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MERCURIAL POISONING.

A Report on Poisoning from Small Quantities of Mercurial Vapor.

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In the study of industrial poisoning the investigator is not infrequently confronted with the question, What is the minimum quantity of poisonous substance to which a subject may be exposed before symptoms and pathological changes develop? The recognition of acute cases of poisoning presents as a rule but little difficulty, because of the rapid onset and the pronounced and specific character of the symptoms. Chronic cases, on the other hand, are not so easily detected, because the symptoms are more insidious in onset and more or less obscure and indefinite. It not infrequently occurs that the organic changes do not appear until the lapse of considerable time, such as weeks or even months of continuous exposure. This is true also of changes resulting from certain non-poisonous dusts, inadequate illumination, and other industrial hazards.

As regards mercury poisoning, a surprisingly large number of cases are reported in the literature as instances of idiosyncrasy to mercury. There is seemingly little doubt that hypersusceptibility exists in certain individuals; but in the light of the present study it would seem advisable, while recognizing cases of idiosyncrasy, also to distinguish between them and true cases of mild mercurialism—this because mild mercurialism appears to occur much more frequently than was formerly thought to be the case.

Lloyd and Gardner [1] recognized the danger of exposure to small quantities of mercury when they investigated a case of mercurialism in a hat factory. These investigators found by analysis that the carroted rabbit fur contained from 0.09 to 0.17 per cent of mercury, and that vapors escaping from the planker's acid vat contained 0.0012 per cent of mercury. A fringed cloth tied around the hood of the vat was found to contain 0.01 per cent of the mercury. In this instance the mercury could have been deposited upon the cloth by evaporation only.

[1] Lloyd, L. L., and Gardner, Wm.: J. Soc. Chem. Ind., London, 1922, 31, pp. 1109-1112.

Koelsch and Ilzhöfer[2] assert that from 0.4 to 1 milligram of mercury taken daily for a month will produce poisoning. Göthlin[3] maintains that it is necessary to absorb the above quantities daily for a period of several months before symptoms of poisoning will develop.

The study here presented was conducted in a Government metallurgical laboratory, and was instigated by a conference with the section chief, whose attention had been called to the fact that his chemists were complaining of symptoms believed by them to be the result of exposure to a substance emanating from the electric induction furnaces operated by them.

These electric induction furnaces are of a type similar to those used in certain industries, but smaller; therefore this study is of added significance because of its direct relation to industrial hygiene, and particularly to the occurrence of mercurialism among industrial workers.

A general survey of the laboratory in question disclosed two induction furnaces—a 10-kilowatt and a larger furnace of 20-kilowatt capacity—located in separate rooms. The mechanical principles in the construction of these two furnaces are similar. The structural point of interest for this study lies in the mercury gaps, in which two electrodes pass through loosely fitting sleeves in the furnace cover, so that the electrodes can be raised or lowered, and thus adjusted to the metallic mercury. Both electrodes and furnace jackets are water-cooled, and in addition ethyl alcohol is allowed to drip upon the surface of the mercury for the express purpose of limiting its vaporization. Apparently the water-cooling system and the alcohol are insufficient to prevent the vaporization of the mercury and its escape through the loosely fitting sleeves in the gap cover, for upon inspection of the furnaces and the immediately surrounding area, it was noted that quantities of mercury had escaped—some in the form of large globules, the result of explosions of alcohol vapors within the gap, while some appeared as fine but plainly visible globules located upon the safety cage which surrounds the furnace. In addition to the visible globules, the furnace, as well as the surrounding area, was covered with a very fine grayish-colored dust, samples of which, when rubbed together in a mortar, were resolved into a large mercury globule and a small quantity of ordinary room dust.

THE DISSEMINATION OF MERCURY THROUGHOUT THE LABORATORY AND ITS ACCUMULATION UPON OBJECTS WITHIN THE ROOM.

To determine whether vaporized mercury was disseminated throughout the room, samples of dust were collected at various distances from the furnace and analyzed.[4] In collecting these dust

[2] Koelsch, F. F., and Ilzhöfer, H.: Zentralbl. f. Gewerbehyg., January, 1917, 7, No. 1, 11, 16; February, 1919, 7, No. 2, 17-27; March, 1919, 7, No. 3, 42-52—Abstract in Jour. Ind. Hyg., November, 1920, 2, No. 7, p. 135.

[3] Göthlin, G.: Cited by Kober and Hanson, Dis. of Occup. and Vocat. Hyg., 1916.

[4] Analysis by H. W. Houghton, chemist, U. S. Hygienic Laboratory.

samples, care was exercised not to collect dust where there was a possibility that mercury had been spilled, as might be the case either on the exterior of the furnace or on the floor.

Dust sample No. 1 was taken from the outer surface of a stone instrument board, 24 by 24 inches (576 square inches), located vertically in front of the 20-kilowatt furnace and about 18 inches from it. Any mercury present on this surface must have been deposited through vaporization only. The dust sample weighed 0.1722 gram and was found to contain 1.16 per cent of metallic mercury.

The second dust sample was taken from a shelf located about 7 feet from the 10-kilowatt furnace and about on a level with the furnace and the operator's head. A total of 1.0906 grams of dust was collected from 228 square inches of shelf surface, and the analysis showed it to contain 3 per cent of metallic mercury.

The third dust sample also was obtained from the room in which the 10-kilowatt furnace is located. This sample was taken from a small ledge above the sink, which is located 15 feet away from the furnace and 7½ feet above the floor. From 108 square inches of ledge surface 0.4036 gram of dust was collected, which, upon analysis, yielded 1 per cent of metallic mercury.

Results obtained by analysis of the dust samples indicate beyond a doubt that mercury vapor escapes into the atmosphere and that it is recondensed upon objects not only in the immediate vicinity of the furnace but also at distances as great as 15 feet away.

Although the analysis of the dust shows the presence of mercury, it does not measure the severity of the exposure, for the reason that the deposit of the mercury occurred over an undetermined period and therefore can not be correlated with the quantities that might be inhaled.

TABLE I.—*Mercury content of dust obtained from various sections of rooms in which induction furnaces are operated.*[1]

Sample No.	Total weight of dust.	Area of surface.	Furnace.	Distance from furnace.	Total mercury.
		Cubic inches.	*Kilowatt.*	*Feet.*	*Per cent.*
1	0.1722	576	20	1.5	1.16
2	1.0906	228	10	7	3.00
3	.4036	108	10	15	1.00

[1] Analyses made by H. W. Houghton, chemist, Hygienic Laboratory.

QUANTITATIVE DETERMINATION OF MERCURY VAPOR IN THE AIR DURING OPERATION OF INDUCTION FURNACES.

In order to arrive at an approximately accurate estimate of the severity of exposure to the mercury vapors emanating from the induction furnaces, a series of air samples was collected and analyzed.[5] These samples were collected by the use of a Palmer dust machine. The substitution of dilute aqua regia solution (1 part aqua regia to 3 parts distilled water) for distilled water provided a readily soluble medium for the mercury vapor as it was drawn through the spray. The machine was placed about 1½ to 2 feet from the furnace and at about the level of the furnace operator's face. At this location the operator spent the greater portion of his time. It might be mentioned that the samples were collected late in the summer, at a time when windows and doors were opened to maximum capacity, and when natural ventilation was at its best.

Samples Nos. 1, 2, 3, 4, and 5 were obtained from the room in which the 10-kilowatt furnace is located. Sample No. 1, a control sample, was obtained from the location mentioned above and at a time when the furnace was not in operation. It represents 102.5 cubic feet of air, and was found upon analysis to be devoid of mercury. Samples Nos. 2, 3, 4, and 5, each representing 120 cubic feet of air, were collected during the operation of the furnace; samples Nos. 2 and 3 were collected on one day and the remaining two samples on the following day. In collecting sample No. 2, the furnace was first allowed to run for 10 minutes; sample No. 3 was taken a few minutes afterwards, the furnace being kept in continuous operation. Sample No. 4 also was taken after the furnace had been in operation for 10 minutes, and No. 5 as soon thereafter as solution and tube could be changed. Analysis of all these samples showed in each instance that they contained a total of 2.5 milligrams of mercury, or 0.2 milligram per cubic foot of air.

It is interesting to note that all the samples contained exactly the same quantity of mercury; this fact indicates that the rate of volatilization of the mercury from the furnace was approximately constant and was probably due to the fact that the furnace was maintained at from 6 to 7 kilowatts during the collection of the samples.

Samples Nos. 6, 7, 8, and 9 were obtained from the room in which the 20-kilowatt furnace is located. The Palmer machine was placed in relation to furnace and operator as described above. Results of the analyses of these samples (Nos. 6, 7, 8, and 9) are not comparable with those of samples Nos. 1, 2, 3, 4, and 5, because this furnace was installed since the study began and is of a different type from the

[5] Analysis made by H. W. Houghton, Chemist, Hygienic Laboratory. Method used was that described by Lloyd and Gardner, J. Soc. Chem. Ind., London, 1912, 31, pp. 1109-1112.

one it replaced. The 20-kilowatt furnace formerly used in this room was, aside from size, identical with the 10-kilowatt furnace. Unfortunately, the old 20-kilowatt furnace broke down before it was possible to obtain air samples; thus was lost an opportunity to compare the two furnaces of the same type but of different size. It is possible to conceive that the larger the furnace the greater the quantity of mercury volatilized, not only because of the increase in the mercury surface, which enlarges the vaporization area, but also because of the increased heat usually employed in a furnace of this capacity.

The newly installed 20-kilowatt furnace differs from the old type in that the electrodes are set stationary in the gap cover and in addition are mercury sealed. There is also an arrangement whereby the mercury in the gap is either raised or lowered, as required, for proper adjustment to the electrodes instead of regulating the electrodes to the mercury, as was done in the 10-kilowatt furnace. There are other changes in this furnace, but they are of mechanical interest only. This type of furnace, so far as concerns the escape of mercury vapor, is an improvement over the old type; but that it does not entirely prevent the escape of mercury is indicated by the following report on the analyses of air samples which were collected while the furnace was in operation.

Sample No. 6 is a control sample taken in the furnace room at a time when the furnace was not in operation, and represents 105 cubic feet of air. Analysis showed it to be devoid of mercury. Samples Nos. 7, 8, and 9 represent, respectively, 90, 112.5, and 135 cubic feet of air. Sample No. 7 was taken after the furnace had been in operation for 10 minutes; Nos. 8 and 9 were taken immediately afterwards, the furnace having been in continuous operation. There was a lapse of about 10 minutes between the taking of one sample and the next, the time being utilized to change and collect fluid and bulbs. Analysis showed that sample No. 7 contained a total of 1 milligram, No. 8, 1.5 milligrams, and No. 9, 2 milligrams of mercury; that is to say, an average for all samples of 0.0133 milligram of mercury per cubic foot of air—but little more than one-half the quantity obtained in the room in which the 10-kilowatt furnace is located.

Having determined that the men who operate the 10-kilowatt furnace are exposed to an atmosphere containing 0.02 milligram of mercury per cubic foot, it is but a simple arithmetical procedure to calculate the daily quantity of mercury that might be inhaled when the daily exposure ranges from three to five hours per day. Let x equal the total number of liters of air inhaled during a daily exposure period (360 liters per hour[6]), y the number of liters per cubic foot,

[6] Reprint No. 694, from Public Health Reports, September, 9, 1921.

and z the quantity of mercury per cubic foot of air; then $\frac{x}{y} \times z =$ total daily quantity of mercury taken into the body through inhalation.

By the method shown above it is estimated that the people working in the room in which the 10-kilowatt furnace is operated may take into their systems daily quantities as great as 0.771 milligram of mercury during three hours' exposure and 1.285 milligrams during five hours' exposure.

The induction furnaces in this laboratory are not always operated throughout the entire workday, the period of operation necessarily depending upon the amount of work on hand. As a rule, from two to five hours represent a day's run. Operation is a daily procedure for several days in succession; then there may be one or more days when the furnaces are not operated. Sometimes the daily run may be made either during the forenoon or during the afternoon, and may or may not extend over more than one or two hours at a time.

As records to show the actual operation time of the furnaces have not been kept, it is possible to make only an approximate estimate of the daily exposure periods; therefore in the above calculations for estimating the quantities of mercury inhaled, periods of three hours and five hours, respectively, have been taken as representing periods of exposure which may be considered as equally liable to occur.

The severity of exposure in the room in which the new 20-kilowatt furnace is operated can not be considered at this time because we have not clinical data to show that such small quantities of mercury can produce symptoms of poisoning; however, the fact that even such small quantities of mercury as were found do exist in the atmosphere is of much interest, because it shows how readily mercury is vaporized, even when inclosed as well as it is in this type of furnace. Exposure should be guarded against by removal of the vapor at its source by means of a forced exhaust system.

TABLE II.—*Mercury content of atmosphere during operation of induction furnace.*[1]

10-KILOWATT FURNACE.

Sample No.	Rate of air flow through collector, cubic feet per minute.	Time (minutes).	Total cubic feet.	Total mercury, milligrams.	Total mercury per cubic foot of atmosphere, milligrams.
1 (control)	4.1	25	102.5	0	0
2	4	30	120	2.5	0.020+
3	4	30	120	2.5	.020+
4	4	30	120	2.5	.020+
5	4	30	120	2.5	.020+

[1] Analyses of samples made by H. W. Houghton, chemist, Hygienic Laboratory.

TABLE II.—*Mercury content of atmosphere during operation of induction furnace*—Continued.

20-KILOWATT FURNACE.

6 (control)	3.5	30	105	0	0
7	3	30	90	1.0	0.011+
8	4.5	25	112.5	1.5	.013+
9	4.5	30	135	2.0	.015+

AN AMALGAMATION METHOD FOR DETERMINING THE MERCURY CONTENT OF LABORATORY AIR.

As a check on the above-mentioned method of mercury determinations, the chemists who operate the high frequency induction furnaces made, by an amalgamation method, mercury determinations of the atmosphere during the operation of the furnaces. This method consisted in drawing the air through a carefully weighed glass tube filled with gold leaf and glass wool in alternate layers, the glass wool serving to support the gold leaf and to prevent slipping and packing as the air was drawn through.

The tube was placed about 2 feet from the furnace and in front of the switchboard, which is the location assumed by the furnace operator. The air, after passing through the tube containing the gold leaf, was measured in a gas meter. For each sample about 35 cubic feet of air were drawn through the tube during a period of about two hours. The quantity of mercury amalgamating with the gold leaf was determined by the increase in weight. Control samples were taken when the furnace was not in operation, and were used to ascertain the quantity of suspended dust which accumulated upon the gold leaf and glass wool. The figure found was subtracted from that of the increased weight of the samples obtained while the furnaces were in operation.

The results obtained by this method of analysis are as follows:

TABLE III.—*Mercury content of laboratory air determined by amalgamation methods.*

Furnace.	Type of furnace.	Hg per cubic foot of air.
10 kilowatt	Old	0.0141
20 kilowatt	do	.0113
Do	New	0

Of the two methods used in analyzing the laboratory air, the aqua regia method (used by the writer) showed somewhat larger quantities of mercury. In collecting these samples, the Palmer machine was operated so that the samples represented from 90 to 135 cubic feet of air, whereas in the amalgamation method each sample represented about 35 cubic feet of air. There was also a wide difference in the rate

of air flow. With the Palmer machine, the air was drawn through the aqua regia spray at the rate of 3 to 4.5 cubic feet per minute and for a period ranging from 20 to 30 minutes; whereas the flow of air through the gold-leaf filled tube was about 35 cubic feet during two hours' time. The quantitative determination of mercury in the aqua regia solutions was made by the colorimetric method, whereas in the amalgamation method it was determined by increase in weight of the tube. Although the latter method will detect minute quantities of mercury, it is not so delicate as the colorimetric method.

In spite of the differences in the two methods used in collecting the samples and in determining the mercury content, it is interesting to note that there is not a very wide difference in the end results. This is especially to be appreciated when consideration is taken of the fact that the quantities are small, being but fractions of a milligram. Both methods serve to establish the truth that mercury vapor is present in the air during the operation of the furnaces.

PHYSICAL EXAMINATION AND CLINICAL HISTORIES OF PERSONS EXPOSED TO MERCURY VAPORS EMANATING FROM THE INDUCTION FURNACES.

That the daily absorption of 0.771 to 1.285 milligrams of mercury will produce symptoms of poisoning is deduced from the following physical examinations and clinical histories.

