	14.7	13.3	9	5	.....
Baltimore, Md.	762,222	204	14.0	12.2	49	35	138
Birmingham, Ala.	191,017	49	13.4	14.6	8	5	.....
Boston, Mass.	764,017	169	11.5	10.9	20	28	53
Bridgeport, Conn.	[3] 143,555	26	9.4	8.0	5	6	62
Buffalo, N. Y.	528,163	99	9.8	10.0	21	19	83
Cambridge, Mass.	110,944	21	9.9	10.9	2	6	37
Camden, N. J.	121,915	31	13.3	11.8	5	6	76
Chicago, Ill.	2,833,288	456	8.4	9.3	78	97	.....
Cincinnati, Ohio.	404,865	100	12.9	12.3	11	21	73
Cleveland, Ohio.	854,003	130	7.9	10.2	30	34	77
Columbus, Ohio.	253,455	50	10.3	10.8	5	7	53
Dallas, Tex.	171,974	48	14.6	13.9	14	2	.....
Dayton, Ohio.	161,824	32	10.3	10.6	2	6	34
Denver, Colo.	267,591	73	14.2	10.1	10	3	.....
Detroit, Mich.	[3] 993,678	180	9.4	8.3	26	42	89
Fall River, Mass.	120,790	33	14.2	13.8	9	12	126
Fort Worth, Tex.	114,717	25	11.4	.....	4	.....	.....
Grand Rapids, Mich.	143,572	21	7.6	11.4	7	4	117
Houston, Tex.	150,087	26	9.0	12.3	4	1	.....
Indianapolis, Ind.	333,257	69	10.8	11.4	8	8	61
Jersey City, N. J.	305,911	63	10.7	9.5	7	20	45
Kansas City, Kans.	113,801	40	18.3	10.0	1	3	23
Kansas City, Mo.	343,988	104	15.8	11.3	14	11	.....
Los Angeles, Calif.	634,866	159	13.1	12.8	15	14	62
Louisville, Ky.	236,877	45	9.9	11.3	9	6	97
Lowell, Mass.	114,423	29	13.2	11.9	10	8	168
Memphis, Tenn.	167,862	58	18.0	10.1	7	8	.....
Milwaukee, Wis.	476,603	83	9.1	5.6	11	7	54
Minneapolis, Minn.	400,970	69	9.0	8.5	10	8	55
Nashville, Tenn.	122,832	41	17.4	17.1	4	7	.....
New Bedford, Mass.	127,542	29	11.9	8.3	4	7	59
New Haven, Conn.	169,987	25	7.7	8.7	6	7	73
New Orleans, La.	399,616	137	17.9	18.0	20	16	.....
New York, N. Y.	5,839,746	1,068	9.5	10.0	171	228	66
Newark, N. J.	431,792	74	8.9	10.8	12	31	58
Norfolk, Va.	124,915	24	10.0	12.9	1	5	18
Oakland, Calif.	233,279	32	7.2	9.4	0	2	0
Omaha, Nebr.	200,739	45	11.7	14.3	6	5	65
Paterson, N. J.	138,521	22	8.3	12.9	1	1	15
Philadelphia, Pa.	1,894,500	350	9.6	10.1	66	62	78
Pittsburgh, Pa.	607,902	141	12.1	10.8	29	36	98
Portland, Oreg.	269,240	50	9.7	10.8	0	6	0
Providence, R. I.	241,011	73	15.8	11.1	8	12	63
Richmond, Va.	178,365	33	9.6	13.9	6	11	73
Rochester, N. Y.	311,548	58	9.7	13.2	15	13	115
St. Louis, Mo.	795,008	145	9.5	10.1	18	15	.....
St. Paul, Minn.	239,836	52	11.3	8.3	3	1	28
Salt Lake City, Utah	123,918	12	5.0	9.0	3	2	45
San Antonio, Tex.	178,056	48	14.1	.....	15	.....	.....
San Francisco, Calif.	529,792	112	11.0	15.5	7	6	40
Seattle, Wash.	[3] 315,312	40	6.6	8.1	1	2	85
Spokane, Wash.	104,445	23	11.5	9.5	1	2	21
Springfield, Mass.	140,052	25	9.3	8.1	4	3	60
Syracuse, N. Y.	181,012	31	8.9	7.6	4	3	48
Toledo, Ohio.	260,717	46	9.2	8.8	4	6	39
Trenton, N. J.	125,075	35	14.6	8.9	8	8	122
Washington, D. C.	[3] 437,571	98	11.7	10.3	10	16	57
Wilmington, Del.	115,568	17	7.7	7.4	2	2	39
Worcester, Mass.	188,449	39	10.8	10.4	6	4	65
Yonkers, N. Y.	105,422	24	11.9	5.6	6	2	125
Youngstown, Ohio.	144,970	21	7.6	10.5	4	8	53

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1921. Cities left blank are not in the registration area for births.
[3] Enumerated population Jan. 1, 1920.

PREVALENCE OF DISEASE.

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

UNITED STATES.

CURRENT STATE SUMMARIES.

Telegraphic Reports for Week Ended August 12, 1922.

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

ALABAMA.

	Cases.
Diphtheria	34
Hookworm disease	44
Influenza	15
Malaria	27
Pellagra	6
Scarlet fever	6
Smallpox	2
Tuberculosis	2
Typhoid fever	41
Typhus fever	1

ARKANSAS.

Cerebrospinal meningitis	1
Chicken pox	1
Diphtheria	11
Malaria	237
Measles	5
Pellagra	10
Scarlet fever	2
Smallpox	8
Tuberculosis	20
Typhoid fever	27
Whooping cough	14

CALIFORNIA.

Diphtheria	37
Influenza	1
Leprosy—Oakland	1
Lethargic encephalitis—Vallejo	1
Measles	4
Poliomyelitis:	
Chico	1
San Bernardino	1
Scarlet fever	18
Smallpox	14
Typhoid fever	21

COLORADO.

(Exclusive of Denver.)

Diphtheria	19
Influenza	2
Lethargic encephalitis	1

COLORADO—continued.

	Cases.
Mumps	1
Pneumonia	1
Scarlet fever	7
Septic sore throat	1
Smallpox	1
Tuberculosis	49
Typhoid fever	19
Whooping cough	3

DELAWARE.

Cholera infantum	1
Diphtheria	3
Malaria	8
Scarlet fever	2
Tuberculosis	4
Typhoid fever	6

FLORIDA.

Dengue	217
Diphtheria	11
Influenza	65
Lethargic encephalitis	1
Malaria	12
Ophthalmia neonatorum	1
Poliomyelitis	1
Scarlet fever	1
Smallpox	1
Typhoid fever	11

GEORGIA.

Chicken pox	2
Diphtheria	104
Dysentery (amebic)	1
Hookworm disease	10
Influenza	20
Malaria	84
Paratyphoid fever	1
Pneumonia	5
Scarlet fever	13
Septic sore throat	1
Smallpox	1
Tuberculosis (all forms)	11
Typhoid fever	35
Whooping cough	22

ILLINOIS.

Diphtheria:	Cases.
Chicago	69
Scattering	59
Influenza	43
Pneumonia	168
Poliomyelitis:	
Cass County	1
Chicago	1
Clark County	1
Winnebago County	1
Scarlet fever:	
Chicago	15
Scattering	54
Smallpox	7
Typhoid fever	33
Whooping cough	273

INDIANA.

Cerebrospinal meningitis:	
Dearborn County	1
Delaware County	1
St. Joseph County	2
Diphtheria	28
Poliomyelitis—Decatur County	1
Scarlet fever	20
Smallpox	8
Typhoid fever	17

IOWA.

Cerebrospinal meningitis	1
Diphtheria	8
Scarlet fever	10
Smallpox	3
Typhoid fever	5

KANSAS.

Chicken pox	4
Diphtheria	33
German measles	1
Influenza	1
Measles	2
Mumps	3
Pneumonia	5
Poliomyelitis	2
Scarlet fever	45
Smallpox	3
Tetanus	1
Tuberculosis	86
Typhoid fever	[1] 41
Whooping cough	43

LOUISIANA.

Cerebrospinal meningitis	1
Diphtheria	10
Malaria	66
Pellagra	10
Poliomyelitis	2
Scarlet fever	3
Smallpox	1
Typhoid fever	18

MARYLAND.[2]

	Cases.
Cerebrospinal meningitis	3
Chicken pox	2
Diarrhea	29
Diphtheria	26
Dysentery	23
Malaria	8
Measles	22
Mumps	6
Ophthalmia neonatorum	2
Pellagra	1
Pneumonia (all forms)	15
Poliomyelitis	2
Scarlet fever	7
Smallpox	1
Tuberculosis	42
Typhoid fever	42
Whooping cough	25

MASSACHUSETTS.

Cerebrospinal meningitis	2
Chicken pox	25
Conjunctivitis (suppurative)	6
Diphtheria	105
German measles	4
Hookworm disease	24
Influenza	1
Measles	82
Mumps	19
Ophthalmia neonatorum	10
Pellagra	1
Pneumonia (lobar)	16
Poliomyelitis	12
Scarlet fever	37
Tuberculosis (all forms)	144
Typhoid fever	31
Whooping cough	82

MINNESOTA.

Chicken pox	1
Diphtheria	43
Measles	12
Pneumonia	2
Poliomyelitis	2
Scarlet fever	59
Smallpox	21
Tuberculosis	57
Typhoid fever	10
Whooping cough	6

MISSISSIPPI.

Diphtheria	29
Poliomyelitis	1
Scarlet fever	3
Typhoid fever	63

MONTANA.

