PUBLIC HEALTH REPORTS

VOL. 38 JULY 20, 1923 No. 29

Intensive Localized Distribution of the Spore of B. Botulinus and Probable Relation of Preserved Vegetables to Type Demonstrated.

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In a report to the Surgeon General,[1] August, 1921, the writer gave a brief summary of an intensive investigation of outbreaks and distribution of the spore of *B. botulinus* in a mountain valley, the Yakima Valley, in the State of Washington. A recent investigation, also carried out in the State of Washington, adds further evidence to the localization of distribution of the spore of *B. botulinus* in a comparatively limited area.

In the southern part of Okanogan County, Wash., situated at an approximate elevation of 2,000 feet and near the Columbia River, there is a ranch of several hundred acres that offers, in the examinations of its soil and preserved food products, the best field evidence to substantiate this interesting epidemiological observation. The following table illustrates this particular point:

TABLE I.—*Botulism, H. Ranch, Okanogan County, Wash.*

Year.	Number of cases.	Number of deaths.	Type of food.	Result of laboratory examinations.
Unknown [1]	Unknown.	([2])	Unknown	None made.
1921	2	1	Home-canned beef	Do.
1922	3	3	Home-canned string beans.	Positive, type A botulinus toxin.
1922	None.	None.	Home-canned corn [3]	Do.
1923	None.	None.	Home-canned string beans.[4]	Do.

[1] It is stated that several families of Colville Indians working on this ranch died under mysterious circumstances several years ago. The recent outbreaks have focused attention on these cases, and it is now suspected that they were botulism.
[2] Several families of Indians.
[3] Taken from the dining table of a family living on the ranch by the county health officer.
[4] The quality of the beans was tested by feeding them to chickens. The chickens later died with typical symptoms of fowl botulism.

It will be noted that this ranch has had two outbreaks of botulism in human beings, which were undoubtedly botulism and in one of

[1] Annual Report of the Surgeon General of the Public Health Service for the Fiscal Year 1921, p. 17.

which the food involved (home-canned string beans) was proved to contain a toxin (M. L. D. for mice of 1/100,000 of a c. c.) which was neutralized with botulinus antitoxin, type A. The other outbreak was stated to have been due to home-canned beef; but this was not proved by laboratory examination. This is the first outbreak to be recorded in the United States as being caused by this food. An explanation of the high toxicity rate of the foods involved may be found in the distribution of the spores of *B. botulinus* in the soil of this ranch and in the method of preservation. The cold pack method was used, and it is not unlikely that the temperature at which the processing was done was totally inadequate. It was frankly stated that no attention was paid to either the "fill" or the relation of altitude to the processing temperatures (boiling point).

The bacteriological and toxicological examination of the soil yielded interesting and conflicting data. The garden soil was said to have been moderately manured at irregular intervals. Two samples of garden soil, when tested colorimetrically, showed a reaction of pH 7.1, and a third a reaction of pH 7.3. The reaction of the uncultivated soil, or virgin soil, was pH 6.6. The following table shows briefly the results of the examination of the soil for the spores of *B. botulinus*, after enrichment in beef-heart media:

TABLE II.—*Results of soil examination for B. botulinus, H. Ranch, Okonogan County, Wash.*

Description of soil.	Amounts of soil used.			Type of toxin demonstrated.
	100 grams.	10 grams.	1 gram.	
Garden No. 1	+	+	+	B
Garden No. 2	+	+	+	B
Garden No. 3	+	+	+	B
Virgin soil, No. 4	+	+	+	B

There are to be noted two things: First, there was a uniformity of results in the various amounts of soil used. This was unexpected, as laboratory data in such experiments usually show variations, which have been explained by assuming that there was an uneven distribution of spores in the specimen; secondly, the same type of toxin was produced—type B.

The demonstration of type A toxin in the foods and type B toxin in the soil demands explanation. These anomalous results were obtained on three different occasions. It seems probable that both organisms are present in the soil, and that the food substances, corn and string beans, are more favorable for the growth of type A organisms and that those of type B are suppressed. This observation may have a bearing on the fact that nearly all human outbreaks of botulism in the United States have been due to type A.

Experimental evidence on the point referred to is shown by the following: 20 grams of commercial canned corn and string beans previously autoclaved in open petri dishes for 30 minutes at 17 pounds' pressure were added to 100 c. c. flasks of beef heart media, together with 1 gram of virgin soil from the ranch, heated to 80° C. for one hour, and overlaid with sterile vaseline. In all, 18 cultures so treated were incubated at 37° C. for 10 days. Two flasks containing soil but no vegetables served as controls. Tests for the presence of toxin and the determination of type were made by intraperitoneal inoculation into mice.

The results are shown in the following table:

TABLE III.—*Tests for the presence of toxin.*

Description of specimen.	Result of test.	Type of toxin.
Virgin soil, 1 gram (control)	1 positive	B
Do	1 negative	
Autoclaved corn+virgin soil, 8 specimens	4 positives 4 negatives	A (4)
Autoclaved string beans+virgin soil, 8 specimens	3 positives 5 negatives	A (2); B (1)
Controls on autoclaved corn in duplicate	Negative	
Controls on autoclaved beans in duplicate	Negative	

It will be seen that of two specimens of virgin soil alone in 1 gram amounts, one produced a toxin, type B, *B. botulinus*. This same soil in 1 gram amounts (eight specimens) with the addition of autoclaved corn yielded 4 positives, type A. With the addition of beans, out of 8 specimens tested, 3 were positive. Two of these proved to contain type A and one type B toxin, *B. botulinus*.