All told, seven men were given thorough physical examinations, including consideration of their histories, urine analysis, and microscopic study of the blood. Two of the men were recent employees and had not been exposed to mercury, but were examined so that they might serve as controls. The section chief and one other man operated induction furnaces some time previous to this investigation, and at that time they experienced symptoms of poisoning; therefore their histories are of sufficient importance to be included in the study. The remaining three men were operating the induction furnaces at the time of investigation and presented definite lesions and symptoms of mercurial absorption. Negative physical data are not recorded in the following cases:

Case No. 1.—W. P. B., American, age, 26 years, a chemist by profession, has been employed in the present metallurgical laboratory for the past nine months, and during that time has operated or assisted in operating the 10-kilowatt furnace. Height, 69 inches; weight, 136 pounds; weight has remained about the same during the past six months. Blood pressure: systolic, 122; diastolic, 64 mm. Hg; dynamometer, right hand, 80 kilo; left hand, 60 kilo. Patellar reflexes are slightly exaggerated. The mucous membrane of the pharynx and of the anterior and posterior fauces show a peculiar copper-red discoloration. The gums show a distinct swelling and

a copper-colored line on both upper and lower gums, the demarcation line being sharply outlined. Blood vessels within this line are appreciably dilated. There are also numerous small irregular areas of superficial erosion on the gums. The mucous membrane of the cheeks is clear.

History: About two to three months after beginning work in the laboratory, W. P. B. developed a soreness and tenderness of the gums. There was also an occasional increased flow of saliva. During the past two months he has been troubled with the appearance of small erosions on the buccal mucous membrane of the cheeks, located in the vicinity of the upper molar teeth. These erosions would remain for two to three days and then disappear, to recur at irregular periods of from one to three or five weeks. Before being employed at the present laboratory, B. was subject to obstinate constipation, but shortly after assuming the present position has noted that intestinal activity is very free. Whenever he operated the furnace, he developed a severe headache, which persisted for a few hours after he arrived at his home.

Case No. 2.—J. R. E., American, age, 36 years; height, 67 inches; weight, 157 pounds; has lost from 10 to 15 pounds' weight during the past six months. Occupation, that of chemist, with employment at present place for the past three years. His duties consist chiefly of operating or assisting in operating the 10-kilowatt induction furnace in the melting of metals that require a very high heat. Blood pressure: systolic, 132; diastolic, 78 mm. Hg.; dynamometer, right hand, 130, left, 120 kilograms. There are six teeth missing from the upper jaw and two from the lower. The gums are swollen and show a distinct copper-colored discoloration, appearing more in patches than as a continuous line. On the left buccal mucous membrane, on a level with the upper molar teeth, is a superficial eroded area approximately $\frac{1}{2}$ inch long and $\frac{1}{16}$ of an inch wide. On the right buccal mucous membrane is another eroded area about the size of a split pea. The mucous membrane of the pharynx and of the faucal pillars presents a distinct copper discoloration. He complains of frequent attacks of severe headache whenever operating the furnace. During the past four months has suffered frequent attacks of pains in the knee or ankle joints; the pain is described as neuralgic in character and lasting from a few hours to a day or two, only one joint being affected at a time, and it may not affect the same joint at each attack. For the past year has suffered from gastrointestinal disorder, characterized by flatulence, gas pains, and sensation of fullness or distention. At intervals occurring once a week, or once in two weeks, develops an attack of diarrhea which persists for two or three days. During the investigation this man went on his annual leave and upon his return was reexamined; at this time it was found that

the gums and erosions of the buccal mucous membrane had practically cleared up. The copper-colored discoloration of the pharynx had also disappeared. At the first examination his hemoglobin was 75; at the reexamination it was 80. During his leave he complained of obstinate constipation.

Case No. 3.—A. A. P., American; age, 30 years; height, 70 inches; weight, 154 pounds; has lost weight during past year, but does not know how much. Occupation, chemist, employed at present position for past year and a half. General appearance, pale. Teeth: Six missing from upper and six from lower jaws. Mitral regurgitation, in compensation. Blood pressure: systolic, 118; diastolic, 70. Dynamometer, right hand, 180,and left, 80 kilograms. Patellar reflexes, appreciably decreased. The gums show a slight copper-discolored line, but not so characteristic as in the above cases. The mucous membrane of the pharynx and posterior pillars presents a deep copper-colored hue, similar to that observed in the other cases.

History: Began operating the 20-kilowatt furnace about 18 months ago. After about two to three months, began to experience frequent attacks of headache, which persisted after his arrival at home and until relieved by aspirin. Has been troubled with herpes about the lips and the margins of nose. In the throat there is a peculiar burning sensation. At times the saliva is appreciably increased in amount. During the past 18 months has had two perialveolar abscesses. All the teeth, and particularly those having amalgam fillings, have been unusually sensitive. Was obstinately constipated before he began work in the laboratory, but now evacuations are very free. During the past three months has experienced intermittent attacks of pains in the various parts of the chest, the pains persisting from a few minutes to two or three hours and then disappearing, to recur again at irregular periods (probably due to peripheral neuralgia). Hemoglobin at time of examination was 70. After the physical examination P. went away on his annual leave and upon his return was reexamined; at this time his hemoglobin was 80. The discoloration of the mucous membrane of the pharynx had practically disappeared. He reported that during the time he was on his leave he was markedly constipated.

Case No. 4.—L. J., American; chief of the metallurgical laboratory; age, 29 years; height, 72 inches; weight, 146 pounds. Blood pressure: systolic, 120; diastolic, 56. Dynamometer, right hand, 100, and left hand, 110 kilograms. Teeth and gums, negative. The mucous membrane of the pharynx shows but slight suggestion of discoloration.

History: Employed in the metallurgical laboratory for the past six years. During two years of this time was actively engaged in operating the induction furnaces, but since that time has supervised the laboratory work; thus his opportunity for recent exposure has

been limited. A few months before discontinuing work with the furnaces, developed considerable trouble with his teeth. The teeth containing amalgam fillings caused the most trouble. Two perialveolar abscesses developed, to relieve which he had two teeth extracted. During this time he was also troubled with eroded sores, both on the gums and on the mucous membrane of the cheeks, in the vicinity of the molar teeth. Frequent attacks of headache followed work around the furnace.

Case No. 5.—J. R. C., American; age, 44 years; height, 67½ inches; weight, 187 pounds. This case is of historical interest only, because at the present time J. R. C. is not operating the induction furnaces, nor is he exposed to mercury. But during the period from 1915 to 1917 he devoted considerable time to operation of the induction furnaces, and at that time he was troubled with an erythematous eruption on the face, particularly about the eyelids, which were edematous. Other areas affected were the skin over the flexor surface of the elbow joint, the groin, and the inner surface of the thigh. The dermatitis caused discomfort, chiefly because of the intense burning and itching. The condition would continue for a few days and then gradually disappear, to recur at irregular periods. He asserts that whenever he handles metallic mercury or solutions of mercury, he is quite likely to have a recurrence of the dermatitis. At the present time there are no signs nor symptoms of mercurial absorption.

Cases Nos. 6 and 7.—R. J. K. and P. P. B., ages, 17 and 18 years, respectively. These young men are laboratory apprentices who have just recently assumed work at the laboratory and have not been exposed to the conditions which obtained in the other cases. Careful physical examinations were made of these men, but they did not reveal any signs or symptoms of mercurial absorption such as were noted in the other cases. The negative results of the examinations in these two cases serve as controls for those cases recorded above.

Blood and urine analyses.—The hemoglobin index (Tallqvist scale) for the two men whose exposure to mercury vapor extended over the longest period of time was 70 and 75, respectively; whereas for the remaining men, including the controls, it ranged from 80 to 85. Thus it can be seen that there was but little decrease in the hemoglobin for those longest exposed. The two men presenting the decreased hemoglobin showed a slight decrease in the red cell count [7] over the other cases. In the former cases the counts ranged from 5,230,000 to 5,390,000; whereas in the latter group the count ranged from 4,790,000 to 4,980,000. The slight variation of red-cell count is not sufficient for us to draw any conclusions from it. The differ-

[7] Blood count and urine examinations made by Dr. T. W. Kemmerer, bacteriologist, Hygienic Laboratory.

ential white-cell count of the entire group of men examined does not present anything distinctive.

Analysis of 24-hour urine specimens were negative, suggesting that the renal glands were unaffected by the mercury.

TABLE IV.—*Differential blood count and hemoglobin.*[1]

Case.	Hemoglobin index (Tallqvist).	Red cells per cubic milligram.	White cells per cubic milligram.	Small lymphocytes.	Large lymphocytes.	Large mononuclears.	Transitionals.	Neutrophiles.	Eosinophiles.	Basophiles.
W. P. B...	85	4,790,000	4,560	19.2	4.0	14.0	1.2	59.0	1.4	1.2
P. P. B....	80	4,980,000	6,070	21.4	2.6	12.6	2.4	59.2	1.0	.8
R. J. K....	80	4,890,000	4,530	20.8	4.0	9.8	1.2	57.6	5.6	1.0
J. R. E.[2]...	75	5,230,000	6,770	15.0	2.6	11.0	.6	68.2	1.8	.8
A. A. P.[2]...	70	5,390,000	8,340	22.4	3.4	10.0	1.6	58.8	3.2	.6
Normal..	**80–90**	**5,000,000**	**5,000–8,000**	**20–23**	**2–4**	**10–15**	**1–3**	**60–72**	**2–3**	**.5–1**

[1] Blood counts made by T. W. Kemmerer, M. D., bacteriologist, Hygienic Laboratory.
[2] Exposed for longer period to mercury vapor.

CONCLUSIONS.

1. Daily exposure to an atmosphere containing as small a quantity as 0.02 milligram of mercury per cubic foot of air results in signs and symptoms of poisoning. The histories indicate that daily exposure must continue for two to three months, or more, before symptoms appear.

2. It is estimated that in exposure to the above quantities of mercury for three to five hours daily there is a total daily absorption of mercury ranging from 0.771 to 1.285 milligrams, according to the duration of exposure.

3. Mercury is volatilized from both the 10 and 20 kilowatt induction furnaces during their operation. This mercury vapor is disseminated throughout the room and recondensed to the metallic form. This is evidenced by analysis of dust samples obtained at various distances from the furnaces, which showed the presence of from 1 to 3 per cent of mercury.

4. The objective symptoms of chronic mercurialism are manifested by a copper-colored discoloration of the mucous membrane of the pharynx, the pillars of the fauces, and the gums. This discoloration was constant in all cases and should not be confused with infective inflammatory processes, which it somewhat resembles. The gums are swollen, and there is enlargement of the capillaries. Superficial erosions appear upon the mucous membrane of the gums, and upon the buccal mucous membrane in the vicinity of the upper molar teeth. Perialveolar abscesses frequently occur and cause considerable discomfort. Occasionally there is an appreciable increase in the flow of saliva. Urine analysis and differential blood counts

show the urine and the blood to be unaffected by the mercury absorbed. Subjective symptoms are characterized by tenderness of the gums and hypersensitiveness of the teeth, particularly those containing amalgam fillings. Activity of intestinal peristalsis is slightly increased, occasionally developing into mild attacks of diarrhea. Obstinate constipation is developed during absence from the laboratory for one to two weeks. Gastrointestinal disturbance is manifested by pain due to accumulation of gas; there is often distention and feeling of weight in the hypogastric and iliac regions. As mentioned, there are occasional attacks of diarrhea. Shifting neuralgic pains are occasionally felt in the various joints and in the chest.

5. The problem of the prevention of mercurial poisoning in laboratories and industrial establishments can best be solved by inclosing all apparatus in which mercury is used and by conveying the fumes away from the worker's face so that it will be impossible for him to inhale them.

TRAINING OF MIDWIVES.

An Abstract.[1]

By TALIAFERRO CLARK, Surgeon, United States Public Health Service.

Despite the higher standards of health administration now obtaining in this country, the great improvement which has been made in the sanitation of domestic and civic environment, the very widespread knowledge of the causes and manner of infections, and the enactment of adequate laws and penalties relating to midwifery practice in many States, the maternal mortality and, to a less-known degree, morbidity rates have steadily increased during the last decade. It is believed by many observers that this condition may be due in large part to inferior obstetrical practice and the lack of obstetrical and lying-in facilities, and in part to the inadequate training of midwives. Although several States have already taken advanced position with regard to the training requirements for licensing midwives, and even in the face of the opposition of a large part of the medical profession of the country, an undue number of mothers are attended in confinement by "grannies" who are without special training or qualifications for such service. It is believed that the following partial abstract of a recent report on the training of midwives in England and other European countries is of timely interest.

[1] Reports on Public Health and Medical Subjects, No. 21: The Training of Midwives. By Janet M. Campbell, Senior Medical Officer for Maternal and Child Welfare, British Ministry of Health. London. 1923.

GREAT BRITAIN.

Until the passing of the midwives act in 1902, amended by the act of 1918, the training and practice of midwives was wholly unregulated and unsupervised by the State. No certificate of qualifications was required in order to practice nor was any course of training prescribed by a recognized authority, though for a number of years certficates in midwifery had been issued by the obstetrical society and were held by the best midwives.

The administration of the midwives act, effective April 1, 1903, was placed in the central midwives board, which was directly responsible to the privy council until 1919, when the supervisory powers were transferred to the Ministry of Health.

At the beginning, three months' training was required, but in June, 1916, this was extended to six months in the case of untrained women and to four months (or, in some cases, three months) for certain trained nurses. The course of training includes the personal delivery and nursing of 20 maternity cases; instruction in elementary anatomy, physiology, and hygiene; the management of labor; the care of the child at and after birth; and the recognition of the most important complications and diseases associated with pregnancy. The curriculum has gradually been broadened and now usually includes instruction in ante and post natal care, the care of ophthalmia neonatorum, and, to some extent, the management of infants and young children.

Examinations are partly oral and practical and partly written on the following subjects:

(*a*) The elementary anatomy and physiology of the female pelvis and its organs.

(*b*) Pregnancy:
(1) Its hygiene;
(2) Its diseases and complications, including abortion;
} both in relation to (*i*) the mother, (*ii*) the unborn child.

(*c*) The symptoms, mechanism, course, and management of natural labor.

(*d*) The signs that a labor is abnormal.

(*e*) Hemorrhage: Its varieties and the treatment of each.

(*f*) Antiseptics in midwifery and the way to prepare and use them.

(*g*) The management of the puerperal patient, including the use of the clinical thermometer and of the catheter and the taking of the pulse.

(*h*) The management (including the feeding) of infants.

(*i*) Signs of the diseases which may develop during the first 10 days, including ophthalmia and pemphigus and other skin eruptions.

(*j*) The duties of the midwife as described in the regulations, including cooperation with health agencies.

(*k*) Obstetric emergencies, and how the midwife should deal with them until the arrival of a doctor. This will include some knowledge of the drugs commonly needed in such cases and of the mode of their administration.

(*l*) Puerperal fevers, their nature, causes, and symptoms.
(*m*) The venereal diseases (syphilis and gonorrhea) in relation to their signs, symptoms, and dangers in women and children and to the risks of contagion to others.
(*n*) The disinfection of person, clothing, and appliances.
(*o*) Elementary physiology and the principles of hygiene and sanitation as regards home, food, and person.
(*p*) The examination of the urine.
(*q*) The care of children born apparently lifeless.

In 1919 the board of education was authorized to contribute toward the cost of training midwives, and, with certain exceptions, grants in aid are limited to midwives intending to practice midwifery and are paid to training institutions approved by the board.

It has long been recognized that even the extended period of six months is insufficient for the satisfactory education of a student in midwifery, and a number of training schools require their pupils to remain for a rather longer time. Mechanical expertness in normal delivery is far from sufficient fully to equip the midwife. "She should be competent to make a sufficiently careful examination after labor to make sure that the placenta and membranes are complete, and that there is no laceration of the perineum or vagina which needs treatment. * * * To be a safe and satisfactory attendant at a confinement, the midwife should have a wide knowledge of midwifery as a whole, a clear appreciation of the possible significance of such unfavorable signs or symptoms as may arise, and a sound understanding of the first-aid treatment to which she may properly have recourse pending the arrival of the doctor."

If six months' study was insufficient properly to equip a midwife in the past, it is still less adequate in the light of modern development. Many pupil midwives are women of limited education, who learn with difficulty, are likely to forget much of the theory taught, and to remember clearly little but what they learn by practical work. Constant practice and repetition are necessary to inculcate habits of cleanliness and antisepsis, and a reasonably long period of time is required in order to establish such habits.

FRANCE.

The requirements for the training of midwives appear still to rest on the provision contained in the law as to the practice of medicine, of March 10, 1803 (19 ventose an. XI), article 32 of which is as follows:

> Pupil midwives shall be examined by the committee on the theory and practice of accouchements, on the accidents which may precede, accompany, or follow confinement, and on measures for remedying them.

The law of November 30, 1892, provides that a midwife may not practice unless she holds the diploma granted by the French Government. The training required at the present time is governed by the decree of January 9, 1917. The course of training lasts two years and

includes both theoretical and practical teaching. No age limit is fixed for candidates undertaking the course of studies. Candidates for a diploma may begin to train in a faculty school, or preparatory medical school, or a maternity home which is subject, as regards the training of pupil midwives, to the inspection of officials appointed for this purpose by the Ministry of Public Instruction. The second year may be spent only in a maternity home specially approved by the Ministers of Public Instruction and the Interior.