Diphtheria	9
Poliomyelitis	4
Rocky Mountain spotted or tick fever:	
Deer Lodge	1
Hamilton	1

[1] The number of typhoid fever cases reported in Kansas for week ended July 22, 1922, was 18 instead of 118 as originally reported to the United States Public Health Service (Public Health Reports, July 28, 1922, p. 1848).

[2] Week ended Friday.

MONTANA—continued.

	Cases.
Scarlet fever	2
Smallpox	1
Typhoid fever	2

NEBRASKA.

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

NEW JERSEY.

Cerebrospinal meningitis	2
Chicken pox	8
Diphtheria	93
Dysentery	1
Influenza	1
Malaria	2
Measles	70
Pneumonia	35
Poliomyelitis	5
Scarlet fever	47
Typhoid fever	23
Whooping cough	133

NEW MEXICO.

Diphtheria	29
German measles	1
Mumps	1
Pellagra	1
Scarlet fever	5
Tuberculosis	14
Typhoid fever	6

NEW YORK.

(Exclusive of New York City.)

Cerebrospinal meningitis	4
Diphtheria	89
Influenza	13
Lethargic encephalitis	2
Measles	119
Pneumonia	76
Poliomyelitis	15
Scarlet fever	92
Smallpox	1
Typhoid fever	53
Whooping cough	222

NORTH CAROLINA.

Chicken pox	10
Diphtheria	252
German measles	1
Measles	15
Ophthalmia neonatorum	1
Poliomyelitis	2
Scarlet fever	51
Septic sore throat	2
Smallpox	12
Typhoid fever	81
Whooping cough	178

OREGON.

	Cases.
Chicken pox	7
Diphtheria	3
Mumps	1
Pneumonia	[1]2
Scarlet fever	2
Septic sore throat	[1]1
Smallpox	8
Tuberculosis	9
Typhoid fever	4
Whooping cough	1

SOUTH DAKOTA.

Diphtheria	3
Measles	7
Scarlet fever	11
Tuberculosis	19
Typhoid fever	5

TEXAS.

Diphtheria	17
Pneumonia	9
Scarlet fever	7
Typhoid fever	25

VERMONT.

Chicken pox	1
Diphtheria	1
Measles	15
Mumps	3
Scarlet fever	1
Typhoid fever	1
Whooping cough	16

WASHINGTON.

Chicken pox	12
Diphtheria	13
Measles	3
Mumps	10
Scarlet fever	6
Smallpox	12
Tuberculosis	3
Typhoid fever:	
Mount Vernon	9
Scattering	7
Whooping cough	29

WEST VIRGINIA.

Diphtheria	7
Typhoid fever:	
Weston	11
Scattering	6

WISCONSIN.

Milwaukee:	
Chicken pox	6
Diphtheria	7
German measles	1
Measles	32
Pneumonia	1
Scarlet fever	3
Smallpox	2
Tuberculosis	22
Typhoid fever	1
Whooping cough	113

[1] Deaths.

WISCONSIN—continued.

Scattering:	Cases.
Chicken pox	7
Diphtheria	22
Influenza	4
Lethargic encephalitis	1
Measles	25
Poliomyelitis	2
Scarlet fever	33

WISCONSIN—continued.

Scattering—Continued.	Cases.
Smallpox	14
Tuberculosis	34
Typhoid fever	5
Whooping cough	94

WYOMING.

Typhoid fever	4

Delayed Reports for Week Ended August 5, 1922.

CONNECTICUT.

	Cases.
Cerebrospinal meningitis	5
Chicken pox	2
Diphtheria	18
Dysentery (bacillary)	2
German measles	2
Influenza	3
Lethargic encephalitis	1
Measles:	
New Haven	18
Scattering	26
Mumps	6
Paratyphoid fever	1
Pneumonia (lobar)	8
Poliomyelitis	1
Scarlet fever	12
Septic sore throat	1
Trachoma	2
Tuberculosis (all forms)	30
Typhoid fever	14
Whooping cough	37

DISTRICT OF COLUMBIA.

Chicken pox	2
Diphtheria	8
Measles	4
Scarlet fever	6
Tuberculosis	23
Typhoid fever	8
Whooping cough	7

KENTUCKY.

Cerebrospinal meningitis—Boyd County	1
Chicken pox	1

KENTUCKY—continued.

	Cases.
Diphtheria	29
Dysentery	3
Influenza	3
Malaria	3
Measles	11
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pneumonia	3
Poliomyelitis—Fulton County	1
Scarlet fever	3
Smallpox	1
Trachoma	25
Tuberculosis:	
Jefferson County	24
Scattering	1
Typhoid fever:	
Jefferson County	10
Scattering	41
Whooping cough	13

MAINE.

Chicken pox	4
Diphtheria	15
Measles	2
Mumps	6
Pneumonia	1
Scarlet fever	13
Tetanus	1
Tuberculosis	12
Typhoid fever	17
Whooping cough	6

SUMMARY OF CASES REPORTED MONTHLY BY STATES.

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

State.	Cerebrospinal meningitis.	Diphtheria.	Influenza.	Malaria.	Measles.	Pellagra.	Poliomyelitis.	Scarlet fever.	Smallpox.	Typhoid fever.
1922.										
Arkansas (July)	1	8	5	580	12	26	1	11	3	83
Colorado (June)	.....	99	2	.....	35	1	.....	78	16	20
Connecticut (July)	6	111	20	3	494	.....	1	80	11	64
District of Columbia (July)	.....	26	1	.....	65	1	1	7	.....	23
Florida (July)	1	51	120	85	1	9	3	10	8	37
Nebraska (July)	.....	35	2	.....	25	.....	3	32	14	12

CITY REPORTS FOR WEEK ENDED JULY 29, 1922.

CEREBROSPINAL MENINGITIS.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1921, inclusive. In instances in which data for the full seven years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended July 29, 1922.		City.	Median for previous years.	Week ended July 29, 1922.	
		Cases.	Deaths.			Cases.	Deaths.
California:				New Jersey:			
San Francisco	0	1		Garfield	0	1	
Connecticut:				Newark	0	1	
Derby	0		1	New York:			
Illinois:				New York	4	3	2
Chicago	1	1	1	Pennsylvania:			
Kentucky:				Philadelphia	1	3	1
Louisville	0	1		South Carolina:			
Maryland:				Greenville	0	1	
Baltimore	1	1	2	Texas:			
Massachusetts:				Dallas	0	1	1
Boston	1	1		El Paso	0		1
Fall River	0	1		Waco	0		1
North Attleboro		1		Virginia:			
Michigan:				Norfolk	0		1
Detroit	2	1		West Virginia:			
Minnesota:				Charleston	0		1
Duluth	0	1		Huntington	0		1

DENGUE.[1]

City.	Cases.	Deaths.
Texas:		
Galveston	52	

[1] Reports of dengue have been received for the week ended July 22, 1922, as follows: Tampa, Fla., 175 cases; Galveston, Tex., 131 cases.

DIPHTHERIA.

See p. 2025; also Telegraphic weekly reports from States, p. 2015, and Monthly summaries by States, p. 2018.

INFLUENZA.

City.	Cases.		Deaths, week ended July 29, 1922.	City.	Cases.		Deaths, week ended July 29, 1922.
	Week ended July 30, 1921.	Week ended July 29, 1922.			Week ended July 30, 1921.	Week ended July 29, 1922.	
California:				New Jersey:			
Los Angeles		1		Newark		5	
San Francisco	1	1	1	New York:			
Florida:				New York	11	7	3
Tampa		2	2	Ohio:			
Georgia:				Cleveland Heights			1
Atlanta	1	1		Pennsylvania:			
Illinois:				Philadelphia	1		
Chicago	1			Texas:			
Maryland:				Dallas	1		
Cumberland		3		Virginia:			
Massachusetts:				Richmond			1
Adams		2		Wisconsin:			
Lynn			1	Milwaukee		1	
Minnesota:							
Minneapolis			1				

CITY REPORTS FOR WEEK ENDED JULY 29, 1922—Continued.

LEPROSY.

City.	Cases.	Deaths.
Kansas:		
Topeka	1	

MALARIA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Arkansas:			Michigan:		
Little Rock	4		Detroit	1	
North Little Rock	1	1	New Jersey:		
California:			Bloomfield	1	
San Bernardino	1		Newark	1	
Florida:			New York:		
Tampa	4	4	New York	1	
Georgia:			North Carolina:		
Albany	5		Charlotte		1
Augusta	14		Tennessee:		
Brunswick		1	Memphis	20	1
Macon	6		Texas:		
Savannah	2		Dallas	1	1
Illinois:					
Chicago	1	1			
Rockford	1				

MEASLES.

See p. 2025; also Telegraphic weekly reports from States, p. 2015, and Monthly summaries, by States, p. 2018.

PELLAGRA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Arkansas:			North Carolina:		
Fort Smith		1	Charlotte		2
Georgia:			Raleigh		3
Atlanta		1	Texas:		
Augusta		1	Beaumont		1
Macon	1		Houston		1
Louisiana:			Virginia:		
New Orleans	1		Richmond		1

PNEUMONIA (ALL FORMS).

Alabama:			Georgia:		
Anniston	1		Atlanta	4	4
Birmingham		3	Augusta	1	1
California:			Brunswick		1
Alameda	1		Savannah		2
Long Beach		1	Idaho:		
Los Angeles	26	13	Pocatello		1
Oakland	2	2	Illinois:		
Pasadena		1	Alton	1	
Riverside	1	1	Chicago	73	17
San Bernardino		1	Evanston	2	
San Francisco	8	2	Kewanee	1	
Colorado:			Oak Park		1
Denver		4	Peoria		1
Connecticut:			Rockford		2
Bridgeport		1	Springfield	1	1
Hartford	1	1	Indiana:		
New Haven		7	Hammond		2
Delaware:			Indianapolis		4
Wilmington		1	La Fayette		1
District of Columbia:			South Bend		1
Washington		2	Terre Haute		1
Florida:			Kansas:		
Tampa	2	2	Kansas City	1	

CITY REPORTS FOR WEEK ENDED JULY 29, 1922—Continued.

PNEUMONIA (ALL FORMS)—Continued.

City.	Cases.	Deaths.
Kentucky:		
Covington		1
Lexington		1
Louisville	2	1
Louisiana:		
New Orleans	6	8
Maine:		
Biddeford		1
Portland		2
Maryland:		
Baltimore	12	10
Massachusetts:		
Belmont		1
Boston		5
Brookline	2	1
Chicopee		1
Haverhill	1	1
Lawrence	1	1
Lowell	1	
Newton	2	1
North Adams	1	
Somerville	1	
Springfield	1	
Worcester	3	
Michigan:		
Detroit	15	6
Grand Rapids	2	
Saginaw	1	1
Minnesota:		
Duluth		1
Minneapolis		2
Missouri:		
Kansas City	2	2
St. Joseph		2
Nebraska:		
Omaha		2
New Hampshire:		
Concord		3
Manchester		2
Nashua		1
New Jersey:		
Clifton		1
Hoboken		2
Jersey City		3
Kearny		1
Montclair	3	1
Newark	13	7
Passaic	2	2
Perth Amboy		2
Trenton		3
West Hoboken		1
New York:		
Albany	1	1
Buffalo	12	5
Cohoes		1
New York—Continued.		
Jamestown	1	
Lackawanna		1
Little Falls		1
Mount Vernon	1	
Newburg	1	
New York	93	52
Niagara Falls		1
North Tonawanda		1
Rochester	5	1
Rome	1	
Saratoga Springs	2	1
Syracuse	1	
Troy		3
Yonkers		3
North Carolina:		
Raleigh		1
Wilmington	1	
Ohio:		
Cincinnati		5
Cleveland		6
Columbus		1
Dayton	1	
Mansfield		1
Springfield		1
Toledo		6
Oklahoma:		
Oklahoma		1
Pennsylvania:		
Philadelphia	21	13
Rhode Island:		
Providence		2
South Carolina:		
Charleston		2
Tennessee:		
Memphis		2
Nashville		2
Texas:		
Dallas		2
El Paso		1
Utah:		
Salt Lake City		3
Virginia:		
Norfolk		3
Petersburg		1
Richmond		3
Roanoke		1
West Virginia:		
Charleston		1
Huntington		1
Wisconsin:		
Oshkosh	1	
Sheboygan	1	
Superior		1

CITY REPORTS FOR WEEK ENDED JULY 29, 1922—Continued.

POLIOMYELITIS (INFANTILE PARALYSIS).

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1921, inclusive. In instances in which data for the full seven years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended July 29, 1922.	
		Cases.	Deaths.
Connecticut:			
Norwich	.....	1	.....
Georgia:			
Rome	.....	1	.....
Massachusetts:			
Attleboro	0	1	.....
Boston	1	1	.....
Brookline	0	1	1
Clinton	0	1	.....
Lawrence	0	.....	1
Medford	0	1	1
New Bedford	0	1	1
Kansas:			
Hutchinson	1	1	.....
Michigan:			
Detroit	3	1	.....
Minnesota:			
Duluth	1	4	.....
Minneapolis	6	2	.....
Missouri:			
Kansas City	2	.....	1
Nevada:			
Reno	0	1	.....
New Jersey:			
Elizabeth	0	5	.....
Newark	0	1	1
Plainfield	0	2	.....
New Mexico:			
Albuquerque	.....	1	.....
New York:			
New York	5	5	3
Rochester	0	.....	1
North Carolina:			
Wilmington	0	1	.....
Rhode Island:			
Pawtucket	0	1	.....
Providence	0	4	1
South Carolina:			
Columbia	0	1	.....
Texas:			
El Paso	0	1	1
Wisconsin:			
Appleton	.....	1	.....
Milwaukee	0	1	.....

RABIES IN ANIMALS.

City.	Cases.
California:	
Los Angeles	5
Kentucky:	
Louisville	1
Massachusetts:	
Medford	1
Missouri:	
Kansas City	1
New Jersey:	
East Orange	1
Tennessee:	
Memphis	1
Texas:	
El Paso	14

SCARLET FEVER.

See p. 2025; also Telegraphic weekly reports from States, p. 2015, and Monthly summaries by States, p. 2918.

CITY REPORTS FOR WEEK ENDED JULY 29, 1922—Continued.

SMALLPOX.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1921, inclusive. In instances in which data for the full seven years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended July 29, 1922.		City.	Median for previous years.	Week ended July 29, 1922.	
		Cases.	Deaths.			Cases.	Deaths.
California:				Ohio:			
Los Angeles	0	.....	1	Sandusky	0	2	.....
San Francisco	0	2	.....	Springfield	0	1	.....
Colorado:				Oklahoma:			
Denver	4	1	1	Oklahoma	2	1	.....
Connecticut:				Oregon:			
Bridgeport	0	1	.....	Portland	4	9	.....
Illinois:				Texas:			
Chicago	1	1	.....	Waco	0	1	.....
Peoria	0	1	.....	Washington:			
Iowa:				Bellingham	1	2	.....
Council Bluffs	1	2	.....	Everett	0	7	.....
Kansas:				Wisconsin:			
Atchison	0	1	1	Oshkosh	0	1	.....
				Superior	0	8	.....

TETANUS.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Connecticut:			Nebraska:		
Hartford	5	.....	Lincoln	.....	1
Illinois:			New York:		
Chicago	3	.....	Cohoes	1	.....
Maryland:			Middletown	1	.....
Baltimore	.....	1	New York	.....	1
Michigan:			Rochester	1	1
Marquette	.....	1	Texas:		
Missouri:			Waco	.....	1
St. Louis	2	1			

TUBERCULOSIS.

See p. 2025; also Telegraphic weekly reports from States, p. 2015.

TYPHOID FEVER.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1921, inclusive. In instances in which data for the full seven years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended July 29, 1922.		City.	Median for previous years.	Week ended July 29, 1922.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				Colorado:			
Anniston	1	1	.....	Denver	1	1	.....
Birmingham	15	4	1	Trinidad	3	1	.....
Mobile	1	1	.....	Connecticut:			
Montgomery	2	3	.....	Bridgeport	1	1	.....
Tuscaloosa	0	1	.....	Hartford	0	2	.....
Arkansas:				Manchester	0	1	.....
Little Rock	3	1	.....	New Haven	3	7	.....
North Little Rock	1	1	.....	New London	0	1	.....
California:				Norwich	0	1	.....
Long Beach	0	1	.....	Delaware:			
Los Angeles	4	1	.....	Wilmington	0	1	.....
Sacramento	0	4	.....	District of Columbia:			
San Francisco	2	4	.....	Washington	8	7	.....

CITY REPORTS FOR WEEK ENDED JULY 29, 1922—Continued.

TYPHOID FEVER—Continued.

City.	Median for previous years.	Week ended July 29, 1922. Cases.	Deaths.
Georgia:			
Albany	1	1	
Atlanta	2	3	
Augusta	3	1	1
Brunswick	0	1	
Macon	2	3	
Rome	2	2	
Savannah	2	6	
Illinois:			
Chicago	8	6	1
Cicero	2	1	
Peoria	0	1	
Rock Island	0	1	
Indiana:			
Frankfort	0	1	
Indianapolis	2	3	
Kokomo	0		1
Muncie	0		1
Iowa:			
Muscatine	0	1	
Kansas:			
Kansas City	2	3	
Lawrence	0	1	
Topeka	0	1	1
Wichita	4	1	
Kentucky:			
Lexington	1	1	
Louisvill	8	10	1
Owensboro		2	
Paducah	1	3	
Louisiana:			
New Orleans	4		1
Maine:			
Lewiston	0	1	
Maryland:			
Baltimore	16	9	2
Massachusetts:			
Boston	6	4	1
Cambridge	0	2	
Chelsea	0	1	
Chicopee	0	1	
Clinton	0	1	
Fall River	2	4	
Haverhill	0	1	
Natick	0	1	
Newburyport	0	1	
Somerville	0	1	
Waltham	0	1	
Worcester	1	1	
Michigan:			
Detroit	15	4	1
Kalamazoo	0	1	
Minnesota:			
Minneapolis	2	4	
Missouri:			
Joplin	0	1	
Kansas City	2	18	1
St. Louis	7	8	
Montana:			
Billings	0	2	1
Nebraska:			
Lincoln	0		1
Omaha	0	2	
New Hampshire:			
Berlin	0	1	
Concord	0	1	
New Jersey:			
Clifton	0	1	
Plainfield	0	1	
Trenton	1	1	
New York:			
Albany	1	2	
Buffalo	1	1	
Ithaca	0	1	
New York	31	39	1
Rochester	1	1	
Syracuse	0	2	
Watertown	0		1
North Carolina:			
Charlotte	5	6	1
Raleigh	0	4	
Winston-Salem	4	5	
Ohio:			
Akron	1	2	
Barberton	0	1	
Bucyrus	0	4	2
Chillicothe	0	1	
Cincinnati	1	1	1
Cleveland	5	2	
Columbus	1	2	
Dayton	2	5	
Sandusky	0	2	
Toledo	1	3	
Oklahoma:			
Oklahoma	2	3	
Tulsa	13	2	
Pennsylvania:			
Philadelphia	13	13	2
South Carolina:			
Charleston	3	5	1
Greenville	1	5	
Tennessee:			
Chattanooga	3	1	
Knoxville	7	6	1
Memphis	4	4	1
Nashville	12	4	3
Texas:			
Dallas	1	4	
El Paso	0		1
Fort Worth	6	1	1
Houston	2		1
Waco	0	1	
Virginia:			
Lynchburg	3	2	
Norfolk	4	2	
Portsmouth		1	
Richmond	4	2	1
Washington:			
Spokane	0	1	
West Virginia:			
Bluefield	0	1	1
Clarksburg		1	
Fairmont	4	3	
Huntington	2	8	
Martinsburg	2	2	
Morgantown	0	3	
Wisconsin:			
La Crosse	0	1	
Oshkosh	0	1	
Stevens Point		2	

TYPHUS FEVER.