Pupil midwives are required to pass an examination at the end of each of the two years of training. The subjects of examination are laid down in two decrees issued on January 11, 1917. In addition to documentary evidence of age and fitness and adequate elementary and secondary education, pupils are examined at the end of the first year on anatomy, physiology, and pathology. At the end of the second year the examination comprises a theoretical test in anatomy and physiology of the organs of reproduction; elementary principles of teratology; normal and pathological gestation and the hygiene of normal and multiple gestation; auto-intoxication, albuminuria, etc.; causes of premature interruption of gestation; abdominal palpation and external manipulation; the management of labor; the hygiene of the lying-in-period; the hygiene of infancy and particularly of the first year; prenatal and post-natal care of the child; breast feeding, mixed feeding, artificial feeding, weaning, etc.; vaccination; and venesection. Candidates are also examined on the legal obligations of the midwife, notification of infectious diseases, etc.; and are required to pass a clinical test consisting of the examination of a woman in a condition of pregnancy.

BELGIUM.

The training of midwives is governed principally by Royal Orders of December 30, 1884. The first of these relates, among other things, to the examination for the diploma of midwife. The subjects of examination, which were revised by a Royal Order of 1908, include anatomy, physiology, the practice of obstetrics, hygiene, and the duties and legal obligations of a midwife. The examination is partly oral and partly written.

The second Royal Order relates to the organization of training institutions for midwives, which are supervised by the Department of the Interior and also by the Provincial Executive. Candidates for admission must be between the ages of 18 and 30 years, but these limits may be waived by the proper authorities in exceptional cases. In addition to furnishing certificates of good conduct and evidence of the consent of parents or guardian, the candidate must undergo an entrance examination on elementary academic subjects.

The course of instruction is two years and includes both theory and practice. Clinical instruction begins at the end of the first

year. Grants may be allowed to students of limited resources, but grants by the State and Provinces are allowed only in localities where the number of midwives is insufficient, or may be limited to those who bind themselves to practice for a period of five years at least in a specified locality.

A Royal Order of 1912 provides that "Only such persons shall be admitted to the examination as have spent two full years in following a course at a midwives' training institution to which is attached a recognized lying-in hospital, or such persons as have received for two continuous years clinical instruction from a doctor of medicine either in a clinic or in the lying-in ward of a public or private hospital and who have conducted at least 15 confinements under the supervision of the doctor in charge of such institution." This provision came into force two years after the date of its promulgation.

GERMANY.

Section 30 (3) of the Imperial Industrial Order of 1901 requires the midwife to obtain a certificate of competency granted after examination by the competent authorities of the State in which she practices. However, each State has its own laws and regulations relating to midwives. Those in force in Prussia, Hamburg, and Baden are probably representative.

Prussia.—The supervision and training of midwives come under the provincial authorities. Prior to the armistice, a six months' course of theoretical and practical training in a recognized institution was usually prescribed, with provision for "refresher courses" to be followed at later stages. Since the armistice, there has been a general demand for a higher educational standard and a longer course of training as well as for an improved status for the midwife and an assured income. Most Provinces have revised their orders so as to provide for a somewhat higher educational standard and a longer training. The educational standard has been raised to "a complete elementary course" and the majority of the Provinces now prescribe nine months' training.

The general law of 1922 deals with the distribution of midwives, their status, and remuneration. A special permit must be secured before a person can settle in any locality in Prussia for the purpose of practicing midwifery. Permits may be issued to a limited number of midwives in a given district, the number being based on the average number of births occurring in the district. However, midwives have the right to practice outside their own district. In addition to attending confinements, they are expected to undertake antenatal supervision, promote breast feeding, and participate in infant welfare work.

In order to insure a reasonable income and encourage better educated women to take up midwifery, a definite schedule of fees, varying with the circumstances of the client, has been fixed, and the midwife may claim an added compensation from the Commune if her annual income, without neglect of duty on her part, falls below a certain minimum.

Provision is made for periodical tests, "refresher courses," and for the payment of traveling and maintenance expenses incurred in attending such courses.

Midwives are placed under the supervision of the government health officer, but in every municipal and rural district a special body for controlling the affairs of midwives must be appointed. These bodies are composed of midwives chosen from the district, representatives of the mothers, representative of the communal authorities, the district physician, and two representatives of the public health insurance administration.

Hamburg.—Under the provisions of a decree relating to the training of midwives, enacted in 1920, a course in training in midwifery is held at the State Midwifery School. Candidates must be between the ages of 20 and 30 and must have received a sound elementary education in order to undergo a preliminary examination. The course of training lasts one year. An examination is held at the end of nine months, and those candidates who pass this examination spend the remaining three months of their course in practical work.

The course of instruction comprises the following:

(1) (*a*) A study of the formation of the human body, specially of the female body; pathology; pregnancy; birth; normal and abmornal confinements and the duties of the midwife in each case.
(*b*) The most important diseases of women and infants.
(*c*) The feeding and care of healthy infants.
(2) Pupils, where possible, assist at confinements at clinics.
(3) The course also comprises teaching with regard to—
(*a*) Special instructions for midwives, and
(*b*) Any other regulations and laws which bear on their work.

The examination is practical, oral, and written. The candidate who fails on one examination is required to undergo further training for a period of three months; but no candidate may enter for examination more than twice. At least every 10 years from the date on which the first examination was taken, the midwife must attend a continuation course lasting at least two weeks, and if she ceases to practice for more than two years she is required to pass an examination before again commencing to practice.

Baden.—By an order of July, 1919, the period of training was extended from six to nine months. Candidates must be between 20 and 30 years of age. They must have received a good elementary

education, and are given an entrance examination. During the period of training they must assist at 10 confinements at least in the training institutions, and two in a polyclinic. An oral, practical, and written examination is held at the end of the course. Should a candidate fail to pass, she must undergo a further course of instruction and take a second examination; she may not take the examination more than twice. No provision appears to be made for "refresher courses" in Baden.

DENMARK.

One of the departments of the Lying-in Hospital at Copenhagen forms the Danish School for Midwives.

Candidates must be between 20 and 30 years of age. Every year 40 midwives are training in this school. However, in order to insure suitable candidates, pupils are nominated by the district physicians, and from this list of nominees the selection is made by the professor and the director of the National Hospital.

The ordinary period of instruction is one year. In addition, several midwives receive permission annually to take a further year's training and are appointed assistant midwives, either at the Lying-in Hospital or in a private nursing home where they obtain ample experience.

Pupils receive theoretical instruction daily. Practical instruction is conducted by the chief midwife, under the supervision of the professor. The course includes instruction in disinfection, the principles of antisepsis and elementary bacteriology, simple biology and anatomy, the physiology of normal pregnancy and antenatal care, the management of labor, and the recognition of various symptoms of disease and abnormal conditions, together with the circumstances in which a doctor must be called.

Once a year a "refresher course" is held. Midwives and physicians come under the direction of the board of health and the Minister for Justice. The county and district physicians supervise practicing midwives.

SWITZERLAND.

Arrangements for training midwives vary in the different Cantons, but those in force in the Canton of St. Gall may be mentioned as an example.

By the decree enacted in 1911 only persons who have successfully attended a course in the lying-in institution of the Canton, or given other proof to the sanitary committee of their qualifications, and have received a certificate from the Canton, will be allowed to practice midwifery.

The sanitary committee provides every year a theoretical and practical course for midwives in the lying-in hospital of the Canton.

The course lasts 28 weeks, and the number of pupils attending the course is limited to 20.

Persons desiring to attend the course must be between the ages of 18 and 32. They must produce their last school report and a doctor's certificate testifying that they are fit persons to be trained as midwives. The pupils may be required to undergo a further educational test. An examination is held on completion of the course.

Midwives who cease to practice for a period of more than three years must attend a continuation course before they resume practice. A midwife forfeits her certificate if she ceases to practice for a period of 10 consecutive years.

Repetition courses are held at a lying-in hospital which last at least 10 days and admit no more than 15 students. Midwives who during the preceding 8 to 10 years have not passed an examination or attended a repetition course are required to attend such a course. Midwives may be required at any time to attend the repetition course if they have shown professional ignorance or committed grave errors in practice. At the repetiton course, special attention is paid to practical obstetrics and to the duties of midwives as regards disinfection.

HOLLAND.

There are two State training schools for midwives in Holland, one in Amsterdam and one in Rotterdam. The training and the qualifications for admission are the same in both schools.

The training covers a period of three years, and, except in rare instances, the pupil midwives must be resident students. They are provided free instruction and board and lodging. Before a candidate is admitted to a training school she must sign a contract to hold herself at the disposal of the Ministry of Labor for a period of two years after she has obtained her diploma as a midwife and to serve as a municipal midwife in any commune or communes determined by the Minister. However, she may be released from this obligation on payment of a stipulated sum.

Candidates for admission to the school must pass a preliminary examination as to their educational qualifications, but may be exempted from this examination if they possess certain educational diplomas. The candidate must be not less than 19 nor more than 26 years of age, though in special circumstances candidates between the ages of 26 and 34 may be admitted. A candidate must present a health certificate and a certificate of good and proper conduct furnished by the burgomaster of the district in which she lives within one month before the day of the examination.

Only theoretical instruction is given during the first year. During the last two years the pupils serve for a period as nurses in the State Hospital for Young Mothers.

TYPHOID FEVER IN THE LARGE CITIES OF THE UNITED STATES, 1923.

In the issue of February 2, 1924, the Journal of the American Medical Association presents its twelfth annual summary of typhoid fever mortality in the cities of the United States that had more than 100,000 population in 1920. The 69 cities in this class include more than one-fourth of the total population of the United States, and one-sixth of the total population live in cities of more than 500,000 population.

These 69 cities, for which records are available for the last four years, show a slight typhoid reduction in 1923 as compared with 1922. The average death rates per 100,000 from typhoid fever for these cities for the years 1920,[1] 1921, 1922, and 1923 were, respectively, 3.7, 4.0, 3.3, and 3.2. The rate for 57 of the cities of this group, for which the records extend back to 1910, show a slightly higher total typhoid death rate for 1923 than that for 1922, but, with the single exception of that year, the rate for 1923 was the lowest ever recorded.

Group 1, population more than 500,000 (12 cities).—The average death rate per 100,000 in this group was 2.5. For the first time since these summaries were begun, every city in the group had a rate under 5, the highest rate being 4.3, for Baltimore and Buffalo, and the lowest, 1.0, for Boston. Although 1922 marked a record low rate for the several cities in this group, further improvement was shown in 1923.

For the first time since 1916, Chicago had a water-borne outbreak. This was restricted to a district served by one of the pumping stations drawing water from Lake Michigan. It is stated that "although Lake Michigan received unusual pollution as the result of torrential rains in the autumn of 1923, chlorination seems to have proved an effectual safeguard except at the one pumping station."

Group 2, population 300,000 to 500,000 (9 cities).—The average rate for this group was 3.8. Only three of the nine cities in this group recorded a higher rate than that for 1922. The rates varied between 1.0 for Minneapolis and Milwaukee, to 8.8 for New Orleans. The New Orleans rate shows a 13 per cent reduction from that for 1922, and is the lowest recorded in the 12-year period; and Milwaukee, with a water supply at times highly polluted, but protected by chlorination, shares honors with Minneapolis for the lowest rate.

Group 3, population 200,000 to 300,000 (12 cities).—This group had an average typhoid death rate for 1923 of 4.1 per 100,000. The rates for cities in this group vary between 0.8 for Providence (with only 2 deaths) to 6.0 for Toledo (excluding Atlanta, which had a

[1] For 65 cities.

very bad year, having a rate of 17.1—a higher rate than the average for the period 1916–1920).

Group 4, population 150,000 to 200,000 (10 cities).—The average rate for this group of cities was 6.7, ranging between 2.2 for Syracuse to 13.6 for Memphis. Birmingham had a rate of 7.7 as compared with 12.5 for 1922 and 17.0 for 1921; whereas both Dallas and Memphis showed increases. The rate for Dallas was 11.6 in 1923 as compared with 5.8 in 1922, and the rate for Memphis was 13.6 in 1923 as against 8.9 in 1922.

Group 5, population 125,000 to 150,000 (9 cities).—The average rate for cities in Group 5 was 2.8, the rates varying from 0.7 for Hartford (recording but 1 death from typhoid) to 7.8 for Houston.

Group 6, population 100,000 to 125,000 (17 cities).—This group contains the only city in the list of 69 cities without a death from typhoid fever during 1923, this honor going to Norfolk, Va. The highest rates were recorded for Nashville (12.3) and Trenton (11.8), which cities also had the highest rates in this group in 1922. Reading, Pa., had a rate of 2.7, as compared with 9.2 in 1922 and 11.7 in 1921. The average rate for this group for 1923 was 4.2.

In concluding this summary, it is stated:

"While the actual percentage reduction has slowed up, it is evident that improvement in the typhoid situation in many cities is still taking place. We believe that the end is not yet reached, and that a still further diminution in typhoid in American cities will be noted within the next few years. It is not likely, however, that the decline will be as rapid or as marked as it has been in the past decade, and it seems probable that a reduction much below the point now reached will come about only when a curb is put on rural typhoid throughout the country. Eradication of rural typhoid is a difficult but by no means impossible task, and it is encouraging that many health officers throughout the country have set their hands to this undertaking. The cities, as well as the country, will profit by every successful attempt to do away with typhoid in country districts."

DEATH RATES IN A GROUP OF INSURED PERSONS.

Comparison of Principal Causes of Death, November and December, 1923, and Years 1913–1923, Inclusive.

The accompanying tables are taken from the Statistical Bulletin of the Metropolitan Life Insurance Co. for January, 1924. They present the mortality experience of the industrial insurance department of the company for November and December, 1923, and for the 11-year period 1913–1923. The rates for 1923 are based on a strength of approximately 15,000,000 insured persons.

The death rate for December in this group was 8.5 per 1,000, the lowest figure for this month in the company's records. The usual seasonal increase, however, was shown over the rate for November (7.8). As compared with November, the month of December showed a greater prevalence for influenza, measles, scarlet fever, and smallpox, but a lower morbidity from diphtheria, malaria, typhoid fever, and whooping cough.

Death rates (annual basis) for principal causes per 100,000 lives exposed, November and December, 1923, and December and year, 1922.

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death.	Death rate per 100,000 lives exposed.			
	December, 1923.	November, 1923.	December, 1922.	Year 1922.
Total, all causes	846.3	778.8	899.0	882.9
Typhoid fever	4.6	5.1	4.8	5.7
Measles	3.2	1.5	5.9	4.3
Scarlet fever	5.1	3.4	4.4	4.9
Whooping cough	1.7	2.4	2.3	2.6
Diphtheria	18.1	16.9	27.7	18.0
Influenza	14.2	6.8	14.1	21.7
Tuberculosis (all forms)	90.4	88.4	101.8	114.2
Tuberculosis of respiratory system	83.2	81.4	92.6	103.6
Cancer	73.9	71.0	71.4	72.0
Diabetes mellitus	14.2	12.8	(1)	17.2
Cerebral hemorrhage	66.9	55.6	65.8	62.9
Organic diseases of heart	127.0	119.1	129.2	126.7
Pneumonia (all forms)	69.2	59.2	87.1	73.7
Other respiratory diseases	13.5	12.8	14.5	13.7
Diarrhea and enteritis	5.4	6.0	6.1	10.8
Bright's disease (chronic nephritis)	70.6	62.0	74.0	70.3
Puerperal state	16.3	14.2	14.4	19.0
Suicides	6.8	6.0	5.8	7.5
Homicides	6.9	9.0	5.4	6.3
Other external causes (excluding suicides and homicides)	63.2	59.2	62.0	58.1
Traumatism by automobile	17.7	16.7	15.0	13.6
All other causes	175.3	167.4	202.2	173.3

[1] Not available.

MORTALITY RECORD FOR 1923.

The year 1923 was stated to have been one of the best years in the history of the company as regards the health conditions in this group, comprising approximately 15,000,000 persons in the United States and Canada. The Bulletin states:

"The excellent health record of 1923 was made despite a bad beginning. During the first quarter there was high mortality from influenza and pneumonia, and the epidemic prevalence of the former was reflected also in increased death rates during the months January to March for organic heart diseases and Bright's disease. Influenza in 1923, as in previous epidemics, was an important factor in hastening the deaths of many persons afflicted with these chronic ailments. By the end of the first quarter a higher death rate had been recorded than for the corresponding period of 1922, and decidedly higher rates than for the first three months of 1921."