City.	Cases.	Deaths.
Georgia:		
Atlanta	1	

CITY REPORTS FOR WEEK ENDED JULY 29, 1922—Continued.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

City.	Population Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Alabama:										
Anniston	17,734	.....	6	.....	.....	.....	1	.....	.....	.....
Birmingham	178,270	41	2	.....	.....	.....	.....	.....	3	3
Mobile	60,151	14	.....	.....	.....	.....	.....	.....	.....	2
Montgomery	43,464	21	3	.....	.....	.....	2	.....	.....	.....
Tuscaloosa	11,996	.....	.....	.....	.....	.....	1	.....	.....	.....
Arkansas:										
Fort Smith	28,811	13	.....	.....	.....	.....	.....	.....	.....	.....
Hot Springs	11,095	2	.....	.....	.....	.....	.....	.....	.....	.....
Little Rock	64,997	.....	1	.....	.....	.....	.....	.....	2	.....
California:										
Alameda	28,806	3	1	.....	.....	.....	2	.....	.....	.....
Bakersfield	18,638	4	.....	.....	.....	.....	.....	.....	.....	.....
Eureka	12,923	1	1	.....	1	.....	.....	.....	1	.....
Long Beach	55,593	15	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	576,673	158	42	.....	.....	.....	9	.....	79	22
Oakland	216,361	.....	5	2	.....	.....	.....	.....	.....	2
Pasadena	45,354	15	3	.....	.....	.....	.....	.....	2	.....
Richmond	16,843	2	1	.....	.....	.....	.....	.....	.....	.....
Riverside	19,341	4	1	.....	.....	.....	.....	.....	.....	.....
Sacramento	65,857	16	2	1	.....	.....	7	.....	6	2
San Bernardino	18,721	8	.....	.....	.....	.....	2	.....	.....	1
San Diego	74,683	18	8	.....	2	.....	1	.....	7	.....
San Francisco	508,410	107	11	1	1	.....	3	.....	18	7
Santa Ana	15,485	4	.....	.....	.....	.....	.....	.....	1	.....
Santa Barbara	19,441	6	.....	.....	.....	.....	.....	.....	.....	1
Santa Cruz	10,917	3	.....	.....	.....	.....	.....	.....	.....	.....
Colorado:										
Denver	256,369	54	12	.....	.....	.....	2	.....	.....	10
Greeley	10,883	2	.....	.....	.....	.....	.....	.....	.....	.....
Pueblo	42,908	10	.....	.....	.....	.....	1	.....	.....	.....
Trinidad	10,906	.....	3	1	.....	.....	.....	.....	.....	.....
Connecticut:										
Bridgeport	143,538	33	1	1	5	.....	3	.....	5	.....
Bristol	20,620	3	.....	.....	3	.....	.....	.....	4	.....
Derby	11,238	3	.....	.....	1	.....	.....	.....	.....	.....
Fairfield	11,475	.....	1	.....	2	.....	.....	.....	.....	.....
Hartford	138,036	25	2	1	3	.....	.....	.....	3	2
Manchester	18,370	2	.....	.....	.....	.....	1	.....	.....	.....
Meriden	29,842	.....	1	.....	.....	.....	.....	.....	1	.....
Milford	10,193	3	1	.....	.....	1	.....	.....	.....	.....
New Haven	162,519	28	3	.....	15	1	1	.....	5	.....
New London	25,688	7	1	.....	1	.....	.....	.....	1	.....
Norwich	22,304	5	.....	.....	.....	.....	.....	.....	.....	1
Delaware:										
Wilmington	110,168	25	1	.....	1	.....	1	.....	.....	3
District of Columbia:										
Washington	437,571	100	2	.....	12	.....	3	.....	27	9
Florida:										
Tampa	51,252	29	.....	.....	.....	.....	.....	.....	4	2
Georgia:										
Atlanta	200,616	64	4	2	.....	.....	4	.....	4	4
Augusta	52,548	14	.....	1	.....	.....	3	.....	.....	2
Brunswick	14,413	6	.....	.....	.....	.....	1	.....	.....	.....
Macon	52,995	.....	4	.....	.....	.....	.....	.....	.....	.....
Rome	13,252	.....	2	.....	.....	.....	.....	.....	.....	.....
Savannah	83,252	34	.....	.....	.....	.....	.....	.....	4	3
Valdosta	10,783	2	.....	.....	.....	.....	1	.....	.....	.....
Idaho:										
Boise	21,393	4	.....	.....	.....	.....	.....	.....	.....	.....
Pocatello	15,001	5	.....	.....	.....	.....	.....	.....	.....	.....
Illinois:										
Alton	24,682	5	.....	.....	.....	.....	.....	.....	.....	1
Aurora	36,397	7	1	.....	1	.....	.....	.....	1	.....
Bloomington	28,725	8	1	.....	.....	.....	1	.....	.....	.....
Centralia	12,491	3	.....	.....	.....	.....	.....	.....	.....	.....
Champaign	15,873	.....	.....	.....	.....	.....	1	.....	.....	.....
Chicago	2,701,705	494	78	5	114	4	25	2	183	39
Cicero	44,995	.....	2	.....	1	.....	.....	.....	5	.....
Elgin	27,454	7	2	.....	1	.....	.....	.....	.....	.....
Evanston	37,215	12	.....	.....	1	.....	.....	.....	.....	.....
Forest Park	10,768	.....	.....	.....	2	.....	.....	.....	.....	.....
Freeport	19,669	4	.....	.....	.....	.....	2	.....	4	.....
Galesburg	23,834	6	.....	.....	.....	.....	.....	.....	.....	.....

CITY REPORTS FOR WEEK ENDED JULY 29, 1922—Continued.

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

City.	Population Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Illinois—Continued.										
Kewanee	16,026	3								
La Salle	13,050	3	1	1	1					
Mattoon	13,552	4								
Oak Park	39,830	9	2		2					
Peoria	76,121	19								1
Quincy	35,978	11	2						1	1
Rockford	65,651	18	1		6		1		1	1
Rock Island	35,177	1			1				1	
Springfield	59,183	16							2	1
Indiana:										
Anderson	29,767	2								
Bloomington	11,595	7								1
Clinton	10,962	4								
Crawfordsville	10,139	4	1				1			
East Chicago	35,967	10	1							
Frankfort	11,585	1			1					
Hammond	36,004	6	2		1		1			
Huntington	14,000	2								
Indianapolis	314,194	90	5		8		5		10	7
Kokomo	30,067	5								2
La Fayette	22,486	8							1	1
Logansport	21,628	6					1			
Mishawaka	15,195	5	1							
Muncie	36,624	8								
South Bend	70,983	11			4		1		6	1
Terre Haute	66,083	14								
Iowa:										
Burlington	24,057	3								
Cedar Rapids	45,566	2								
Clinton	24,151		2							
Council Bluffs	36,162	9								
Davenport	56,727		1							
Dubuque	39,141				1					
Iowa City	11,267		3							
Mason City	20,065	4	1				1			1
Ottumwa	23,003		1							
Sioux City	71,227		4							
Waterloo	36,230				1		2			
Kansas:										
Coffeyville	13,452	4					1			
Fort Scott	10,693	2								
Hutchinson	23,298		1						1	
Kansas City	101,177		2		1				2	
Lawrence	12,456	2						1		
Leavenworth	16,912		2				2			
Parsons	16,028	4			1					1
Salina	15,085	4								
Topeka	50,022	13	2				1		2	
Wichita	72,128	19			1		2		1	1
Kentucky:										
Covington	57,121	17	2		1		1			
Lexington	41,534	15	1							2
Louisville	234,891	52	2				7		25	3
Paducah	24,735				1					
Louisiana:										
New Orleans	387,219	130	5	1			1		20	16
Maine:										
Auburn	16,985	2					1			
Bangor	25,978		2							
Bath	14,731	3								
Biddeford	18,008	9								
Lewiston	31,791	6					1			
Portland	69,272	15	4				1			1
Sanford	10,691	2								
Maryland:										
Baltimore	733,826	212	14		29		6		45	17
Cumberland	29,837	5	1						6	1
Massachusetts:										
Adams	12,967	0								
Amesbury	10,036	1	1							
Arlington	18,665	4			1					1
Attleboro	19,731	3								1
Belmont	10,749	3							1	1

CITY REPORTS FOR WEEK ENDED JULY 29, 1922—Continued.

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

City.	Population Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Massachusetts—Continued.										
Beverly	22,561	4			4		1			
Boston	748,060	152	32		38		17	2	48	14
Braintree	10,580	1								1
Brookline	37,748	8	1		1					
Cambridge	109,694	31			5				8	4
Chelsea	43,184	7	3		8		1		6	
Chicopee	36,214	7							2	
Clinton	12,979	3								
Danvers	11,108		2							
Easthampton	11,261						1			
Everett	40,120	5			1				2	
Fall River	120,485	40	1		7		2		5	3
Gardner	16,971	3								
Greenfield	15,462	1					1			
Haverhill	53,884	6								
Holyoke	60,203	8	1		4				3	
Lawrence	94,270	18	3		3	1	1			2
Leominster	19,744	2							2	
Lowell	112,479	30			1				6	2
Lynn	99,148	20	2		6		1		1	1
Malden	49,103	8							1	1
Medford	39,038	7			1		2		1	
Melrose	18,204	4			4		2		1	1
Methuen	15,189	2								
New Bedford	121,217	17	3				3		3	2
Newburyport	15,618	3			1		1		1	
Newton	46,054	9								1
North Adams	22,282	2								
Northampton	21,951	6			2		1			
Pittsfield	41,751	7					1		1	
Plymouth	13,045	5								
Quincy	47,876	2			4				3	
Somerville	93,091	17	2		1		1		1	1
Southbridge	14,245	2								
Springfield	129,563	20	1		6				1	1
Taunton	37,137	3								1
Wakefield	13,025	1			2				1	
Waltham	30,915	4	1		1				1	
Watertown	21,457	1	2						1	
Webster	13,258	3			2				1	
West Springfield	13,443	3								
Westfield	18,604	3							2	
Winthrop	15,455	1			1					
Woburn	16,574	1								
Worcester	179,754	40		1			3		5	1
Michigan:										
Alpena	11,101						1			
Ann Arbor	19,516	12			2				1	
Battle Creek	36,164		2		2					
Benton Harbor	12,233	1							1	
Detroit	993,739	183	27	1	16		39		73	19
Grand Rapids	137,634	16	5		3		3		6	
Hamtramck	48,615	0	1		3		2		1	
Jackson	48,374	11							2	
Kalamazoo	48,858	14	2							
Marquette	12,718	0							1	
Pontiac	34,273	7			3		2		6	1
Port Huron	25,944	13			4					
Saginaw	61,903	10	1	1			5			
Sault Ste. Marie	12,096	6								
Minnesota:										
Duluth	98,917	26	1		11				2	1
Hibbing	15,089	1	1							
Mankato	12,469						8		1	
Minneapolis	380,582	64	9		6		9		32	4
Rochester	13,722	8					1		1	
St. Cloud	15,873		1							
Winona	19,143	4			2					
Missouri:										
Independence	11,686	7								
Kansas City	324,410	90	4		4		5		18	9
St. Joseph	77,939	17					1			1
St. Louis	772,897	158	21		1		4		35	12
Springfield	39,631	8								

CITY REPORTS FOR WEEK ENDED JULY 29, 1922—Continued.

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

City.	Population Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Montana:										
Anaconda	11,668	2								
Billings	15,100	3								
Great Falls	24,121	8	3	1						
Missoula	12,668	5							1	
Nebraska:										
Lincoln	54,934	15					1		1	1
Omaha	191,601	52	5		3		2			5
Nevada:										
Reno	12,016	7								
New Hampshire:										
Berlin	16,104	4					1			
Concord	22,167	8					3			
Dover	13,029	2								
Keene	11,210	0							2	
Manchester	78,384	10	1							
Nashua	28,379	7								1
New Jersey:										
Asbury Park	12,400	5								
Bayonne	76,754		3		1		1			
Belleville	15,660								3	
Bloomfield	22,019	4					2			
Clifton	25,470	5	1		4				2	
East Orange	50,710	8	1		1				1	
Elizabeth	95,682		5		4		2		1	1
Englewood	11,627	3			6					1
Garfield	19,381	0	1							
Hoboken	68,166	14	1						2	1
Jersey City	297,864	54	10				1		9	4
Kearny	26,724	4	1		1					
Montclair	28,810	7			4		1		2	1
Morristown	12,548	8			5	1				1
Newark	414,216	83	8		27		6		29	7
Orange	33,268	9			4		2			
Passaic	63,824	14	2		2				4	1
Paterson	135,866		3		9				18	
Perth Amboy	41,707	8	1	1			2		4	
Phillipsburg	16,023	5								1
Plainfield	27,700	5	1	1	3				1	1
Rahway	11,042	3								
Summit	10,174	2								
Trenton	119,289	37	2		2				7	5
West Hoboken	40,038	4	1							
West New York	29,926	1	2						1	
New Mexico:										
Albuquerque	15,157	9		1						4
New York:										
Albany	113,344		6				2		2	
Auburn	36,192	8	2	1						
Buffalo	506,775	110	9		2		10		39	7
Cohoes	22,987	5							1	1
Geneva	14,648	2								
Hornell	15,025	6			4					
Hudson	11,745	2	2							
Ithaca	17,004	7		1					1	
Jamestown	38,917	6			2					
Lackawanna	17,918	2			3		1		1	
Lockport	21,308	4							1	1
Middletown	18,420								1	
Mount Vernon	42,726	8			3		2		3	
Newburgh	30,366	10	1		12	1			8	
New York	5,621,151	978	134	12	107	5	32	2	[1] 166	[1] 83
Niagara Falls	50,760	6	1		6		2			
North Tonawanda	15,482	1					2			
Ogdensburg	14,609	6								
Olean	20,506	7								2
Peekskill	15,868	1			8				2	
Poughkeepsie	35,000	6							1	
Rochester	295,750	64	5	2	19		1		4	2
Rome	26,341	5	3				3			
Saratoga Springs	13,181	7					1		1	1
Schenectady	88,723	13	1				3		4	
Syracuse	171,717	28	12	2			6		8	

[1] Pulmonary tuberculosis only.

CITY REPORTS FOR WEEK ENDED JULY 29, 1922—Continued.

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

City.	Population Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
New York—Continued.										
Troy	72,013	21	1				1		5	
Watertown	31,285	10							1	1
White Plains	21,031	4			1				2	
Yonkers	100,226	22	2		1		2			
North Carolina:										
Charlotte	46,338	14	9				1		7	1
Durham	21,719	3	3		1				1	
Raleigh	24,418	16	1							
Wilmington	33,372	7								
Winston-Salem	48,395	14	1				1		4	
North Dakota:										
Fargo	21,961	0					1			
Ohio:										
Akron	208,435	19	4		4		1			
Alliance	21,603	8							1	
Ashtabula	22,082	4			1					1
Barberton	18,811	2								
Bucyrus	10,425	6								
Cambridge	13,104	3			1					
Canton	87,091	19	3	1			1			
Chillicothe	15,831	4								
Cincinnati	401,247	100	4		3		3		9	15
Cleveland	796,836	121	15	1	32	1	12		39	15
Cleveland Heights	15,236				1					
Columbus	237,031	49	3		7		2		3	2
Dayton	152,559	32	1		1					
East Cleveland	27,292	3			1				2	
Elyria	20,474	6	1						1	1
Findlay	17,021	4	1							
Hamilton	39,675	5	1						1	1
Kenmore	12,683				3					
Lancaster	14,706	3							1	1
Lorain	37,295				1					
Mansfield	27,824	3	2							
Marion	27,891		3				2			
Martins Ferry	11,634	2								
Middletown	23,594	5								1
Newark	26,718	3								
Niles	13,080	1	1						1	
Piqua	15,044	5								
Salem	10,305	4			6					
Sandusky	22,897	5								1
Springfield	60,840	8			2				6	2
Steubenville	28,508	7	3							
Tiffin	14,375	5							1	1
Toledo	243,109	54	6		41		1			5
Youngstown	132,358	14	2		2		2	1	3	3
Zanesville	29,569	12	2							
Oklahoma:										
Oklahoma	91,258	21	1				3		1	1
Tulsa	72,075				1		1			
Oregon:										
Portland	258,288	49	7	1	1				4	3
Pennsylvania:										
Philadelphia	1,823,158	376	26	1	111	3	24		70	42
Rhode Island:										
Cranston	20,407	7								
East Providence	21,793						1			
Newport	30,255	4	4							
Pawtucket	64,248		3							
Providence	237,595	51	3	1	2		1			4
South Carolina:										
Charleston	67,957	33							1	5
Columbia	37,524		1				2		1	
Greenville	23,127	7								2
South Dakota:										
Sioux Falls	25,176	7								
Tennessee:										
Chattanooga	57,895		1							
Knoxville	77,818		1		1		2		2	2
Memphis	162,351	59	9	1					5	4
Nashville	118,342	42	1				1		7	3

CITY REPORTS FOR WEEK ENDED JULY 29, 1922—Continued.

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

City.	Population Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Texas:										
Beaumont	40,422	9		1						
Corpus Christi	10,522	4	1						1	
Dallas	158,976	32	3		1		2		2	1
El Paso	77,543	40			2		1			6
Fort Worth	106,482	28	5				2		2	
Galveston	44,255	6		1						1
Houston	138,076	34	4				1			
Waco	38,500	15	5							3
Utah:										
Salt Lake City	118,110	30	1		3		1			1
Vermont:										
Burlington	22,779	9	2		3					
Rutland	14,954	4								1
Virginia:										
Alexandria	18,060	3								
Lynchburg	29,656	14							2	2
Norfolk	115,777		2						26	2
Petersburg	31,002	15					3		4	2
Portsmouth	54,387	15								3
Richmond	171,667	37	2				9		11	2
Roanoke	50,842	14	4						2	2
Washington:										
Bellingham	25,570						2			
Everett	27,644		5							
Seattle	315,652		3				3		1	
Tacoma	96,965		2							
West Virginia:										
Bluefield	15,282	7					1			
Charleston	39,608	16								
Clarksburg	27,869	7								
Fairmont	17,851		1							
Huntington	50,177	17					1			2
Morgantown	12,127		1							
Moundsville	10,669	5					1			
Parkersburg	20,050	8	1							
Wheeling	54,322	17	1		1		1		1	
Wisconsin:										
Appleton	19,561						1			
Beloit	21,284	1	1		1		3			
Eau Claire	20,880		1		1		1			
Fond du Lac	23,427	5								
Green Bay	31,017		2							
Janesville	18,293	3	1						1	
Kenosha	40,472	10	1						1	
La Crosse	30,363				1		6			
Madison	38,378						1		2	
Marinette	13,610						3			
Milwaukee	457,147		8		29		5			
Oshkosh	33,162	7	1						12	
Racine	58,593	7					3		2	
Sheboygan	30,955		1							
Stevens Point	11,371						1			
Superior	39,624	6	1							
Wausau	18,661		1							
West Allis	13,765								1	
Wyoming:										
Cheyenne	13,829	9								

FOREIGN AND INSULAR.