Based on the health record of these persons for 1923, it was predicted that when the data are available it will be shown that 1923 was one of the best health years in the sanitary history of the United States and Canada. The death rate for this group—comprising nearly one-seventh of the population of the two countries—was 8.9 per 1,000 in 1923, as compared with 8.8 in 1922 and 8.7 in 1921.

New record low rates are shown for the third and fourth quarters of the year, and for a number of diseases of major public health interest, such as typhoid fever, diphtheria, tuberculosis, diarrheal diseases, and puerperal septicemia. A few causes of death showed increased mortality in 1923 over that for 1922, the most conspicuous examples of which are measles, whooping cough, influenza, pneumonia, and heart diseases. Increases are also shown for homicides and accidents—more particularly automobile accidents. The Bulletin states:

"Nineteen hundred and twenty-three was a 'measles year,' with a death rate of 8.2 per 100,000 as compared with 4.3 in 1922 and 3.2 in 1921.

"The number of measles deaths was, this year, almost equal to those from scarlet fever and whooping cough combined. It is such an aberrant experience that brings home to health workers the importance of measles as a cause of child mortality and morbidity. * * *

"The whooping cough rate also showed a pronounced rise over that for the previous year, but the mortality from this disease was lower than for a majority of the years of the last decade."

Influenza was stated to have been responsible for more than 20 per cent of the total mortality during the first three months of the year. There was no concentration of cases and deaths between the ages 20 and 45 as was observed in the pandemic of 1918–19, the influenza mortality in 1923 occurring for the most part in early childhood and after the age of 45.

Another important difference between the type of influenza in 1923 and that of the great world pandemic of 1918–19 is that the former did not seriously affect the death rate for puerperal diseases. Also, the 1923 type was not the kind which develops quickly into pneumonia and causes death after running a very short course.

An increase of 13.2 per cent was registered in the death rate for automobile fatalities, making this form of accident one of the major causes of death in American mortality statistics. On the basis of this increase in these insured persons, it is estimated that the total number of automobile fatalities in the United States in 1923 was more than 15,000. The death rate from automobile accidents (exclusive of motor-cycle accidents) in the registration area of the United States was 12.5 per 100,000 in 1922. A rate of 14.2 (an increase of 13.2 per cent over 1922) applied to the estimated population of con-

tinental United States as of July 1, 1923, (110,663,502), would mean a total of 15,700 deaths from automobile accidents.

Deaths from alcoholism in this group numbered 436 in 1923 (3.0 per 100,000 persons), as compared with 293 in 1922, 122 in 1921, and 77 in 1920. It is stated that while the death rate from this cause is still much lower than the rates for all years prior to 1917, a continued increase such as that shown for last year may soon bring it to equal the earlier figures.

No significant changes from the rates for 1922 were noted for several important causes of death, namely, cancer, cerebral hemorrhage, chronic Bright's disease, and suicides. Especial attention is called to this fact with reference to cancer, which as yet has apparently shown no indication of a turn toward improved mortality.

It may be noted here that from 1911 to 1922 the gross death rate in this selected group of persons has uniformly been much lower than the death rate in the registration area of the United States, varying between 73 and 87 per cent of the latter rate.

Death rates per 100,000 lives exposed for principal causes of death, 1913 to 1923.

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death.	1923	1922	1921	1920	1919	1918	1917	1916	1915	1914	1913
All causes of death	891.3	882.9	870.6	989.4	1063.0	1559.2	1161.1	1168.1	1130.9	1152.8	1199.4
Typhoid fever	5.1	5.7	6.7	6.7	7.3	11.5	12.1	13.0	12.9	16.1	18.4
Communicable disease of childhood	32.1	29.8	37.9	43.1	31.5	41.6	46.8	40.8	36.4	48.2	58.1
Measles	8.2	4.3	3.2	8.5	3.5	8.6	11.1	9.9	5.7	6.9	12.3
Scarlet fever	4.4	4.9	7.0	6.0	3.9	3.6	6.0	4.1	4.6	9.8	12.7
Whooping cough	4.3	2.6	3.9	6.6	3.2	10.1	5.1	5.8	4.7	5.8	5.9
Diphtheria	15.2	18.0	23.8	22.1	20.9	19.3	24.6	21.0	21.4	25.7	27.2
Influenza and pneumonia	106.5	95.3	76.5	159.5	214.1	542.2	135.4	138.1	119.5	111.6	118.4
Influenza	30.0	21.7	8.7	53.5	96.9	272.4	14.4	23.8	13.0	11.3	12.3
Pneumonia	76.5	73.7	67.8	106.1	117.2	269.8	121.0	114.3	106.5	100.3	106.1
Meningococcus meningitis	.7	.7	.9	1.0	1.3	2.8	3.5	1.5	1.3	1.5	1.7
Tuberculosis—(all forms)	110.2	114.2	117.4	137.9	156.5	189.0	188.9	190.2	197.8	204.5	206.7
Tuberculosis of respiratory system	100.4	103.6	105.6	124.0	141.6	171.2	172.3	172.8	180.0	185.2	186.6
Cancer (all forms)	72.6	72.0	71.7	69.8	67.0	67.2	70.9	70.3	70.9	69.8	70.5
Diabetes mellitus	16.1	17.2	15.5	14.1	13.4	14.0	15.3	15.9	15.1	14.2	13.9
Cerebral hemorrhage, apoplexy	61.8	62.9	62.1	61.3	59.8	64.0	66.8	68.7	68.5	69.2	67.2
Diseases of heart	128.5	126.7	117.4	117.0	113.9	141.7	142.0	140.2	136.7	138.1	140.6
Diarrhea and enteritis	9.6	10.8	14.2	15.8	16.9	23.4	25.5	26.2	24.4	24.7	27.7
1 to 2 years	4.0	4.9	6.0	7.0	7.5	11.6	11.9	12.5	11.3	11.9	13.2
2 years and over	5.6	5.9	8.1	8.8	9.5	11.8	13.6	13.7	13.1	12.8	14.5
Chronic nephritis (Bright's disease)	69.5	70.3	68.0	70.8	73.5	86.8	95.7	99.0	95.7	95.4	96.0
Puerperal state (total)	17.9	19.0	19.8	23.0	20.0	27.4	18.2	17.6	18.0	19.8	20.0
Puerperal septicemia	6.9	7.4	8.5	8.6	6.7	7.3	7.5	7.2	7.2	8.4	9.1
Puerperal albumin and convulsions	4.2	4.7	4.9	5.0	4.8	4.9	5.1	5.0	4.8	5.1	5.3
Accidents of pregnancy	1.8	1.7	1.6	3.1	3.0	6.9	1.6	1.4	1.8	1.7	1.7
Total external causes	77.5	71.8	72.0	72.0	94.2	128.9	106.7	99.5	88.2	89.2	98.3
Suicides	7.4	7.5	7.6	6.1	6.8	7.6	9.3	9.8	12.2	12.3	13.5
Homicides	7.3	6.3	6.7	5.8	6.9	6.2	7.4	6.9	6.9	7.0	7.2
Accidents (total)	62.7	58.0	57.5	59.6	63.8	75.5	76.5	73.2	67.3	69.9	77.6
Accidental burns	6.3	6.1	6.6	8.1	8.1	9.0	8.9	8.8	8.6	8.4	9.0
Accidental drowning	6.7	7.3	8.2	6.7	8.6	9.4	8.7	9.7	11.9	10.0	12.1
Accidental traumatism by fall	8.4	7.3	7.1	7.3	8.0	10.4	11.9	13.1	11.9	12.6	13.7
Accidental traumatism by machines	1.7	1.6	1.0	1.7	1.6	2.4	2.0	1.7	1.4	1.5	2.0
Railroad accidents	4.9	4.1	3.9	5.2	5.7	7.8	8.5	7.9	7.4	7.5	9.0
Automobile accidents	15.4	13.6	12.2	11.1	10.7	10.3	9.7	7.4	5.4	4.8	4.1
All other accidents	19.4	18.0	18.5	19.5	21.2	26.1	26.8	24.6	20.7	25.1	27.7
War deaths	.....	.1	.1	.5	16.6	39.7	13.5	9.6	1.8	.....	.....
Other diseases and conditions	183.1	186.5	190.5	197.4	193.5	218.7	233.2	247.1	245.5	250.5	261.9

DEATHS DURING WEEK ENDED FEBRUARY 9, 1924.

Summary of information received by telegraph from industrial insurance companies for the week ended February 9, 1924, and corresponding week of 1923. (From the Weekly Health Index, February 12, 1924, issued by the Bureau of the Census, Department of Commerce.)

	Week ended Feb. 9, 1924.	Corresponding week, 1923.
Policies in force	56, 513, 075	52, 064, 941
Number of death claims	10, 979	12, 360
Death claims per 1,000 policies in force, annual rate	10. 1	12. 4

Deaths from all causes in certain large cities of the United States during the week ended February 9, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923. (From the Weekly Health Index, February 12, 1924, issued by the Bureau of the Census, Department of Commerce.)

City	Week ended Feb. 9, 1924.		Annual death rate per 1,000, corresponding week, 1923.	Deaths under 1 year.		Infant mortality rate, week ended Feb. 9, 1924.[2]
	Total deaths.	Death rate.[1]		Week ended Feb. 9, 1924.	Corresponding week, 1923.	
Total	7,988	13.8	17.1	1,018	1,203	.....
Akron	28	7.0	9.0	5	6	53
Albany [3]	51	22.4	26.2	4	4	88
Baltimore [3]	263	17.5	21.4	30	42	87
Birmingham	84	21.8	15.7	8	8	.....
Boston	214	14.4	22.2	28	36	78
Bridgeport	41	14.9	13.1	5	5	78
Buffalo	136	13.0	18.4	23	22	98
Cambridge	21	9.8	15.0	2	3	35
Camden [3]	27	11.1	30.2	6	11	95
Canton	31	15.7	14.7	7	6	148
Chicago [3]	676	12.0	15.4	105	136	97
Cincinnati	145	18.5	22.5	12	18	76
Cleveland	191	10.9	14.6	20	28	52
Columbus	70	13.7	23.2	1	12	10
Dallas	47	13.0	16.3	6	9	.....
Dayton	49	15.1	18.3	6	10	101
Denver	65	12.3	17.3	8	12	.....
Des Moines	25	9.0	11.1	3	2	.....
Detroit	252	13.2	18.0	38	63	71
Duluth	18	8.7	13.7	2	4	43
Erie	24	10.8	13.9	6	2	124
Fall River [3]	25	10.8	21.6	7	10	99
Flint	18	7.6	12.4	8	2	138
Fort Worth	25	8.8	9.8	2	3	.....
Grand Rapids	41	14.4	19.3	9	12	140
Houston	52	16.9	9.7	3	6	.....
Indianapolis	99	14.7	15.7	10	14	76
Jacksonville, Fla	41	20.9	19.8	8	4	.....
Jersey City	85	14.2	18.9	10	16	72
Kansas City, Kans	30	13.3	19.4	3	8	60
Kansas City, Mo	102	14.8	17.8	12	11	.....
Los Angeles	254	18.9	17.5	23	19	72
Louisville	92	18.6	18.4	12	14	115
Lowell	24	10.8	17.7	6	10	107
Lynn	28	14.1	17.8	3	2	76
Memphis	68	20.6	23.9	8	7	.....
Milwaukee	112	11.9	17.2	13	35	59
Minneapolis	86	10.7	14.8	11	15	59
Nashville [3]	43	18.2	16.2	11	4	.....
New Bedford	30	11.8	17.6	9	16	140
New Haven	66	19.6	14.5	9	2	118
New Orleans	178	22.7	20.0	18	11	.....
New York	1,560	13.5	15.3	174	208	70
Bronx Borough	169	10.1	11.6	16	17	56
Brooklyn Borough	504	12.0	14.5	59	69	64
Manhattan Borough	740	17.1	17.5	86	101	84
Queens Borough	110	10.3	12.4	10	18	55
Richmond Borough	37	14.8	27.4	3	3	55

[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 1923. Cities left blank are not in the registration area for births.
[3] Deaths for week ended Friday, Feb. 8, 1924.

Deaths from all causes in certain large cities of the United States during the week ended February 9, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923. (From the Weekly Health Index, February 12, 1924, issued by the Bureau of the Census, Department of Commerce)—Continued.

City.	Week ended Feb. 9, 1924.		Annual death rate per 1,000, corresponding week, 1923.	Deaths under 1 year.		Infant mortality rate, week ended Feb. 9, 1924.
	Total deaths.	Death rate.		Week ended Feb. 9, 1924.	Corresponding week, 1923.	
Newark, N. J.	86	10.1	17.0	10	20	47
Norfolk	28	8.9	12.8	5	7	91
Oakland	60	12.7	16.1	6	4	75
Oklahoma City	17	8.5	.....	0	.....	.....
Omaha	42	10.5	18.6	5	9	54
Paterson	30	11.1	16.4	4	5	65
Philadelphia	509	13.6	18.4	69	75	88
Pittsburgh	223	18.6	23.5	42	35	142
Portland, Oreg.	58	10.9	10.9	4	7	41
Providence	80	17.1	18.1	19	14	155
Richmond	60	17.0	18.1	11	5	130
Rochester	73	11.7	15.5	4	8	31
St. Louis	244	15.7	16.6	25	12	.....
St. Paul	67	14.3	14.9	8	7	69
Salt Lake City [1]	32	13.0	16.9	8	4	133
San Antonio	80	21.8	18.6	12	14	.....
San Francisco	143	13.6	17.4	11	12	66
Schenectady	26	13.5	14.8	4	1	113
Seattle	58	9.6	8.9	6	5	58
Somerville	18	9.3	12.7	4	5	109
Spokane	30	15.0	16.0	3	1	63
Springfield, Mass.	27	9.5	19.2	2	4	34
Syracuse	46	12.8	17.8	5	9	62
Tacoma	14	7.1	10.3	1	2	23
Toledo	78	14.7	15.1	8	11	76
Trenton	39	15.7	20.1	6	8	98
Utica	33	16.3	16.1	4	4	87
Washington, D. C.	133	15.8	29.0	16	22	92
Waterbury	26	13.5	11.1	6	7	134
Wilmington, Del.	24	10.4	29.7	2	11	43
Worcester	63	16.8	15.8	10	5	120
Yonkers	24	11.4	12.6	4	2	87

[1] Deaths for week ended Friday, Feb. 8, 1924.

PREVALENCE OF DISEASE.

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

UNITED STATES.

CURRENT STATE SUMMARIES.

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

Reports for Week Ended February 16, 1924.

ALABAMA.

	Cases.
Chicken pox	49
Diphtheria	15
Influenza	127
Malaria	8
Measles	551
Mumps	38
Pellagra	4
Pneumonia	171
Scarlet fever	8
Smallpox	15
Tuberculosis	15
Typhoid fever	10
Whooping cough	54

ARIZONA.

Chicken pox	7
Diphtheria	1
Measles	189
Mumps	3
Pneumonia	2
Scarlet fever	5
Smallpox	1
Tuberculosis	43
Typhoid fever	1

ARKANSAS.

Chicken pox	35
Diphtheria	13
Hookworm disease	1
Influenza	293
Malaria	45
Measles	355
Mumps	25
Paratyphoid fever	3
Pellagra	6
Scarlet fever	5
Smallpox	11
Trachoma	8
Tuberculosis	8
Typhoid fever	10
Whooping cough	27

CALIFORNIA.

	Cases.
Cerebrospinal meningitis:	
Modesto	1
Santa Barbara	1
Diphtheria	256
Influenza	23
Lethargic encephalitis:	
San Francisco	1
Stockton	1
Measles	592
Poliomyelitis—Crescent City	1
Scarlet fever	180
Smallpox:	
Long Beach	36
Los Angeles County	72
Scattering	56
Typhoid fever	9

COLORADO.

(Exclusive of Denver.)

Chicken pox	7
Diphtheria	7
Impetigo contagiosa	1
Influenza	3
Jaundice	2
Measles	197
Mumps	26
Pneumonia	13
Scarlet fever	26
Tuberculosis	150
Typhoid fever	4
Whooping cough	6

CONNECTICUT.

Cerebrospinal meningitis	2
Chicken pox	102
Conjunctivitis (infectious)	2
Diphtheria	60
German measles	5
Influenza	4
Measles	251

CONNECTICUT—continued.

	Cases.
Mumps	110
Pneumonia (lobar)	52
Scarlet fever	172
Septic sore throat	5
Smallpox	1
Tuberculosis (all forms)	5
Typhoid fever	1
Whooping cough	51

DELAWARE.

Cerebrospinal meningitis—Wilmington	1
Chicken pox	3
Diphtheria	6
Influenza	4
Mumps	1
Pneumonia	9
Scarlet fever	12
Tuberculosis	6
Typhoid fever	1
Whooping cough	3

DISTRICT OF COLUMBIA.

Chicken pox	48
Diphtheria	6
Influenza	3
Measles	13
Scarlet fever	49
Smallpox	4
Tuberculosis	24
Whooping cough	7

FLORIDA.

Diphtheria	9
Influenza	7
Malaria	10
Pneumonia	8
Scarlet fever	2
Smallpox	10
Typhoid fever	14

GEORGIA.

Cerebrospinal meningitis	1
Chicken pox	42
Diphtheria	27
Dysentery (bacillary)	1
German measles	13
Hookworm disease	6
Influenza	59
Malaria	7
Measles	461
Mumps	20
Pellagra	2
Pneumonia	24
Scarlet fever	15
Smallpox	134
Tuberculosis (pulmonary)	20
Typhoid fever	2
Whooping cough	75

ILLINOIS.

Cerebrospinal meningitis—Cook County	1
Diphtheria:	
Cook County	127
Lake County	9
Madison County	11
Scattering	41

ILLINOIS—continued.

	Cases.
Influenza	59
Lethargic encephalitis—Fulton County	1
Measles	628
Pneumonia	433
Poliomyelitis—Lee County	1
Scarlet fever:	
Cook County	121
DeKalb County	14
Kane County	19
La Salle County	11
Macon County	11
St. Clair County	16
Vermilion County	8
Scattering	98
Smallpox:	
Chicago	12
Scattering	4
Tuberculosis	207
Typhoid fever	17
Whooping cough	148

INDIANA.

Cerebrospinal meningitis—Vanderburgh County	1
Chicken pox	110
Diphtheria:	
Hamilton County	11
St. Joseph County	10
Scattering	73
Influenza	18
Measles	606
Pneumonia	45
Scarlet fever:	
Lake County	15
St. Joseph County	11
Vermilion County	8
Vigo County	8
Scattering	84
Smallpox:	
Delaware County	17
Marion County	32
Scattering	18
Trachoma—Union County	1
Tuberculosis	33
Typhoid fever	1
Whooping cough	96

IOWA.

Diphtheria	24
Scarlet fever	56
Smallpox	8

KANSAS.

Cerebrospinal meningitis	2
Chicken pox	163
Diphtheria	53
German measles	10
Influenza	7
Leprosy	1
Measles	1,334
Mumps	358
Pneumonia	65
Scarlet fever	105
Septic sore throat	1
Smallpox	50

KANSAS—continued.

	Cases.
Tuberculosis	53
Typhoid fever	2
Whooping cough	139

LOUISIANA.

Diphtheria	18
Hookworm disease	48
Influenza	88
Malaria	4
Measles	1,339
Pneumonia	82
Scarlet fever	4
Smallpox	15
Tuberculosis	40
Typhoid fever	7
Whooping cough	39

MAINE.

Chicken pox	58
Conjunctivitis (infectious)	2
Diphtheria	2
German measles	15
Influenza	4
Measles	50
Mumps	29
Pneumonia	30
Scarlet fever	37
Tuberculosis	8
Whooping cough	47

MARYLAND.[1]

Cerebrospinal meningitis	1
Chicken pox	252
Diphtheria	37
Dysentery	1
German measles	21
Influenza	126
Lethargic encephalitis	2
Measles	172
Mumps	39
Ophthalmia neonatorum	1
Pneumonia (all forms)	155
Scarlet fever	133
Septic sore throat	3
Smallpox	1
Tuberculosis	64
Typhoid fever	9
Vincent's angina	1
Whooping cough	36

MASSACHUSETTS.

Cerebrospinal meningitis	3
Chicken pox	320
Conjunctivitis (suppurative)	13
Diphtheria	211
German measles	25
Influenza	14
Lethargic encephalitis	1
Measles	944
Mumps	330
Ophthalmia neonatorum	15
Pneumonia (lobar)	137
Poliomyelitis	2
Scarlet fever	554

[1] Week ended Friday.

MASSACHUSETTS—continued.

	Cases.
Septic sore throat	4
Smallpox	1
Trachoma	2
Trichinosis	1
Tuberculosis (all forms)	146
Typhoid fever	6
Whooping cough	129

MICHIGAN.

Diphtheria	147
Measles	659
Pneumonia	150
Scarlet fever	370
Smallpox	126
Tuberculosis	55
Typhoid fever	7
Whooping cough	43

MINNESOTA.

Chicken pox	132
Diphtheria	85
Influenza	3
Lethargic encephalitis	1
Measles	229
Pneumonia	10
Scarlet fever	296
Smallpox	57
Tuberculosis	54
Typhoid fever	5
Whooping cough	13

MISSISSIPPI.

Diphtheria	12
Scarlet fever	3
Smallpox	4
Typhoid fever	35

MISSOURI.

(Exclusive of Cape Girardeau.)

Chicken pox	58
Diphtheria	72
Influenza	16
Measles	890
Mumps	56
Pneumonia	33
Poliomyelitis	1
Scarlet fever	182
Septic sore throat	3
Smallpox	5
Tetanus	1
Trachoma	7
Tuberculosis	47
Typhoid fever	3
Whooping cough	67

MONTANA.

Diphtheria	9
Scarlet fever	38
Smallpox	31
Typhoid fever	2

NEBRASKA.

Chicken pox	37
Diphtheria	23
Measles	518
Mumps	13

NEBRASKA—continued.

	Cases.
Pneumonia	4
Scarlet fever	38
Septic sore throat	4
Smallpox	1
Tuberculosis	2
Typhoid fever	1
Whooping cough	30

NEW JERSEY.

Cerebrospinal meningitis	2
Chicken pox	346
Diphtheria	108
Influenza	18
Measles	478
Pneumonia	178
Poliomyelitis	1
Scarlet fever	207
Smallpox	3
Typhoid fever	6
Whooping cough	95

NEW MEXICO.

Cerebrospinal meningitis	1
Chicken pox	20
Diphtheria	19
Dysentery	1
Measles	106
Mumps	20
Pneumonia	21
Scarlet fever	21
Septic sore throat	1
Smallpox	4
Tuberculosis	19
Typhoid fever	1
Whooping cough	10

NEW YORK.

(Exclusive of New York City.)

Diphtheria	186
Influenza	62
Measles	1,318
Pneumonia	355
Poliomyelitis	1
Scarlet fever	439
Smallpox	20
Whooping cough	342
Typhoid fever	23

NORTH CAROLINA.

Chicken pox	249
Diphtheria	36
German measles	1
Measles	2,034
Scarlet fever	46
Septic sore throat	2
Smallpox	172
Typhoid fever	2
Whooping cough	488

OREGON.

Chicken pox	12
Diphtheria:	
Portland	9
Scattering	8

[1] Deaths.

OREGON—continued.

	Cases.
Lethargic encephalitis	4
Measles	249
Mumps	6
Pneumonia	[1] 12
Scarlet fever	20
Smallpox	10
Tuberculosis	11
Typhoid fever	1
Whooping cough	2

SOUTH DAKOTA.

Chicken pox	19
Diphtheria	1
Influenza	1
Measles	175
Mumps	1
Pneumonia	10
Scarlet fever	33
Typhoid fever	1
Whooping cough	11

TEXAS.

Chicken pox	33
Diphtheria	35
Influenza	241
Lethargic encephalitis	1
Measles	1,691
Mumps	51
Pellagra	3
Pneumonia	39
Scarlet fever	23
Smallpox	16
Trachoma	10
Tuberculosis	65
Typhoid fever	12
Whooping cough	184

VERMONT.

Chicken pox	15
Diphtheria	5
Measles	89
Mumps	16
Pneumonia	1
Scarlet fever	7
Whooping cough	35

WASHINGTON.

Chicken pox	48
Diphtheria:	
Seattle	13
Scattering	24
Lethargic encephalitis—Chelan County	1
Measles	795
Mumps	57
Pneumonia	1
Scarlet fever:	
Seattle	14
Spokane	10
Whitman County	13
Scattering	30
Smallpox	28
Tuberculosis	42
Typhoid fever	6
Whooping cough	8

WEST VIRGINIA.

	Cases.
Cerebrospinal meningitis—Charleston	1
Diphtheria	11
Scarlet fever	16
Typhoid fever	12

WISCONSIN.

	Cases.
Milwaukee:	
Cerebrospinal meningitis	1
Chicken pox	62
Diphtheria	10
Lethargic encephalitis	2
Measles	7
Pneumonia	14
Poliomyelitis	2
Scarlet fever	31
Smallpox	1
Tuberculosis	38
Whooping cough	36
Scattering:	
Chickenpox	106
Diphtheria	37

WISCONSIN—continued.

Scattering—Continued.	Cases.
German measles	2
Influenza	24
Measles	409
Pneumoni	31
Poliomyelitis	3
Scarlet fever	293
Smallpox	17
Tuberculosis	29
Typhoid fever	5
Whooping cough	114

WYOMING.

Chicken pox	27
Diphtheria	3
Measles	105
Mumps	1
Pneumonia (broncho)	1
Scarlet fever	13
Typhoid fever	1
Whooping cough	9

Reports for week ending February 9, 1924.

NORTH DAKOTA.

	Cases.
Chicken pox	8
Diphtheria	16
German measles	2
Influenza	4
Measles	358

NORTH DAKOTA—continued.

	Cases.
Pneumonia	18
Scarlet fever	49
Smallpox	12
Tuberculosis	6
Whooping cough	1

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.
January, 1924.										
District of Columbia	.....	50	2	.....	35	.....	.....	130	18	6
Florida	.....	57	27	33	1,081	1	1	7	37	33
Indiana	8	555	153	.....	2,492	.....	3	537	367	42
North Dakota	.....	64	4	.....	1,028	.....	1	225	44	7

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

State.	Chicken pox.	Diphtheria.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Tuberculosis.	Typhoid fever.	Whooping cough.
Alabama	142	266	690	11	136	13	123	73	104
Arizona	6	19	43	3	55	.....	123	1	3
Arkansas	43	105	208	5	76	29	42	70	136
California	550	1,234	1,187	94	883	374	712	96	139
Colorado[3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut	466	264	572	108	312	2	133	22	196
Delaware	12	34	36	.....	94	.....	30	12	23
District of Columbia	171	77	24	.....	101	25	96	12	37
Florida	5	66	291	6	9	8	68	30	15
Georgia[1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Idaho	89	6	93	1	96	5	.....	3	3
Illinois	1,802	1,318	1,053	617	1,008	13	1,083	315	494
Indiana[3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iowa[3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas	414	476	419	351	436	60	178	49	358
Kentucky[1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisiana	7	160	835	1	47	27	.....	44	19
Maine	171	62	117	31	67	1	34	30	235
Maryland	279	253	163	15	319	4	230	133	196
Massachusetts	1,201	1,151	1,096	587	1,018	.....	465	47	426
Michigan	975	1,021	1,307	168	1,155	417	432	126	263
Minnesota	679	663	676	.....	1,158	116	236	37	73
Mississippi	506	200	641	43	88	40	219	81	729
Missouri[1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montana	270	56	672	10	16	187	48	32	48
Nebraska	100	149	310	16	157	10	15	3	27
Nevada[2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire[2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Jersey	753	603	642	.....	363	3	406	41	246
New Mexico	36	54	146	16	36	.....	70	33	15
New York	2,454	1,876	3,327	639	1,636	22	1,594	186	1,350
North Carolina	530	851	1,907	.....	445	228	.....	61	1,199
North Dakota	50	146	465	.....	213	20	22	28	43
Ohio[3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oklahoma	.....	84	29	.....	163	35	35	96	.....
Oregon	117	155	1,614	11	101	59	37	15	13
Pennsylvania	3,452	2,164	1,832	564	1,914	7	494	230	889
Rhode Island	39	91	58	4	134	.....	42	3	15
South Carolina	21	331	165	15	26	220	7	10	105
South Dakota	117	88	332	18	185	7	12	1	99
Tennessee[2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas[1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah[2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vermont	152	34	592	13	61	77	.....	5	355
Virginia	493	721	1,616	.....	374	16	.....	106	790
Washington	333	130	1,727	109	221	167	156	58	41
West Virginia	251	276	45	.....	315	9	35	93	156
Wisconsin	1,036	707	937	33	924	65	198	53	745
Wyoming	46	4	206	.....	27	.....	.....	3	40

[1] Reports received weekly.
[2] Reports received annually.
[3] Reports not received at time of going to press.

Case Rates per 1,000 Population (Annual Basis) for the Month of November, 1923.

State.	Chicken pox.	Diphtheria.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Tuberculosis.	Typhoid fever.	Whooping cough.
Alabama	0.71	1.34	3.46	0.06	0.68	0.07	0.62	0.37	0.52
Arizona	.19	.61	1.37	.10	1.76	.....	3.93	.03	.10
Arkansas	.29	.70	1.39	.03	.51	.19	.28	.47	.91
California	1.76	3.95	3.80	.30	2.82	1.20	2.28	.31	.44
Colorado [3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut	3.84	2.18	4.71	.89	2.82	.02	1.10	.18	1.62
Delaware	.63	1.79	1.90	.....	4.96	.....	1.58	.63	1.21
District of Columbia	4.75	2.14	.67	.....	2.81	.70	2.67	.33	1.03
Florida	.06	.77	3.38	.07	.10	.09	.79	.35	.17
Georgia [1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Idaho	2.30	.16	2.41	.03	2.48	.13	.....	.08	.08
Illinois	3.23	2.36	1.89	1.11	1.81	.02	1.94	.56	.89
Indiana [3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iowa [3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas	2.80	3.22	2.84	2.38	2.95	.41	1.20	.33	2.42
Kentucky [1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisiana	.05	1.05	5.49	.01	.31	.18	.....	.29	.12
Maine	2.68	.97	1.83	.49	1.05	.02	.53	.47	3.68
Maryland	2.26	2.04	1.32	.12	2.53	.03	1.86	1.07	1.58
Massachusetts	3.63	3.48	3.31	1.77	3.08	.....	1.40	.14	1.29
Michigan	2.98	3.12	4.00	.51	3.53	1.28	1.32	.39	.80
Minnesota	3.31	3.23	3.29	.....	5.64	.56	1.15	.18	.36
Mississippi	3.44	1.97	4.36	.29	.60	.27	1.49	.55	4.95
Missouri [1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montana	5.37	1.11	13.38	.20	.32	3.72	.96	.64	.96
Nebraska	.91	1.36	2.83	.15	1.43	.09	.14	.03	.25
Nevada [2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire [2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Jersey	2.71	2.17	2.31	.....	1.31	.01	1.46	.15	.89
New Mexico	1.18	1.76	4.77	.52	1.18	.....	2.29	1.08	.49
New York	2.75	2.10	3.73	.72	1.84	.02	1.79	.21	1.51
North Carolina	2.40	3.85	8.64	.....	2.02	1.03	.....	.28	5.43
North Dakota	.91	2.64	8.42	.....	3.86	.36	.40	.51	.78
Ohio [3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oklahoma	.....	.47	.16	.....	.92	.20	.20	.54	.....
Oregon	1.73	2.29	23.85	.16	1.49	.87	.55	.22	.19
Pennsylvania	4.61	2.89	2.45	.75	2.56	.01	.66	.31	1.19
Rhode Island	.76	1.77	1.13	.08	2.60	.....	.82	.06	.29
South Carolina	.15	2.31	1.15	.10	.18	1.53	.05	.07	.73
South Dakota	2.17	1.63	6.16	.33	3.43	.13	.22	.02	1.84
Tennessee [2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas [1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah [2]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vermont	5.25	1.17	20.44	.45	2.11	2.66	.....	.17	12.26
Virginia	2.50	3.66	5.15	.....	1.90	.08	.....	.54	4.01
Washington	2.83	1.10	14.65	.92	1.88	1.42	1.32	.49	.35
West Virginia	1.97	2.16	.35	.....	2.47	.07	.27	.73	1.22
Wisconsin	4.60	3.14	4.16	.15	4.10	.29	.88	.24	3.31
Wyoming	2.64	.23	11.83	.....	1.55	.....	.....	.17	2.30

[1] Reports received weekly.
[2] Reports received annually.
[3] Reports not received at time of going to press.

TYPHOID FEVER IN SANTA ANA, CALIFORNIA.

The State health officer of California reports an outbreak of typhoid fever in Santa Ana, Calif., which occurred in January.

CITY REPORTS FOR WEEK ENDED FEBRUARY 2, 1924.

Diphtheria.—The reports indicate that diphtheria was slightly less prevalent during the week ended February 2, 1924, than it was during the preceding week. The number of cases reported is slightly less than the number reported for the week ended February 3, 1923.

Measles.—In the States and cities along the northern Atlantic coast the number of cases of measles reported during January was

somewhat less than the number reported for January of last year, but in most other sections of the country the reports of cases of this disease were less favorable. In the Mountain and Pacific Coast States measles appeared to be much more prevalent than it was one year ago.