PLAGUE ON VESSEL.

Steamship "Southgate"—At Thursday Island—From Calcutta and Rangoon.

The steamship *Southgate*, which left Calcutta May 2, and Rangoon May 9, 1922, arrived at Thursday Island quarantine, Australia, May 30, with a case of plague on board in the person of a fireman. The case had not been diagnosed on board and the patient had not been isolated. The vessel was stated to be badly rat-infested. The *Southgate* proceeded in quarantine direct to Sydney.

AUSTRALIA.

Plague—Plague-Infected Rodents—Sydney.

During the two weeks ended June 15, 1922, two cases of plague were reported at Sydney, New South Wales, Australia. During the same period five plague-infected rats were reported found. Reports for the period April 2 to June 10, 1922, show the finding of 19 plague-infected rats at Sydney.

BERMUDA.

Communicable Diseases—July 2–22, 1922.

During the period July 2 to 22, 1922, certain communicable diseases were reported in Bermuda, as follows: Measles, epidemic; typhoid fever, 6 cases; whooping cough, 31 cases. (Population, 20,801.)

ECUADOR.

Plague-Infected Rats—Guayaquil.

During the period July 1 to 15, 1922, four plague-infected rats were found at Guayaquil, out of 4,460 rats examined.

HAWAII.

Plague—Kalopa.

A death suspected of being due to plague, which was reported as occurring at Kalopa, island of Hawaii, July 13, 1922, was reported confirmed for plague July 19, 1922. The case occurred in a Hawaiian, a direct contact with the case reported at Kalopa Homesteads, July 4, 1922.[1] From June 30 to date, three cases of plague have been reported in Hawaii.

[1] Public Health Reports, Aug. 4, 1922, p. 1924.

JAPAN.

Plague—Osaka.

Under date of July 14, 1922, the occurrence of 9 cases of plague with 8 deaths was reported at Osaka, Japan, for the month of June, 1922.

PALESTINE.

Outbreak of Plague—Jerusalem.

An outbreak of plague, with 14 cases and 2 deaths, was reported in Jerusalem, Palestine, during the week ended July 10, 1922. The outbreak occurred in the native quarter of Jaffa.

POLAND.

Communicable Diseases—May 7–June 3, 1922.

Communicable diseases were reported in Poland, exclusive of the districts of Brest-Litovsk and Minsk, but including the district of Wilno, during the period May 7 to June 13, 1922, as follows:

May 7–June 3, 1922.

Disease.	Cases.	Deaths.	Districts of highest mortality.
Cerebrospinal meningitis	45	18	Lodz, Lublin, Warsaw city.
Diphtheria	265	13	Lublin, Wilno, Warsaw city, and district.
Measles	2,718	55	Bialystok, Nowogrodek, Stanislawow, Wolyn.
Scarlet fever	835	81	Lwow, Stanislawow.
Smallpox	326	61	Lodz, Stanislawow.
Tuberculosis	629	771	Lodz, Lwow, Stanislawow, Warsaw city.
Typhoid fever	1,270	97	Lodz, Polesia, Warsaw city.
Typhus fever	4,367	327	Bialystok, Lublin, Nowogrodek.
Typhus, recurrent	2,817	72	Bialystok, Lublin, Nowogrodek, Polesia, Wilno.

Population, unofficial, 27,000,000.

Typhus Fever—Warsaw.

During the period May 21 to June 24, 1922,[1] 76 cases of typhus fever were reported in the city of Warsaw, occurring among permanent and transient residents.

UNION OF SOUTH AFRICA.

Smallpox—Typhus Fever—May, 1922.

During the month of May, 1922, 69 cases of smallpox, with 4 deaths, occurring in the colored population, and 10 cases occurring in the white population, were reported in the Union of South Africa. During the same period 381 cases of typhus fever with 57 deaths were reported in the colored population, and 5 cases in the white population. (For distribution of cases and deaths, according to States, see table, p. 2035.)

[1] Public Health Reports, July 7, 1922, p. 1672.

VIRGIN ISLANDS.

Contagious Diseases—June, 1922.

The occurrence of contagious diseases in the Virgin Islands during the month of June, 1922, has been reported as follows:

Island and disease.	Cases.	Remarks.
In St. Thomas and St. John:		
Chancroid	4	1 imported.
Chicken pox	7	
Fish poisoning	1	
Gonococcus infection	3	
Mumps	3	
Smallpox	1	Imported.
Syphilis	2	1 imported; 1 primary, 1 secondary.
In St. Croix:		
Chicken pox	3	
Dengue	3	
Filariasis	1	Bancrofti.
Gonococcus	1	
Syphilis	3	Secondary.
Trachoma	2	
Tuberculosis	1	Chronic pulmonary.
Uncinariasis	1	

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

Reports Received During Week Ended August 18, 1922.[1]

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

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Amoy	June 18–24		1	
Shanghai	June 25–July 1	1		Foreign.
India				Mar. 26–Apr. 29, 1922: Deaths, 11,923.
Bombay	May 28–June 3	2	2	
Calcutta	June 25–July 1	10	10	
Rangoon	June 18–24	24	11	
Philippine Islands:				
Manila	June 18–24	1		
Province—				
Tarlac	May 28–June 10	3	3	
Siam:				
Bangkok	May 28–June 17	7	5	
Syria:				
Aleppo	July 9–15			Present in interior.

PLAGUE.

Australia:				
New South Wales—				
Sydney	June 1–15	2		Apr. 2–June 10, 1922: 19 plague-infected rats.
Azores:				
St. Michaels Island	June 25–July 1	13	3	At Arrifes and Ribeira, about 10 miles from port of Ponta Delgada.
British East Africa:				
Kenya Colony				Apr. 1–30, 1922: Cases, 81; deaths, 72.

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

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

Reports Received During Week Ended August 18, 1922—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Amoy	June 18–24		21	
Do	June 25–July 1		26	
Canton	June 1–30	7	6	
Foochow	June 25–July 1			Prevalent.
Hongkong	June 18–24	62	32	
Ecuador:				
Guayaquil	July 1–15			Rats examined, 4,460; found infected, 4.
Egypt				Jan. 1–July 13, 1922: Cases, 354; deaths, 132.
City—				
Alexandria	July 2–11	5	3	
Port Said	July 2–13	13	12	
Suez	July 10	1	1	
Province—				
Assiout	July 11	1	1	
Benisouef	June 30	3		
Do	July 2–13	13	6	
Fayoum	July 2–10	10	3	
Gharbieh	June 30	2	1	
Do	July 2	3		
Hawaii:				
Kalopa	July 13	1	1	Contact with case at Kalopa Homesteads, reported July 4, 1922.
India				June 4–17, 1922: Cases, 674; deaths, 552.
Bombay	May 28–June 3	11	6	
Calcutta	June 25–July 1	3	3	
Karachi	do	1	1	
Madras Presidency	do	21	8	
Rangoon	June 18–24	34	31	
Indo-China:				
Saigon	Apr. 23–June 24	30	21	
Japan:				
Osaka	July 13	9	8	Reported as having occurred during past month.
Palestine:				
Jerusalem	July 4–10	14	2	In native quarter.
Peru	June 1–30	87	15	
Siam:				
Bangkok	May 28–June 3	1		
Straits Settlements:				
Singapore	June 18–24	1	1	
Tunis:				
Tunis	June 30–July 9	3		
On vessel:				
S. S. Southgate	May 30	1		At Thursday Island quarantine, Australia. Vessel left Calcutta May 2 and Rangoon, May 9. Vessel badly rat infested.

SMALLPOX.

Arabia:				
Aden	July 2–8	12	5	
Brazil:				
Rio de Janeiro	July 2–15	14	6	
British East Africa:				
Kenya Colony	Apr. 1–30	6		
Dar es Salaam	May 21–June 10	10		
Canada:				
Ontario—				
Hamilton	July 30–Aug. 5	1		
North Bay	July 16–29	2		
Ottawa	July 23–29	4		
Toronto	do	1		
Chile				Prevalent, July 3, 1922, throughout southern Provinces.
Concepcion	June 27–July 3		5	
Quillon	do			Epidemic.
China:				
Amoy	June 18–24		1	
Antung	July 3–9	1		
Chungking	June 18–24			Present.
Do	June 25–July 1			Do.
Hongkong	June 18–24	5	3	
Nanking	do			Do.
Do	June 25–July 1			Do.