Influenza.—During the week ended February 2, 1924, 105 cities reported 82 deaths from influenza. For the corresponding week last year the same cities reported 310 deaths from this disease.

Scarlet fever.—Cities in all sections of the country, except in the East North Central States, reported more cases of scarlet fever than were reported during the corresponding week of the year 1923. There was a slight improvement over the week ended January 26, 1924.

Smallpox.—Some improvement is noted in the reports of smallpox for the week ended February 2, 1924, over the reports for the preceding week, especially in the cities located on the Pacific coast, where the disease has been prevalent this winter. Fortunately, the disease has been of mild type, only one death being reported for the week from the cities included in the table.

Typhoid fever.—Reports for the first five weeks of this year, while higher than those for last year, show but few cases of typhoid fever as compared with reports for previous years.

City reports for week ended February 2, 1924.

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

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

Division, State, and city.	Chicken pox, cases reported.	Diphtheria.		Influenza.		Measles, cases reported.	Mumps, cases reported.	Pneumonia, deaths reported.	Scarlet fever.	
		Cases, estimated expectancy.	Cases reported.	Cases reported.	Deaths reported.				Cases, estimated expectancy.	Cases reported.
NEW ENGLAND.										
Maine—										
Lewiston	1	1	0	0	0	2	0	0	1	2
Portland	15	3	5	0	0	1	0	2	3	4
New Hampshire—										
Concord	.....	0	0	0	0	3	.....	0	1	0
Manchester	.....	3	1	0	0	2	.....	1	3	2
Vermont—										
Barre	2	0	0	0	0	1	0	0	1	0
Burlington	1	1	3	0	0	2	0	1	1	2
Massachusetts—										
Boston	70	68	86	0	0	150	24	21	53	161
Fall River	5	6	6	1	0	0	4	7	3	11
Sprinfield	6	4	2	0	0	41	13	3	8	9
Worcester	12	6	29	2	0	3	43	8	10	23

City reports for week ended February 2, 1924—Continued.

Division, State, and city.	Chicken pox, cases reported.	Diphtheria.		Influenza.		Measles, cases reported.	Mumps, cases reported.	Pneumonia, deaths reported.	Scarlet fever.	
		Cases, estimated expectancy.	Cases reported.	Cases reported.	Deaths reported.				Cases, estimated expectancy.	Cases reported.
NEW ENGLAND—con.										
Rhode Island—										
Pawtucket	10	1	0	0	0	1	12	3	1	6
Providence	0	15	12	.....	2	4	0	17	8	67
Connecticut—										
Bridgeport	0	10	6	0	0	0	0	3	5	19
Hartford	.....	8	13	0	0	11	.....	2	6	58
New Haven	15	6	2	1	1	12	38	7	7	10
MIDDLE ATLANTIC.										
New York—										
Buffalo	0	28	14	0	0	18	0	20	18	25
New York	226	284	193	82	22	653	176	266	171	252
Rochester	10	12	7	0	0	1	6	7	11	8
Syracuse	36	8	11	0	0	78	9	7	18	57
New Jersey—										
Camden	1	3	10	0	0	0	0	8	1	1
Newark	58	29	18	4	0	49	91	15	22	29
Trenton	6	7	10	0	0	51	1	2	3	4
Pennsylvania—										
Philadelphia	175	73	111	2	2	35	0	81	54	60
Pittsburgh	99	24	29	.....	5	12	118	56	20	55
Reading	0	4	7	0	0	2	0	1	1	1
Scranton	8	6	3	0	0	4	0	4	5	1
EAST NORTH CENTRAL.										
Ohio—										
Cincinnati	28	16	10	.....	4	99	3	12	11	20
Cleveland	47	34	37	10	0	18	79	30	39	31
Columbus	.....	4	5	.....	2	3	.....	7	7	11
Toledo	0	9	16	.....	1	16	0	7	14	24
Indiana—										
Fort Wayne	0	4	6	0	0	0	0	5	2	5
Indianapolis	44	16	14	.....	3	7	146	17	10	5
South Bend	.....	2	8	0	0	1	.....	2	2	12
Terre Haute	1	1	0	0	0	0	0	0	3	3
Illinois—										
Chicago	171	151	121	13	3	83	105	78	157	116
Cicero	1	3	0	0	0	0	37	0	2	1
Peoria	.....	2	0	0	0	0	.....	3	7	0
Springfield	6	3	0	2	2	0	1	5	2	1
Michigan—										
Detroit	90	78	65	.....	4	77	66	46	77	109
Flint	18	10	2	0	0	34	13	8	10	5
Grand Rapids	.....	3	5	0	0	0	.....	6	8	12
Wisconsin—										
Madison	7	1	4	0	0	3	1	0	1	8
Milwaukee	52	19	11	1	0	3	.....	0	39	42
Racine	3	1	2	0	0	1	0	2	4	21
Superior	1	1	1	0	0	1	.....	4	3	3
WEST NORTH CENTRAL.										
Minnesota—										
Duluth	13	3	1	0	0	2	1	2	5	9
Minneapolis	128	22	36	.....	2	14	4	10	24	64
St. Paul	.....	12	9	0	0	20	.....	16	21	54
Iowa—										
Davenport	1	1	8	0	.....	0	0	.....	1	3
Des Moines	1	4	1	0	.....	16	0	.....	10	7
Sioux City	0	1	5	0	.....	0	0	.....	2	0
Waterloo	0	1	1	0	.....	0	9	.....	1	4
Missouri—										
Kansas City	24	10	9	3	3	110	8	13	13	17
St. Joseph	2	4	1	0	0	50	1	8	3	4
St. Louis	32	64	49	0	0	11	25	.....	28	62
North Dakota—										
Fargo	0	0	0	0	0	0	0	0	1	0
Grand Forks	.....	0	0	0	0	4	.....	0	1	1

City reports for week ended February 2, 1924—Continued.

Division, State, and city.	Chicken pox, cases reported.	Diphtheria.		Influenza.		Measles, cases reported.	Mumps, cases reported.	Pneumonia, deaths reported.	Scarlet fever.	
		Cases, estimated expectancy.	Cases reported.	Cases reported.	Deaths reported.				Cases, estimated expectancy.	Cases reported.
WEST NORTH CENTRAL—continued.										
South Dakota—										
Sioux Falls	.....	1	0	0	0	5	.....	0	3	3
Nebraska—										
Lincoln	.....	2	6	.....	1	115	.....	3	3	2
Omaha	13	6	4	0	0	31	.....	10	11	5
Kansas—										
Topeka	18	2	5	0	0	95	0	2	1	4
Wichita	12	2	5	0	0	180	79	3	3	0
SOUTH ATLANTIC.										
Delaware—										
Wilmington	.....	2	6	0	0	8	.....	0	4	2
Maryland—										
Baltimore	148	34	29	30	4	40	19	45	34	57
Cumberland	.....	0	1	1	0	0	.....	1	1	1
Frederick	.....	1	0	0	0	8	.....	0	.....	2
District of Columbia—										
Washington	61	17	5	0	0	13	0	21	20	42
Virginia—										
Lynchburg	6	1	2	0	0	0	0	0	1	0
Norfolk	0	1	2	0	0	42	0	4	2	3
Richmond	8	5	4	0	0	29	1	5	4	3
Roanoke	1	2	2	0	0	0	3	0	1	3
West Virginia—										
Charleston	0	2	0	0	0	0	1	2	1	0
Huntington	4	1	0	0	0	0	0	2	1	1
Wheeling	6	2	0	0	0	3	8	2	1	7
North Carolina—										
Raleigh	11	0	3	0	0	8	0	1	1	4
Wilmington	0	0	1	0	0	32	0	0	0	0
Winston-Salem	9	0	1	0	0	111	0	3	2	18
South Carolina—										
Charleston	0	2	1	0	0	83	0	3	1	0
Columbia	2	1	0	0	0	53	6	5	0	0
Greenville	0	0	0	0	0	41	2	2	0	0
Georgia—										
Atlanta	0	2	1	9	0	8	1	25	3	2
Brunswick	0	0	0	1	0	18	0	1	0	0
Savannah	2	1	0	7	1	17	0	3	2	0
Florida—										
St. Petersburg	3	.....	0	0	0	29	0	0	.....	1
Tampa	1	1	1	0	0	13	0	0	1	0
EAST SOUTH CENTRAL.										
Kentucky—										
Covington	1	1	1	.....	1	3	0	2	1	4
Lexington	5	1	0	0	0	4	0	5	1	0
Louisville	6	12	5	4	0	1	3	12	5	3
Tennessee—										
Memphis	22	4	7	0	0	38	6	24	1	3
Nashville	4	1	0	.....	1	7	0	9	3	0
Alabama—										
Birmingham	13	3	5	12	3	64	10	8	2	2
Mobile	0	0	0	.....	1	0	0	3	0	0
Montgomery	.....	1	1	.....	1	5	.....	4	0	0
WEST SOUTH CENTRAL.										
Arkansas—										
Fort Smith	2	1	0	0	.....	0	0	.....	0	2
Little Rock	4	1	2	0	.....	3	9	.....	2	0
Louisiana—										
New Orleans	4	14	19	10	9	104	0	21	3	4
Shreveport	0	.....	0	0	0	8	0	4	.....	1
Oklahoma—										
Tulsa	6	3	0	0	.....	8	0	.....	1	2

City reports for week ended February 2, 1924—Continued.

Division, State, and city.	Chicken pox, cases reported.	Diphtheria.		Influenza.		Measles, cases reported.	Mumps, cases reported.	Pneumonia, deaths reported.	Scarlet fever.	
		Cases, estimated expectancy.	Cases reported.	Cases reported.	Deaths reported.				Cases, estimated expectancy.	Cases reported.
WEST SOUTH CENTRAL—continued.										
Texas—										
Dallas	3	6	8	1	1	372	9	5	2	7
Galveston	0	2	0	0	0	0	0	3	1	0
Houston	.....	3	7	0	0	50	.....	12	1	3
San Antonio	2	2	2	0	0	27	0	19	0	2
MOUNTAIN.										
Montana—										
Billings	5	0	0	0	0	28	0	0	1	0
Great Falls	4	2	0	0	0	204	0	0	1	6
Helena	0	.....	0	0	0	8	0	0	.....	0
Missoula	0	0	3	0	0	25	0	1	1	0
Idaho—										
Boise	0	1	0	0	0	8	0	0	1	0
Colorado—										
Denver	29	10	15	0	0	60	2	11	10	16
Pueblo	0	5	1	0	0	179	0	5	1	1
New Mexico—										
Albuquerque	2	1	0	0	0	3	0	2	4	1
Utah—										
Salt Lake City	23	3	2	0	0	493	24	4	4	1
Nevada—										
Reno	0	0	0	0	0	0	0	0	0	0
PACIFIC.										
Washington—										
Seattle	10	6	5	0	.....	935	3	.....	9	7
Tacoma	8	1	5	0	.....	162	4	.....	4	2
Oregon—										
Portland	8	6	18	0	0	59	0	0	5	6
California—										
Los Angeles	117	27	80	15	4	69	2	16	15	88
Sacramento	12	2	3	.....	1	4	0	2	1	22
San Francisco	.....	22	68	9	0	117	.....	10	17	5

Division, State, and city.	Population July 1, 1923, estimated.	Smallpox.			Tuberculosis, deaths reported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
NEW ENGLAND.										
Maine—										
Lewiston	33,790	0	0	0	0	0	1	0	0	9
Portland	73,129	0	0	0	1	0	0	0	8	17
New Hampshire—										
Concord	22,408	0	0	0	2	0	0	0	.....	19
Manchester	81,383	0	0	0	0	0	0	0	.....	19
Vermont—										
Barre	[1] 10,008	0	0	0	0	0	0	0	1	4
Burlington	23,613	0	1	0	0	0	0	0	2	12
Massachusetts—										
Boston	770,400	0	0	0	8	2	4	0	13	209
Fall River	120,912	0	0	0	4	1	0	0	10	40
Springfield	144,227	0	0	0	2	0	0	0	0	33
Worcester	191,927	0	0	0	4	0	0	0	3	57
Rhode Island—										
Pawtucket	68,799	0	0	0	0	0	1	0	0	22
Providence	242,378	0	0	0	2	1	0	0	5	28

[1] Population Jan. 1, 1920.

City reports for week ended February 2, 1924—Continued.

Division, State, and city.	Population July 1, 1923, estimated.	Smallpox. Cases, estimated expectancy.	Smallpox. Cases reported.	Smallpox. Deaths reported.	Tuberculosis, deaths reported.	Typhoid fever. Cases, estimated expectancy.	Typhoid fever. Cases reported.	Typhoid fever. Deaths reported.	Whooping cough, cases reported.	Deaths, all causes.
NEW ENGLAND—continued.										
Connecticut—										
Bridgeport	[1] 143,555	0	0	0	1	0	0	0	0	32
Hartford	[1] 138,036	0	0	0	0	0	0	0	.....	26
New Haven	172,967	0	0	0	0	0	0	0	9	35
MIDDLE ATLANTIC.										
New York—										
Buffalo	536,718	0	0	0	7	2	0	1	42	160
New York	5,927,625	0	0	0	[2] 104	11	11	3	107	1,574
Rochester	317,867	0	0	0	3	1	0	0	12	64
Syracuse	184,511	0	0	0	1	1	6	0	5	40
New Jersey—										
Camden	124,157	0	0	0	3	1	0	0	2	48
Newark	438,699	0	2	0	4	1	2	0	8	90
Trenton	127,390	0	0	0	3	0	0	0	3	30
Pennsylvania—										
Philadelphia	1,922,788	0	1	0	43	5	5	1	52	562
Pittsburgh	613,442	0	0	0	14	1	1	0	44	252
Reading	110,917	0	0	0	1	1	1	0	0	44
Scranton	140,636	0	0	0	0	0	0	0	0	22
EAST NORTH CENTRAL.										
Ohio—										
Cincinnati	406,312	1	1	0	9	0	0	0	26	13
Cleveland	888,519	3	1	0	15	1	1	0	43	20
Columbus	261,082	1	0	0	7	0	2	0	.....	80
Toledo	268,338	2	19	0	6	1	1	0	0	
Indiana—										66
Fort Wayne	93,573	2	1	0	3	0	0	0	0	34
Indianapolis	342,718	3	18	0	8	1	0	0	14	100
South Bend	76,709	1	2	0	0	0	0	0	.....	13
Terre Haute	68,939	0	0	0	0	0	0	0	17	8
Illinois—										
Chicago	2,886,121	2	5	0	41	4	10	3	35	727
Cicero	55,968	0	0	0	0	0	0	0	10	3
Peoria	79,675	2	0	0	0	0	0	0	.....	17
Springfield	61,833	1	0	0	0	0	0	0	1	25
Michigan—										
Detroit	995,668	6	29	0	18	2	1	1	15	272
Flint	117,968	3	2	0	2	0	0	0	3	31
Grand Rapids	145,947	1	0	0	2	0	0	0	.....	36
Wisconsin—										
Madison	42,519	2	1	0	1	0	0	0	7	6
Milwaukee	481,595	4	0	0	14	1	0	0	42	.....
Racine	64,393	0	3	0	0	0	0	0	0	12
Superior	[1] 39,671	4	11	0	1	0	0	1	.....	12
WEST NORTH CENTRAL.										
Minnesota—										
Duluth	106,289	1	6	1	1	1	0	0	1	27
Minneapolis	409,125	15	4	0	6	2	0	0	.....	94
St. Paul	241,891	15	22	0	5	0	2	0	.....	68
Iowa—										
Davenport	61,262	2	11	.....	.....	0	0	.....	0	.....
Des Moines	140,923	6	0	.....	.....	0	0	.....	0	.....
Sioux City	79,662	3	0	.....	.....	0	0	.....	0	.....
Waterloo	39,667	0	0	.....	.....	0	0	.....	12	.....
Missouri—										
Kansas City	351,819	6	0	0	7	1	2	0	17	81
St. Joseph	78,232	2	0	0	3	0	1	0	2	37
St. Louis	863,853	2	0	0	12	2	0	0	55	220
North Dakota—										
Fargo	24,841	0	0	0	0	0	0	0	0	4
Grand Forks	14,547	1	0	.....	.....	0	0	.....	.....	.....

[1] Population Jan. 1, 1920.

[2] Pulmonary only.

City reports for week ended February 2, 1924—Continued.

Division, State, and city.	Population July 1, 1923, estimated.	Smallpox.			Tuberculosis deaths reported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
WEST NORTH CENTRAL—continued.										
South Dakota—										
Sioux Falls	29,206	2	0	0	0	0	0	0	.....	8
Nebraska—										
Lincoln	58,761	1	1	0	0	0	0	0	.....	18
Omaha	204,382	8	0	0	6	0	0	0	.....	64
Kansas—										
Topeka	52,555	0	0	0	0	0	0	0	4	7
Wichita	79,261	2	4	0	1	0	0	0	5	36
SOUTH ATLANTIC.										
Delaware—										
Wilmington	117,728	0	0	0	0	0	1	0	.....	29
Maryland—										
Baltimore	773,580	0	0	0	25	2	1	0	22	252
Cumberland	32,361	0	0	0	0	1	0	0	.....	11
Frederick	11,301	0	0	0	0	0	0	0	.....	5
District of Columbia—										
Washington	[1] 437,571	1	12	0	15	1	0	0	19	150
Virginia—										
Lynchburg	30,277	0	0	0	1	0	0	1	30	11
Norfolk	159,089	0	0	0	5	1	0	0	4	.....
Richmond	181,044	0	0	0	2	0	0	0	9	55
Roanoke	55,502	0	0	0	1	0	0	0	.....	15
West Virginia—										
Charleston	45,597	0	0	0	1	0	0	1	0	22
Huntington	57,918	0	1	0	2	0	0	0	0	21
Wheeling	[1] 56,208	0	0	0	1	1	14	1	2	19
North Carolina—										
Raleigh	29,171	0	0	0	0	0	0	0	11	9
Wilmington	35,719	0	0	0	0	0	0	0	0	11
Winston-Salem	56,230	2	0	0	1	0	0	0	0	20
South Carolina—										
Charleston	71,245	0	1	0	3	0	0	0	.....	25
Columbia	39,688	0	1	0	1	0	0	0	0	32
Greenville	25,789	0	2	0	0	0	0	0	2	5
Georgia—										
Atlanta	222,963	1	42	0	6	0	1	0	0	90
Brunswick	15,937	0	0	0	0	0	0	0	0	7
Savannah	89,448	0	0	0	2	0	0	0	0	31
Florida—										
St. Petersburg	24,403	.....	0	0	1	.....	0	0	2	10
Tampa	56,050	0	0	0	3	1	1	0	1	12
EAST SOUTH CENTRAL.										
Kentucky—										
Covington	57,877	0	0	0	1	0	0	0	0	11
Lexington	43,673	0	0	0	1	0	0	0	2	17
Louisville	257,671	1	0	0	8	1	0	0	0	101
Tennessee—										
Memphis	170,067	4	0	0	6	0	0	0	4	88
Nashville	121,128	1	1	0	3	0	0	0	8	49
Alabama—										
Birmingham	195,901	0	4	0	8	1	1	0	0	72
Mobile	63,858	0	0	0	0	0	0	1	0	21
Montgomery	45,383	0	0	0	1	0	0	0	.....	14
WEST SOUTH CENTRAL.										
Arkansas—										
Fort Smith	30,635	1	0	.....	.....	0	0	.....	6	.....
Little Rock	70,916	0	0	.....	.....	0	0	.....	1	.....
Louisiana—										
New Orleans	404,575	4	1	0	9	2	0	0	0	182
Shreveport	54,590	.....	8	0	1	.....	0	0	0	24
Oklahoma—										
Tulsa	102,018	1	2	.....	.....	0	0	.....	1	.....

[1] Population Jan. 1, 1920.

City reports for week ended February 2, 1924—Continued.

Division, State, and city.	Population July 1, 1923, estimated.	Smallpox.			Tuberculosis, deaths reported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
WEST SOUTH CENTRAL—contd.										
Texas—										
Dallas	177,274	2	3	0	1	1	0	0	0	43
Galveston	46,877	0	0	0	2	1	0	0	0	11
Houston	154,970	0	0	0	3	0	0	0	.....	45
San Antonio	184,727	0	0	0	11	0	1	0	0	68
MOUNTAIN.										
Montana—										
Billings	16,927	0	0	0	0	0	0	0	0	4
Great Falls	27,787	2	1	0	0	0	0	0	2	8
Helena	[1] 12,037	.....	0	0	0	.....	0	0	0	11
Missoula	[1] 12,668	1	1	0	0	0	0	0	0	5
Idaho—										
Boise	22,806	0	0	0	0	0	0	0	0	2
Colorado—										
Denver	272,031	15	0	0	7	0	0	0	15	69
Pueblo	43,519	0	0	0	3	0	0	0	1	15
New Mexico—										
Albuquerque	16,648	0	0	0	7	0	0	0	0	12
Utah—										
Salt Lake City	126,241	5	0	0	5	0	1	0	7	36
Nevada—										
Reno	12,429	0	0	0	0	0	0	0	0	2
PACIFIC.										
Washington—										
Seattle	[1] 315,685	6	3	.....	.....	0	2	.....	0	.....
Tacoma	101,731	2	6	.....	.....	0	0	.....	0	.....
Oregon—										
Portland	273,621	4	20	0	3	1	0	0	0	.....
California—										
Los Angeles	666,853	1	136	0	33	1	4	1	10	256
Sacramento	69,950	0	0	0	1	0	1	0	0	26
San Francisco	539,038	1	3	0	11	1	0	0	.....	158

Division, State, and city.	Cerebrospinal meningitis.		Lethargic encephalitis.		Pellagra.		Poliomyelitis (infantile paralysis).		
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases, estimated expectancy.	Cases.	Deaths.
NEW ENGLAND.									
Massachusetts—									
Boston	1	0	0	1	0	0	1	1	0
Springfield	0	0	1	0	0	0	0	0	0
MIDDLE ATLANTIC.									
New York—									
New York	3	3	5	5	0	0	1	0	0
Pennsylvania—									
Philadelphia	0	0	2	1	0	0	0	0	0
Pittsburgh	0	1	0	0	0	0	0	0	0
EAST NORTH CENTRAL.									
Ohio—									
Cincinnati	0	0	1	1	0	0	0	0	0
Cleveland	1	1	0	0	0	0	0	0	0
Illinois—									
Chicago	1	1	2	1	0	0	1	0	0

[1] Population Jan. 1, 1920.

City reports for week ended February 2, 1924—Continued.

Division, State, and city.	Cerebrospinal meningitis.		Lethargic encephalitis.		Pellagra.		Poliomyelitis (infantile paralysis).		
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases, estimated expectancy.	Cases.	Deaths.
EAST NORTH CENTRAL—con.									
Michigan—									
Detroit	1	0	0	0	0	0	0	1	1
Wisconsin—									
Madison	0	0	1	1	0	0	0	0	0
Milwaukee	1	1	0	0	0	0	0	0	0
Racine	1	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL.									
Minnesota—									
Minneapolis	0	1	0	0	0	0	0	0	0
Missouri—									
St Louis	1	2	0	0	0	0	0	0	0
SOUTH ATLANTIC.									
Maryland—									
Baltimore	0	0	0	0	0	0	1	1	0
District of Columbia—									
Washington	1	1	0	0	0	0	0	0	0
West Virginia—									
Charleston	0	1	0	0	0	0	0	0	0
North Carolina—									
Winston-Salem	0	0	0	0	1	1	.....	0	0
South Carolina—									
Columbia	0	0	0	0	0	1	0	0	0
Georgia—									
Atlanta	1	0	0	0	0	0	0	0	0
Brunswick	0	1	0	0	0	0	.....	0	0
EAST SOUTH CENTRAL.									
Alabama—									
Montgomery	0	0	0	0	0	1	0	0	0
WEST SOUTH CENTRAL.									
Louisiana—									
New Orleans	1	0	0	0	0	0	0	0	0
Texas—									
Houston	0	1	0	0	0	0	0	0	0
MOUNTAIN.									
Montana—									
Great Falls	0	0	0	1	0	0	0	0	0
PACIFIC.									
Oregon—									
Portland	0	0	1	0	0	0	0	0	0
California—									
Los Angeles	0	0	1	1	0	0	0	0	0
San Francisco	0	0	0	1	0	0	0	0	0

The following table gives a summary of the reports from 105 cities for the five-week period ended February 2, 1924. The cities included in this table are those whose reports have been published for all five weeks in the Public Health Reports. Seven of these cities did not report deaths. The aggregate population of the cities reporting cases was estimated at nearly 29,000,000 on July 1, 1923, which is the latest date for which estimates are available. The cities reporting deaths had nearly 27,700,000 population on that date. The

number of cities included in each group and the aggregate population are shown in a separate table below.

Summary of weekly reports from cities, December 30, 1923, to February 2, 1924.

DIPHTHERIA CASES.

	1924, week ended—				
	Jan. 5.	Jan. 12.	Jan. 19.	Jan. 26.	Feb. 2.
Total	1,339	1,385	1,453	1,387	1,288
New England	172	123	130	141	161
Middle Atlantic	401	476	488	479	410
East North Central	341	352	333	305	291
West North Central	133	102	125	124	125
South Atlantic	59	86	112	72	59
East South Central	19	20	15	17	19
West South Central	46	36	38	41	38
Mountain	26	19	19	27	21
Pacific	142	171	193	181	164

MEASLES CASES.

Total	4,008	4,997	5,479	5,571	5,908
New England	175	161	176	170	227
Middle Atlantic	611	639	699	770	899
East North Central	283	356	328	296	330
West North Central	525	444	383	411	522
South Atlantic	553	439	499	507	556
East South Central	45	92	98	121	118
West South Central	352	375	370	552	564
Mountain	300	458	434	723	1,005
Pacific	1,164	2,033	2,492	2,021	1,687

SCARLET FEVER CASES.

Total	1,550	1,731	1,883	1,925	1,858
New England	281	287	330	327	368
Middle Atlantic	386	445	461	530	492
East North Central	413	404	487	419	405
West North Central	190	265	227	245	227
South Atlantic	122	113	128	142	145
East South Central	10	27	26	27	12
West South Central	22	20	21	15	19
Mountain	20	25	36	24	24
Pacific	106	145	167	196	166

SMALLPOX CASES.

Total	178	341	454	379	368
New England	0	2	0	1	0
Middle Atlantic	1	1	1	6	3
East North Central	28	58	92	64	74
West North Central	25	49	45	50	36
South Atlantic	37	52	81	55	58
East South Central	2	7	4	3	5
West South Central	2	10	6	3	12
Mountain	2	2	4	2	2
Pacific	81	160	221	195	178

Summary of weekly reports from cities, December 30, 1923, to February 2, 1924—Con.

TYPHOID FEVER CASES.

	1924, week ended—				
	Jan. 5.	Jan. 12.	Jan. 19.	Jan. 26.	Feb. 2.
Total	63	81	77	69	78
New England	2	1	11	1	5
Middle Atlantic	11	29	30	21	26
East North Central	26	27	16	18	14
West North Central	3	1	3	2	5
South Atlantic	7	9	7	11	18
East South Central	6	0	3	8	1
West South Central	4	8	6	4	1
Mountain	1	2	0	0	1
Pacific	3	4	1	4	7

INFLUENZA DEATHS.

Total	46	76	68	70	82
New England	4	9	2	6	3
Middle Atlantic	13	24	32	14	29
East North Central	7	17	11	23	18
West North Central	0	4	10	4	5
South Atlantic	6	5	1	6	5
East South Central	3	6	4	3	7
West South Central	3	5	2	6	10
Mountain	2	1	0	1	0
Pacific	8	5	6	7	5

PNEUMONIA DEATHS.

Total	852	1,105	1,054	1,002	1,120
New England	52	80	78	51	73
Middle Atlantic	328	418	422	409	463
East North Central	182	203	202	177	222
West North Central	59	67	73	70	64
South Atlantic	97	143	132	129	123
East South Central	35	43	30	50	62
West South Central	28	44	47	60	64
Mountain	28	32	30	20	21
Pacific	43	45	40	36	28

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

Group of cities.	Number of cities reporting—		Aggregate population of cities reporting—	
	Cases.	Deaths.	Cases.	Deaths.
Total	105	98	28,898,320	27,694,454
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	12	2,515,330	1,686,636
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,855	911,855
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,524,209

FOREIGN AND INSULAR.

CUBA.

Communicable Diseases—Provinces.

Communicable diseases have been reported in the provinces of Cuba as follows:

NOVEMBER 11-20, 1923.

Province.	Cases reported—							
	Chicken pox.	Diphtheria.	Malaria.	Measles.	Paratyphoid fever.	Poliomyelitis (infantile paralysis).	Scarlet fever.	Typhoid fever.
Camaguey			79		1			2
Habana	2	5	70	1	4		2	18
Matanzas		2					1	
Oriente		1	96					12
Pinar del Rio								2
Santa Clara			5					4
Total	2	8	250	1	5		3	38

NOVEMBER 21-30, 1923.

Camaguey	1		130					
Habana		10	28	1			1	19
Matanzas			1				1	1
Oriente			79		1			14
Pinar del Rio			7		2			1
Santa Clara	2		3		6	1	1	11
Total	3	10	248	1	9	1	3	46

DECEMBER 1-10, 1923.

Camaguey			76					6
Habana	3	6	27		1		1	4
Matanzas	1		2					7
Oriente			93					19
Pinar del Rio			1		2			1
Santa Clara		3	2		8			7
Total	4	9	201		11		1	44

DECEMBER 11-20, 1923.

Camaguey			89					6
Habana	5	11	30				3	8
Matanzas	4							
Oriente		1	89					3
Pinar del Rio		1						
Santa Clara	1		6		2			4
Total	10	13	214		2		3	21

DECEMBER 21-31, 1923.

Camaguey		1	75					1
Habana	3	11	21	2	1		2	6
Matanzas								2
Oriente		1	79					4
Pinar del Rio					3			2
Santa Clara	1	2	4					4
Total	4	15	179	2	4		2	19

JAVA.

Plague—November, 1923.

During the month of November, 1923, there were reported in the island of Java, 942 deaths from plague. For distribution of mortality by Provinces, see below.

MALTA.

Communicable Diseases—December 16-31, 1923.

During the period December 16 to 31, 1923, communicable diseases were reported in the island of Malta as follows: Broncho-pneumonia, 4 cases; chicken pox, 2 cases; influenza, 6 cases; trachoma, 9 cases; undulant fever, 19 cases; whooping cough, 159 cases. (Population, 216,702.)

MEXICO.

Smallpox Among the Military—Tampico.

According to information received under date of January 27, 1924, 12 cases of smallpox were reported, January 23, among soldiers arrived at Tampico the same date from Irapuato, State of Guanajuato, Mexico. One of the reported cases terminated fatally January 25, 1924.

VENEZUELA.

Epidemic Smallpox—Caracas.

Under date of January 22, 1924, a serious epidemic of smallpox was reported at Caracas, Venezuela.

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

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

Reports Received During Week Ended February 22, 1924. [1]

PLAGUE.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Nanking	Dec. 30-Jan. 12			Present.
Java				Nov. 1-30, 1923: Deaths, 942.
Province-				
Djokjakarta	Nov. 1-30		37	
Kedoe	do		444	
Pekalongan	do		46	
Samarang	do		118	
Soerabaya	do		2	
Soerakarta	do		295	
Madagascar:				
Tananarive Province	Nov. 16-30	42	32	
Tananarive Town	do	8	8	
Portugal:				
Lisbon	Dec. 31-Jan. 6		1	

[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 February 22, 1924.

SMALLPOX.

Place.	Date.	Cases.	Deaths.	Remarks.
Brazil:				
Porto Alegre	Dec. 23-29		1	
Rio de Janeiro	Jan. 6-12	2	1	
Canada:				
Alberta—				
Calgary	Jan. 27-Feb. 2	2		
Manitoba—				
Winnipeg	Feb. 2-8	10		
Quebec—				
Montreal	Feb. 3-9	1		
Chile:				
Antofagasta	Jan 13-19	3		
Concepcion	Dec. 25-31		1	
China:				
Canton	Dec. 23-Jan. 13			Present.
Chungking	Dec. 23-29			Endemic.
Foochow	Dec. 31-Jan. 12			Present.
Harbin	Jan. 1-7	5		
Hongkong	Dec. 9-29	259	204	
Nanking	Dec. 30-Jan. 12			Do.
Shanghai	Jan. 6-12	3	8	Cases, foreign.
Greece:				
Saloniki	Nov. 5-11		1	
Java:				
West Java—				
Batavia	Dec. 8-14	4		
Latvia				Nov. 1-30, 1923: Cases, 1.
Manchuria:				
Dairen	Dec. 31-Jan. 6	1		
Mexico:				
Mexico City	Jan. 6-26	40	23	Including municipalities in Federal district.
Tampico	Jan. 27			Present among military.
Vera Cruz	Jan. 21-27		1	
Portugal:				
Lisbon	Dec. 31-Jan. 19	10	3	
Oporto	Jan. 13-26	14	7	
Spain:				
Barcelona	Jan. 3-9		2	
Valencia	Jan. 21-26	24	2	
Switzerland:				
Berne	Jan. 6-12	1		
Lucerne	Nov. 1-30	34		
Do	Dec. 1-31	26		
Tunis:				
Tunis	Jan. 15-21	3		
Turkey:				
Constantinople	Jan. 6-12	1		
Union of South Africa:				
Northern Rhodesia	Dec. 18-24	10	2	
Venezuela:				
Caracas	Jan. 22			Epidemic.
On vessel:				
S. S. Tupper	Jan. 20-26			At Gonaives, Haiti.