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

Reports Received During Week Ended August 18, 1922—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Dominican Republic:				
San Pedro de Macoris	July 9–15	34		City and country.
Santo Domingo	July 16–22		2	Present in country.
Fiume				July 10–16, 1922. One case.
India				Mar. 26–Apr. 29, 1922: Deaths, 3,500.
Bombay	May 28–June 3	5	3	
Calcutta	June 25–July 1	4	4	
Madras	June 19–25	30	15	
Rangoon	June 18–24	2	2	
Japan:				
Taiwan Island	June 21–30	23	3	
Do	July 1–10	18	3	
Java:				
West Java—				
Batavia	June 17–23	1	1	Province.
Mexico:				
Nogales	July 24–29		2	
San Luis Potosi	July 23–29		3	
Peru	June 1–30	16	7	
Poland:	May 7–June 3	326	61	Exclusive of districts of Brest-Litovst and Minsk.
Union of South Africa				May 1–31, 1922: Cases, 69; deaths, 4 (colored). White, 10 cases.
Cape Province				May 1–31, 1922: Cases, 19; deaths, 1 (colored).
Do	June 4–17			Outbreaks.
Natal				May 1–31, 1922: Cases, 2; deaths, 2 (colored).
Orange Free State				May 1–31, 1922: Cases, 12; deaths, 1 (colored).
Southern Rhodesia	June 15–23	13	3	
Transvaal				May 1–31, 1922: Cases, 36 (colored). White, 10 cases.
Do	June 4–17			Outbreaks.

TYPHUS FEVER.

Algeria:				
Oran	July 1–20		2	
Chile:				
Concepcion	June 27–July 3		1	
China:				
Manchuria—				
Harbin	June 26–July 2	3		
Egypt:				
Alexandria	July 9–15	2		
Germany:				
Coblenz	July 16–22	1		
Poland				May 7–June 3, 1922: Cases, 4,367; deaths, 327. Recurrent fever: Cases 2,817; deaths, 72.
Warsaw	May 21–June 24	76		
Spain:				
Madrid	June 1–30		7	
Union of South Africa				May 1–31, 1922: Cases, 381; deaths, 57 (colored); white, 5 cases.
Cape Province				May 1–31, 1922; Cases, 300; deaths, 50 (colored); white, 5 cases.
Do	June 4–17			Outbreaks.
Natal				May 1–31, 1922: Cases, 23; deaths, 3 (colored).
Do	June 4–17			Outbreaks.
Orange Free State				May 1–31, 1922: Cases, 37; deaths, 2 (colored).
Do	June 4–17			Outbreaks.
Transvaal				May 1–31, 1922: Cases, 21; deaths, 2 (colored).
Yugoslavia:				
Belgrade	May 6–June 3	2		

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

Reports Received from July 1 to August 11, 1922.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Amoy	May 14–June 10	1	3	
Shanghai	July 5	1		Foreign. Aug. 2: Reported prevalent.
Tientsin	July 25	2	2	Foreign concession.
Greece:				
Athens	June 29	1	1	
Saloniki	June 7–17	30	11	At quarantine station, among passengers from vessel carrying Russian refugees.
India				Feb. 26–Mar. 25, 1922: Deaths, 5,273. (Report for week ended Feb. 25, 1922, not received.)
Bombay	Apr. 23–29	1	1	
Calcutta	Apr. 23–June 24	536	378	
Madras	May 21–June 17	3	1	
Rangoon	May 7–June 17	92	54	
Philippine Islands:				
Manila	May 21–June 17	7		
Province—				
Batangas	May 26–June 3	1	1	
Bulacan	Apr. 30–May 6	1	1	
Camarines Sur	Mar. 25–Apr. 1	1	1	
Laguna	Apr. 16–22	1		
Mindoro	Apr. 23–29	1		
Pampanga	Apr. 16–May 27	3	3	
Rizal	Apr. 2–May 27	2	1	
Tarlac	May 21–27	1	1	
Poland:				
Rowno	June 18			Present. Among persons repatriated from Russia.
Rumania:				
Crangasi				Suburb of city of Bucharest. Outbreak. To July 15, 10 cases, 6 deaths. First case stated in soldier from frontier on Dniester River.
Siam:				
Bangkok	Apr. 30–May 27	8	4	
Syria:				
Aleppo	May 27–June 3			A few cases in interior.
Do	June 25–July 8			Present in interior.

PLAGUE.

Asia Minor:				
Smyrna	May 28–June 17	3	1	
Brazil:				
Bahia	May 7–June 4			Rodent; occurring in a section of the city. Many dead rats found.
Pernambuco	May 7–13	1		
British East Africa:				
Kenya Colony—				
Nairobi	Feb. 1–28	15	15	
Ceylon:				
Colombo	May 6–June 17	11	8	
China:				
Amoy	May 7–June 17		66	May 20: From 10 to 20 deaths reported daily.
Canton	May 1–31	21	17	
Foochow	May 7–June 10	5	4	June 18–24: Present
Hongkong	June 4–17	114	72	
Ecuador:				
Guayaquil	June 1–15			Rats found infected, 16; examined, 3,400.
Egypt				Jan. 1–June 29, 1922: Cases, 280; deaths, 120.
City—				
Alexandria	June 1–28	21	6	
Port Said	June 12–25	2	5	Septicemic, 1 case, 1 death.
Suez	May 24–June 25	7	6	
Province—				
Assiout	May 30–June 23	14	8	Septicemic, 1
Benisouef	May 26–June 24	16	7	
Fayoum	June 3–29	8	4	
Gharbieh	May 26–June 26	25	12	
Minieh	June 2–29	24	7	

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

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

Reports Received from July 1 to August 11, 1922—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Greece:				
Patras	Apr. 24–May 14		3	
Hawaii:				
Hamakua	June 30–July 4	1	1	At Kalopa Homesteads. Hawaiian.
Do	July 8			Hamakua Mill Co. One plague rat trapped; found positive, July 14, 1922.
Paauhau	June 30			One plague rat, trapped at Paauhau Gulch, June 29; found positive, June 30, 1922.
Paauilo	July 7		1	At Pokahea. Japanese.
India				Apr. 23–June 3, 1922: Cases, 5,401; deaths, 4,090.
Bombay	Apr. 23–May 27	139	102	
Calcutta	Apr. 23–June 24	56	54	
Karachi	May 23–June 24	59	55	
Madras Presidency	May 21–June 24	74	36	
Rangoon	May 6–June 17	141	130	
Java				Month of April, 1922: Report of the seven Provinces of Java: Cases, 413; deaths, 495. May 1–31, 1922: Cases, 293; deaths, 310, occurring in six provinces.
East Java—				
Soerabaya	May 7–13	2	2	
Soerakarta—				
Keporen	May 20			Epidemic.
Madagascar:				
Tananarive Province—				
Ankestrina	May 4		1	Native village; disease stated to have been present since about Apr. 27, 1922.
Mesopotamia:				
Bagdad	Apr. 1–30	68	40	
Mexico:				
Vera Cruz	June 30			One plague-infected rat.
Peru				May 1–15, 1922: Cases, 36; deaths, 19.
Philippine Islands:				
Manila	June 3	1	1	From S. S. Taisang from Amoy, China.
Siam:				
Bangkok	Apr. 30–May 20	3	3	
Straits Settlements:				
Singapore	Apr. 30–June 5	7	8	
Union of South Africa:				
Orange Free State—				
Grootkom Farm	May 7–13			One dead plague-infected rodent found. Locality adjoins Trucart's Berg Farm, on which plague-infected mouse was found preceding week.
Rendezvous Ry. Station.	May 14–20			Plague-infected wild rodent found near.
On vessels:				
S. S. Ardeola	June 25–July 8			At Liverpool. Four plague-infected rats found dead. Vessel from Las Palmas, Canary Islands, June 26, 1922.
S. S. Taisang	June 1–3	1	1	At Manila, P. I., from Amoy, China. Patient landed at Manila June 1, 1922. The Taisang was 2½ days en route direct from Amoy.

SMALLPOX.

Arabia:				
Aden	May 7–June 24	69	21	
Asia Minor:				
Smyrna	May 14–June 24	4		In district.
Bolivia:				
La Paz	Mar. 1–Apr. 30	97	16	

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

Reports Received from July 1 to August 11, 1922—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Brazil:				
Para	May 29-June 25	8		
Do	July 3-16	28	1	
Rio de Janeiro	May 14-June 24	48	12	
Do	June 25-July 1	8	1	
Sao Paulo	Apr. 10-May 7	2	2	
British East Africa:				
Kenya Colony—				
Dar es Salaam	Apr. 16-May 22	13		
Zanzibar	May 1-31	26	6	
Canada:				
Alberta—				
Calgary	June 18-24	1		
Manitoba—				
Winnipeg	May 6-June 17	3		
New Brunswick—				
Kent County	June 25-July 1	2		
Madawaska County	June 4-17	6		
Ontario—				
North Bay	June 3-17	2		
Ottawa	June 11-July 1	17		
Do	July 2-22	6		
Toronto	June 18-July 1	5		
Ceylon:				
Colombo	May 14-20	1		
Chile:				
Concepcion	Mar. 14-June 5		62	
Quillon				In Concepcion Province; epidemic in May, 1922, with 60 reported cases. To June 5: Epidemic.
San Patricio	May 16-22	13		
Talcahuano	May 22-June 24	33	19	May 16-22, 1922: Present.
Temuco				Province of Cautin; epidemic, May, 1922.
Valparaiso	Mar. 26-Apr. 22		52	Incomplete: several districts not reporting.
China:				
Amoy	May 7-20			Present.
Antung	May 20-June 18	4		
Chungking	May 28-June 17			Do.
Foochow	May 14-20	1		
Hankow	June 25-July 1	1		
Hongkong	May 14-June 17	36	29	
Manchuria—				
Dairen	May 15-June 4	2	1	
Harbin	May 22-28	1		
Nanking	May 7-June 17			Do.
Shanghai	May 22-28	1		Native.
Tientsin	May 14-20			Present.
Tsingtau	May 29-June 18	4	3	
Chosen (Korea):				
Chemulpo	May 1-31	1		
Fusan	do	118	53	
Seoul	do	15	2	
Cuba:				
Antilla	June 18-24	1		Reported for Preston.
Cienfuegos	June 24-July 1	1		
Santiago	June 1-30	3		
Dominican Republic:				
San Pedro de Macoris	May 21-June 24	167	2	City and country. Corrected report.
Do	June 25-July 8	70	1	City and district.
Santo Domingo	June 4-24	3	9	
Do	June 25-July 8	1	2	July 2-8, 1922: Present in city and country; a few cases.
Egypt:				
Port Said	June 11-17	1		
Finland	June 1-15	1		
Fiume	June 13-19	1		
France:				
Paris	June 1-10	1	1	
Great Britain:				
Sheffield	May 28-June 17	5		
Southampton	June 18-24	2		
Halifax				Outbreak reported under date of June 17, 1922.
Huddersfield				Do.