TYPHUS FEVER.

Algeria:				
Algiers	Jan. 11-20	1	1	
Chile:				
Talcahuano	Dec. 31-Jan. 6	1		
China:				
Chungking	Dec. 23-29			Endemic.
Latvia	Nov. 1-30	1		Nov. 1-30, 1923: Cases, 1; paratyphus, 2 cases.
Rumania:				
Kishineff District	Nov. 1-31	10		
Spain:				
Barcelona	Jan. 3-9		2	
Turkey:				
Constantinople	Dec. 30-Jan. 12	3		
Union of South Africa:				
Johannesburg	Oct. 1-Nov. 30		2	

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

Reports Received from December 29, 1923, to February 15, 1924.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Hongkong	Nov. 18–24	1		
India				Oct. 14–Dec. 8, 1923: Cases, 9,691; deaths, 6,153.
Calcutta	Nov. 11–Dec. 29	85	69	
Madras	Nov. 25–Dec. 29	15	5	
Do	Dec. 30–Jan. 5	1		
Rangoon	Nov. 11–Dec. 29	8	5	
Siam:				
Bangkok	Nov. 18–Dec. 8	4	2	
Turkey:				
Constantinople	Dec. 2–8		1	

PLAGUE.

Azores:				
St. Michael Island	Oct. 20–Nov. 10	9	5	At localities 3 to 9 miles from port of Ponta Delgada.
Bolivia:				
La Paz	Oct. 1–31		3	
Brazil:				
Bahia	Nov. 11–Dec. 22	5	3	
British East Africa:				
Kenya—				
Mombasa	Oct. 14–20	1	1	Infected rats, 2. Dec. 9–15, 1923: Cases, 4; deaths, 2; removed from vessel arrived Dec. 11, 1923.
Nairobi	Nov. 1–21	40		In rural districts, several hundred.
Tanganyika				To Nov. 24, 1923: Cases, 39; deaths, 25.
Uganda	Aug. 1–Oct. 31	734	719	
Canary Islands:				
Las Palmas	Oct. 15–Nov. 15	14	14	
San Juan de la Rambla	Dec. 11	1		Locality 52 km. from Teneriffe.
Celebes Island	Nov. 30			Epidemic.
Ceylon:				
Colombo	Nov. 11–Dec. 15	22	15	Plague rodents, 18.
China:				
Nanking	Dec. 16–29			Present.
Ecuador:				
Guayaquil	Nov. 16–Dec. 15	15	6	Rats taken, 35,070; found infected, 94.
Jipijapa	do			Present.
Quito	Nov. 1–30	11	1	
Vino del Milagro	Dec. 1–15	1		
Egypt				Jan. 1–Dec. 27, 1923: Cases, 1,518; deaths, 724.
City—				
Alexandria	Jan. 1–Dec. 27	65	33	Date of last case, Nov. 29, 1923.
Cairo	do	2	2	Date of last case, Dec. 25, 1923.
Port Said	do	51	29	Date of last case, Sept. 10, 1923.
Suez	do	46	24	Date of last case, Dec. 26, 1923.
Hawaii:				
Honokaa				Jan. 8–10, 1924: Three plague-infected rodents.
Paauhau				Dec. 14, 1923: One plague rat.
India				Oct. 14–Dec. 8, 1923: Cases, 25,781; deaths, 17,435.
Bombay	Oct. 28–Dec. 22	5	5	
Calcutta	Dec. 23–29	1	1	
Karachi	Nov. 11–Dec. 29	42	33	
Do	Dec. 30–Jan. 5	1	1	
Madras Presidency	Nov. 4–Dec. 29	1,657	1,021	
Rangoon	do	20	15	
Indo-China:				
Saigon	Oct. 28–Dec. 8	19	6	Including 100 square kilometers in surrounding country.
Iraq:				
Bagdad	Nov. 11–Dec. 8	6	4	

[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 December 29, 1923, to February 15, 1924—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Java				Oct. 1-31, 1923: Deaths, 902.
Province—				
Djokjakarta	Oct. 1-31		56	
Kedoe	do		252	
Pekalongan	do		25	
Samarang	do		218	
Socrabaya	do		3	Nov. 11-24, 1923: Cases, 2; deaths, 2.
Soerakarta	do		348	
Madagascar:				
Tananarive Province	Oct. 1-Nov. 15	111	105	Bubonic, pneumonic, septicemic.
Tananarive town	do	46	46	Other localities: Cases, 55; deaths, 53.
Paraguay:				
Asuncion	Dec. 18	6	4	
Peru				Nov. 1-Dec. 31, 1923: Cases, 38 deaths, 24.
Locality—				
Canete	Nov. 1-30	1	1	
Chancay	Dec. 1-31	2		
Chepen	Nov. 1-30	1		
Chiclayo	Nov. 1-Dec. 31	2	1	
Lima (city)	do	22	15	
Lima (country)	do	8	7	
Lurin	do	2		
Portugal:				
Lisbon	Dec. 13-21	7		
Portuguese West Africa:				
Angola—				
Loanda	Oct.-Nov	59	23	
Siam:				
Bangkok	Nov. 4-Dec. 8	3	2	
Spain:				
Malaga	Dec. 17	2		
Straits Settlements:				
Singapore	Nov. 11-Dec. 22	4	4	
Syria:				
Beirut	Nov. 1-Dec. 10	3		
Turkey:				
Constantinople	Dec. 2-22	6	3	
Union of South Africa:				
Cape Province—				
Uitenhage district	Dec. 9-15			Plague rodent found vicinity Haarhoff's kraal farm.
Orange Free State—				
Kroonstad district	Dec. 16-27	7	3	At Zandfontein farm, Bothaville area: Cases, white, 4; native, 3; deaths, white, 1; native, 2.
Wonderfontein farm	Dec. 2-8	4		Vicinity of Hoopstad. At Hoopstad, Dec. 9-15, 1923, one death of case previously reported.
On vessel:				
Ship ——	Dec. 11	4	2	At Mombasa, British East Africa.

SMALLPOX.

Algeria:				
Algiers	Nov. 1-30	1		
Arabia:				
Aden	Dec. 16-22	1		Imported.
Belgium:				
Brussels	do	10		
Bolivia:				
La Paz	Oct. 1-Dec. 31	45	15	
Brazil:				
Pernambuco	Nov. 4-Dec. 1	15	3	
Porto Rico	Dec. 30-Jan. 5		1	
Rio de Janeiro	Nov. 18-24	3	1	
Sao Paulo	Sept. 3-9	1		
British East Africa:				
Tanganyika Territory	Sept. 30-Oct. 27	14	1	
Uganda	Sept. 1-30	6	1	
Zanzibar	Sept. 1-Oct. 31	116	18	Sept. 1-30, 1923: In areas 27 miles from town of Zanzibar. Oct. 1-31, 1923: In vicinity, 1 case, 1 death. In Mkokotoni district, 30 cases, 14 deaths reported.

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

Reports Received from December 29, 1923, to February 15, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Canada:				
British Columbia—				
Vancouver	Dec. 2–29	10		
Do	Dec. 30–Jan. 26	17		
Manitoba—				
Winnipeg	Nov. 25–Dec. 29	21	(1)	
Do	Dec. 30–Feb. 1	37		
New Brunswick—				
Madawaska County	Dec. 8–15	1		
Restigouche County	Jan. 20–26	1		
Ontario				Jan. 1–31, 1924: Cases, 50.
Fort William and Port Arthur.	Dec. 16–29	3		Occurring at Fort William.
Quebec—				
Montreal	Nov. 30–Jan. 26	3		
Saskatchewan—				
Regina	Dec. 9–15	1		
Ceylon:				
Colombo	Nov. 11–17	1		Port case.
Chile:				
Concepcion	Oct. 1–Nov. 30		13	Nov. 12–Dec. 3, 1923: Deaths, 5.
Talcahuano	Nov. 26–Dec. 2	3		Dec. 22, 1923: Five cases present.
Valparaiso	Dec. 9–15		1	
China:				
Amoy	Nov. 18–Dec. 8			Present.
Chungking	Nov. 4–Dec. 15			Present and endemic.
Foochow	do			Present.
Hongkong	Oct. 28–Dec. 8	459	426	
Manchuria—				
Harbin	Nov. 12–Dec. 22	36		
Nanking	Dec. 2–15			Do.
Shanghai	Dec. 29			Prevalent.
Chosen (Korea):				
Seoul	Nov. 1–30	1		
Colombia:				
Buenaventura	Nov. 18–Dec. 15	8		
Ecuador:				
Esmeraldas	Nov. 16–30	4		
Quito	Nov. 1–30	167	26	
Egypt:				
Port Said	Nov. 24–Dec. 2	1		
Esthonia				Nov. 1–30, 1923: Cases, 32.
Greece:				
Saloniki	Oct. 22–Nov. 4		7	
Guadeloupe (West Indies)				Jan. 2–16, 1924: Present.
Basse Terre	Dec. 18			Present.
Do	Jan. 12			Do.
Marie Galante	Dec. 18			Off shore island; present.
Moule	Jan. 12			Present.
Pointe à Pitre	Dec. 18			Present in vicinity.
India				Oct. 14–Dec. 8, 1923: Cases, 6,544; deaths, 1,356.
Bombay	Oct. 28–Dec. 22	46	19	
Calcutta	Dec. 16–29	4	4	
Karachi	Dec. 30–Jan. 5	2		
Madras	Nov. 4–Dec. 29	23	3	
Do	Dec. 30–Jan. 5	5		
Rangoon	Nov. 4–Dec. 29	12	4	
Indo-China:				
City—				
Saigon	Nov. 4–Dec. 8	69	34	Including 100 square kilometers of surrounding country.
Iraq:				
Bagdad	Oct. 24–Dec. 8	25	16	
Jamaica				Nov. 25–Dec. 29, 1923: Cases, 115.
Do				Dec. 30, 1923–Jan. 19, 1924: Cases 57. (Reported as alastrim.)
Kingston	Nov. 25–Dec. 29	3		
Do	Dec. 30–Jan. 19	4		
Java:				
East Java—				
Surabaya	Oct. 28–Nov. 24	219	28	
West Java—				
Batavia	Oct. 27–Dec. 7	60	12	
Latvia				Oct. 1–31, 1923: Cases, 3.

[1] The report of 3 deaths from smallpox in Winnipeg from Nov. 25 to Dec. 15, 1923, was erroneous. The type of the disease is said to be mild, and no death has occurred.

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

Reports Received from December 29, 1923, to February 15, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Mexico:				
Manzanillo	Dec. 4–10	5	1	
Mexico City	Nov. 25–Dec. 29	32		Including municipalities in Federal District.
Do	Dec. 30–Jan. 5	9		Do.
Vera Cruz	Nov. 3–Dec. 30		4	
Do	Jan. 6–13		1	
Persia:				
Teheran	Sept. 24–Oct. 23		1	
Poland				Sept. 23–Nov. 3, 1923: Cases, 22; deaths, 3.
Portugal:				
Lisbon	Nov. 11–Dec. 29	19	10	
Do	Dec. 30–Jan. 12	11		
Oporto	Nov. 25–Dec. 29	39	23	
Do	Dec. 30–Jan. 12	22	13	
Siam:				
Bangkok	Oct. 28–Dec. 8	33	18	Nov. 25–Dec. 1, 1923: Epidemic
Siberia:				
Dauria Station	Oct. 21			Present. Locality on Chita Railway, Manchurian frontier.
Sierra Leone:				
Sherbro District—				
Tagbail	Nov. 1–15	3		
Spain:				
Barcelona	Nov. 15–Dec. 26		2	
Valencia	Nov. 25–Dec. 29	152	12	
Do	Dec. 30–Jan. 13	64	9	
Straits Settlements:				
Singapore	Dec. 16–22	1		
Switzerland:				
Berne	Nov. 18–Dec. 22	12		Corrected.
Syria:				
Aleppo	Nov. 25–Dec. 1	1		In vicinity, at Djisr Choughour.
Damascus	Nov. 16–Dec. 15	7		
Tunis:				
Tunis	Oct. 27–Nov. 2	5	1	
Do	Jan. 8–14		1	
Turkey:				
Constantinople	Nov. 11–Dec. 8	3		
Union of South Africa				Oct. 1–31, 1923: Colored, cases, 41; deaths, 2; white, cases, 3.
Cape Province	Oct. 28–Dec. 8			Outbreaks.
Natal	Oct. 28–Nov. 3			Do.
Northern Rhodesia	Dec. 4–10	10		
Orange Free State	Oct. 28–Nov. 24			Do.
Transvaal	Nov. 18–Dec. 1			Do.
Johannesburg	Nov. 25–Dec. 15	3		
Uruguay:				
Montevideo	Oct. 1–31	1		
On vessels:				
S. S. Torres	Jan. 14	1		At New Orleans quarantine station from Tampico, Mexico, via ports. Case in seaman signed on at Galveston, Tex., on outward voyage.
S. S. Vasari	Dec. 31	1		At Trinidad, West Indies, from Buenos Aires, Argentina. Vessel left Buenos Aires Dec. 15, 1923, for New York, via Santos, Rio de Janeiro, Trinidad, Barbados.

TYPHUS FEVER.

Algeria:				
Algiers	Nov. 1–Dec. 31	7	3	
Bolivia:				
La Paz	Oct. 1–Dec. 31	43	5	
Bulgaria:				
Sofia				Nov. 18–Dec. 15, 1923: Paratyphus fever; cases, 17.

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

Reports Received from December 29, 1923, to February 15, 1924—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Chile:				
Antofagasta	Dec. 2-8	4		
Concepcion	Oct. 1-Nov. 30		4	Dec. 11-24, 1923: Deaths, 3.
Talcahuano				Dec. 5, 1923: 3 cases under treatment.
Valparaiso	Nov. 25-Dec. 15		29	Dec. 24, 1923: In hospital, 34 cases.
China:				
Antung	Nov. 12-Dec. 30	5		
Chungking	Nov. 18-24			Present.
Ecuador:				
Quito	Nov. 1-30	14	1	
Egypt:				
Alexandria	Nov. 19-Dec. 23	3		
Do	Jan. 8-14	1		
Cairo	Sept. 10-Nov. 11	28	5	
Esthonia				Nov. 1-30, 1923: Paratyphus fever, cases, 8.
Finland				Dec. 1-15, 1923: Paratyphus fever, cases, 15.
Hungary				July 1-Aug. 31, 1923: Cases, 24.
Latvia				Oct. 1-31, 1923: Cases, 12; paratyphus fever, 7; recurrent typhus, 3.
Mexico:				
Mexico City	Nov. 25-Dec. 29	86		Including municipalities in Federal district.
Do	Dec. 30-Jan. 5	8		Do.
Norway:				
Stavanger	Dec. 25-31	1		
Palestine:				
Jaffa	Jan. 1-7	1		
Persia:				
Teheran	Sept. 24-Oct. 23		1	
Poland				Sept. 23-Nov. 3, 1923: Cases, 207; deaths, 21. Recurrent typhus, cases, 22.
Spain:				
Barcelona	Nov. 29-Dec. 12		2	
Madrid	Dec. 1-31		7	
Turkey:				
Constantinople	Nov. 11-Dec. 29	15	1	
Union of South Africa				Oct. 1-31, 1923: Colored, 287 cases, 58 deaths; white, 2 cases; total, 289 cases, 58 deaths.
Cape Province				Oct. 1-31, 1923: Colored, cases, 245; deaths, 47.
Do	Oct. 28-Dec. 8			Outbreaks.
Natal				Oct. 1-31, 1923: Colored, cases, 4; deaths, 3.
Do	Oct. 28-Nov. 3			Outbreaks.
Durban	Nov. 24-Dec. 1	73		Cases occurring among native stevedores in the harbor area of the port and confined to one barracks.
Orange Free State				Oct. 1-31, 1923: Colored, cases, 25; deaths, 8.
Do	Dec. 15			Outbreaks.
Transvaal				Oct. 1-31, 1923: Colored, cases, 13.
Do	Oct. 28-Dec. 1			Outbreaks.
Johannesburg	Nov. 11-Dec. 15	2		
Venezuela:				
Maracaibo	Dec. 16-22		1	
Yugoslavia:				
Croatia—				
Zagreb	Dec. 2-15	3		
Serbia—				
Belgrade	Nov. 25-Dec. 1	1		

YELLOW FEVER.

Brazil:				
Pernambuco City	Nov. 16	3	2	