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

Reports Received from July 1 to August 11, 1922—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Greece:				
Saloniki	May 1-21	3		
Syra Island	May 26	12	5	
Haiti:				
Cape Haitien	June 11-17	1		
Plaine du Nord	do			Vicinity of Cape Haitien. Present.
India				Feb. 26-Mar. 25, 1922: Deaths 1,162. (Date of report corrected.)
Bombay	Apr. 23-May 27	21	9	
Calcutta	Apr. 23-June 24	84	67	
Karachi	May 23-June 24	35	9	
Madras	May 14-June 24	207	94	
Rangoon	May 7-June 17	35	14	
Japan:				
Kobe	June 19-25	2		
Taiwan Island	June 11-20	3		
Yokohama	May 29-June 25	4	2	
Java:				
West Java—				
Batavia	Apr. 28-June 2	9	1	City and Province.
Luxemburg	June 15-30	1		
Malta	May 1-June 15	4		
Mesopotamia:				
Bagdad	Apr. 1-30	3	1	
Mexico:				
Chihuahua	June 22-July 2		1	
Guadalajara	May 1-31	7		
Manzanillo	June 6-25		4	Estimated cases, 4 to 10.
Do	June 27-July 3	6	1	Estimated.
Mexico City	May 21-June 24	129		Including municipalities in Federal District. Report, June 11-17, not received.
Nogales	July 22	26		State of Sonora.
Peru				May 1-15, 1922: Cases, 5; deaths, 4.
Poland				Mar. 26-May 6, 1922: Cases, 696; deaths, 157.
Portugal:				
Lisbon	May 29-June 25	6	8	Corrected report.
Do	June 26-July 8	11	10	
Russia:				
Esthonia	May 1-31	4		
Spain:				
Barcelona	June 22-28		1	
Do	June 29-July 5		1	
Corunna	June 11-17		1	
Huelva	Apr. 1-30		2	
Seville	June 11-17	36		Week ended June 11: Many cases.
Do	June 19-July 15		72	
Valencia	May 21-27	1		
Straits Settlements:				
Singapore	Apr. 30-June 5	11	2	
Switzerland:				
Basel	May 28-June 3	1		
Berne	May 14-20	1		
Zurich	Apr. 23-June 24	9		
Do	June 25-July 1	2		
Syria:				
Aleppo	June 4-24			Present.
Damascus	June 18-24		2	
Turkey:				
Constantinople	May 21-June 24	21	6	
Do	June 25-July 8	5	1	
Union of South Africa				Apr. 1-30, 1922: Cases, 43; deaths, 6 (colored); white, cases, 23.
Cape Province				Apr. 1-30, 1922: Cases, 13 (colored); white, 3.
Do	May 7-June 3			Outbreaks.
Natal				Apr. 1-30, 1922: Cases, 18; deaths, 6 (colored); white, 20.
Orange Free State	May 7-27			Outbreaks.
Southern Rhodesia	May 11-31	54	1	
Transvaal				Apr. 1-30, 1922: Cases, 12.
Do	May 7-June 3			Outbreaks.

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

Reports Received from July 1 to August 11, 1922—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Virgin Islands:				
St. Thomas	June 5–18	1	1	At quarantine. From vessel from Dominican Republic.
Yugoslavia				Sept. 4–24, 1921: Cases, 11; deaths, 4.
Serbia				Oct. 23–29, 1921; Cases, 5.
Belgrade	June 11–17	1		
Zagreb	June 4–10	1		
On vessels:				
S. S. Changsha	May 11	1		At Hongkong, China. Case landed from vessel; patient, intending passenger. Vessel proceeded to Australian ports.
S. S. Comeric	do	1		At sea, en route to Durban, S. A., from Sydney, Australia. (Public Health Reports, June 23, 1922, p. 1555.)
Schr. Fancy Me	May 28			At St. Thomas, Virgin Islands. From San Pedro de Macoris, Dominican Republic. One case removed to quarantine June 5, died, June 18.
S. S. Shelley	Apr. 19	1		At sea en route from Hongkong. Vessel left Hongkong Apr. 17. Arrived Thursday Island Quarantine, Australia, Apr. 28, 1922. Case, member of crew; type, confluent hemorrhagic.
S. S. St. Albans	May 18	1		At Thursday Island quarantine, Australia. Case in person of Chinese steerage passenger. Vessel left Shimonoseki, Japan, for Melbourne via Hongkong and Manila. Left Thursday Island for Australian ports.

TYPHUS FEVER.

Algeria:				
Algiers	May 1–31	16	4	
Oran	June 1–30	3	1	
Asia Minor:				
Smyrna	May 14–June 24	8		City and district. Corrected report.
Austria:				
Vienna	May 7–June 10	3	1	
Bolivia:				
La Paz	Mar. 1–Apr. 30	15	8	
Bulgaria:				
Sofia	May 28–June 17	4		
Chile:				
Concepcion	Apr. 11–May 29		10	
Valparaiso	Apr. 2–22		6	
China:				
Antung	May 15–21	1		
Foochow	May 14–20	1		
Manchuria—				
Harbin	May 8–June 11	4		
Czechoslovakia:				
Prague	June 11–17	1		
Danzig (Free City)	June 4–10	1		
Egypt:				
Alexandria	June 4–24	9	6	
Do	June 25–July 1	4	2	
Cairo	Mar. 19–Apr. 29	42	28	Relapsing fever, Mar. 26–Apr. 8, 1 case.
Port Said	May 28–June 3	1		
Do	July 2–8	1		
Germany				May 1–6, 1922: Five cases typhus fever at quarantine station of Osternothafen, in persons returning from Russia.
Berlin	Apr. 30–May 6		1	
Coblenz	July 2–8	1		
Königsberg	May 28–June 3	1		
Greece:				
Saloniki	May 1–28	23	1	
Mesopotamia:				
Bagdad	Apr. 1–30	1		

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

Reports Received from July 1 to August 11, 1922—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Mexico:				
Mexico City	Apr. 23–June 24	111		Including municipalities in Federal District.
Palestine:				
Jerusalem	June 27–July 3	1		
Persia:				
Teheran	Mar. 22–Apr. 22		1	
Poland				Mar. 26–Apr. 22, 1922: Cases, 7,155. Apr. 23–May 6, 1922: Cases, 2,811; deaths, 172. Recurrent typhus—Mar. 26–Apr. 22, 1922: Cases, 4,515; deaths, 155. Apr. 23–May 6, 1922: Cases, 1,598; deaths, 34. (Corrected report.)
Warsaw	Apr. 23–May 20	80		Among transient and permanent residents.
Portugal:				
Oporto	May 4–June 24	9	4	
Rumania				Apr. 1–May 31, 1922: Cases, 62.
Cities—				
Bucharest	May 1–31	14		
Cerenauti	do	5		
Chisinau	Apr. 1–30	21		
Cluj	May 1–31	18		
Constanza	do	1		
Galata	do	1		
Sulina	do	2		
Provinces—				
Bucovina	Jan. 1–31	35	13	
Chisinau	Apr. 1–30	14		Recurrent typhus: Cases, 7.
Transylvania	Jan. 1–31	16	3	
Russia:				
Esthonia	Apr. 1–May 31	31		
Lettonia	Apr. 1–30	275		Recurrent typhus: Cases, 12.
Spain:				
Madrid	May 1–31		9	
Seville	May 21–June 3		1	
Tunis:				
Tunis	June 4–10	2		
Turkey:				
Constantinople	May 21–June 17	12		
Union of South Africa				Apr. 1–30, 1922: Cases, 355; deaths, 77 (colored); white, 3 cases.
Cape Province				Apr. 1–30, 1922: Cases, 338; deaths, 75 (colored); white, 2 cases.
Do	May 7–13			Outbreaks.
Natal				Apr. 1–30, 1922: Cases, 3; deaths, 1 (colored).
Do	May 7–June 3			Outbreaks.
Orange Free State				Apr. 1–30, 1922: Cases, 12; deaths, 1 (colored); white, 1 case.
Do	May 28–June 3			Outbreaks.
Transvaal				Apr. 1–30, 1922: Cases, 2 (colored).
Do	May 28–June 3			Outbreaks.
Yugoslavia				Aug. 7–13, 1921: 2 new cases. (1921.)
Bosnia-Herzegovina	Aug. 7–13	1		Do.
Croatia-Slavonia	Sept. 4–10	1		Do.
Voivodina	Aug. 7–13	1		
From vessel:				
S. S. Smolensk	June 14	1	1	From Danzig, May 30, 1922. At embarkation detention camp, Southampton, England. Public Health Reports, June 30, 1922, p. 1610.

YELLOW FEVER.

Mexico:				
Tampico	July 27–29	1	1	From Panuco. Patient brought to Tampico on eighth day of illness.

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