Obviously the soil contains both types. The results obtained when the soil alone is planted in ordinary beef-heart medium indicate that type B is predominant. When the soil, together with the corn or beans, is planted in the same medium, type A appears to predominate, indicating that the corn and beans have an enriching effect or favor the growth of type A. There is the other possibility that type B, being the less resistant type to heat, may be destroyed, although this is unlikely to have occurred in the above experiment, as all temperatures were the same, namely, 80° C., one hour.

The following experiment seems to prove that both types, A and B, were present in the soil. Some of the original cultures obtained by planting the soil in the beef-heart medium, which gave a positive test for the presence of type B toxin by the mouse test, were boiled for 30 minutes. Agar shake cultures were made from these and incubated. From these shake cultures, 37 colonies morphologically resembling those of *B. botulinus* were fished with pasteur pipettes under the dissecting microscope and placed in beef-heart enrichment media. Ten of these, after 10 days incubation at 37° C., when

tested, were positive for type A toxin. No type B colonies were isolated. There is, of course, the possibility that the liver agar may have supplied something that favors the growth of type A; or that in the process of boiling, type B organisms were destroyed; or that the writer unintentionally "fished" type A colonies only and missed those of type B.

To test further the effect of heat, the original soil samples in beef-heart media, 12 in number, were detoxified by heating to 80° C. for one hour. Twenty grams of autoclaved corn were added to each of two flasks, and 20 grams of autoclaved beans to each of two other flasks. These flasks were then boiled for 30 minutes and incubated at 37° C. for 10 days. Four flasks similarly treated were not boiled. Two flasks without corn or beans were used as controls for each treatment, with and without boiling. The results are briefly shown in Table IV.

TABLE IV.—*Experiments to determine the effect of boiling on the types of organisms.*

BOILED SPECIMENS.

No.	Sample.	Type of toxin demonstrated
1	Detoxified soil specimen+autoclaved corn	A
2	do	B
3	Detoxified soil specimen+autoclaved beans	A
4	do	B
5	Detoxified soil specimen (control)	B
6	do	

UNBOILED SPECIMENS.

7	Detoxified soil specimen+autoclaved corn	A
8	do	B
9	Detoxified soil specimen+autoclaved beans	
10	do	
11	Detoxified soil specimen (control)	
12	do	

The above experiment does not offer any great amount of additional evidence as to the effect of temperature on types, but indicates rather definitely that with the addition of corn and beans type A toxin was produced in three out of eight instances in soil in which previously type B had been demonstrated.

It has been stated that type A colonies were fished from liver agar shake cultures made from the growth, in beef-heart medium, obtained from the soil which apparently contained only type B organisms. It was thought that by the addition of soil to beef-broth cultures of these type A colonies it might be possible to demonstrate type B toxin. One gram of the original soil was therefore added to four of these cultures. Two cultures without the addition of soil served as controls. All the cultures were subjected to a temperature of 80° C.

for one hour and were then incubated 10 days. Tests for toxin production showed type A in all the cultures.

TABLE V.

Test.	Result.
4 cultures from liver agar "shake" colonies which yielded type A originally, plus 1 gram original soil, heated to 80° C., 1 hour.	All proved positive type A toxin.
Control.—2 cultures from liver agar "shake" colonies which yielded type A originally, heated to 80° C., 1 hour.	Both cultures proved positive type A toxin.

These results indicate the stability of the type A, once the toxin is formed in the food, even when there is the addition of soil in which type B toxin can generally be demonstrated. However, it would seem more probable that there were many more type A spores in the culture than there were type B spores in the soil and that type A developed and type B was suppressed.

COMMENT.

The above experiments are offered as evidence that probably many soils contain spores of both type A and type B, *B. botulinus*, which, when inoculated into suitable media, are capable of producing their selective type of poison. (The conditions that induce the formation of specific types in preserved foods are far from being clearly understood.) It is, however, not unlikely that foods like corn and string beans, when contaminated with soil containing the spores of both type A and type B, *B. botulinus*, are responsible in some manner for the production of one or the other type of toxin, and these experiments suggest a more frequent occurrence of type A toxin. We have observed on this ranch curious and interesting anomalous data. Furthermore, the data render doubtful any dogmatic assertion as to any particular type of toxemia being limited to foods grown in any particular geographical region. The experimental and field data here presented do not furnish any conclusive evidence that one type is a mutant of the other, but rather surprisingly indicate that type B is the predominating type in both garden and virgin soil of this restricted area of a western State. Likewise, it is conclusive that this ranch has had a remarkable concentration of outbreaks and that home canning of vegetables grown on its soil under the present conditions is unsafe.

Acknowledgments.—It is desired to acknowledge with thanks the cooperation of Dr. Paul West, county health officer of Okanogan County, Wash.

PHYSIOLOGICAL EFFECTS OF HIGH TEMPERATURES AND HUMIDITIES WITH AND WITHOUT AIR MOVEMENT.

Effects on Body Temperature and Pulse Rate of Subjects at Rest.

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INTRODUCTION.

For several years the writers have been studying various problems of the effect of air conditions in metal mines upon underground workers. In 1918 a short study was made in certain hot and deep mines, and brief reports were published in the Engineering and Mining Journal (August, 1920) and in the Public Health Reports (vol. 36, No. 4, January 28, 1921).[1]

In 1921 a more extended study was made (also in hot and deep metal mines) for the purpose of ascertaining the limiting conditions imposed upon underground workers by the physiological effect of various air movements, temperatures, and humidities. The determinations were made both with the subjects at work and at rest. It is intended to report this later investigation in a series of short papers, each paper to consider one particular phase of the work. The present paper deals with the effect on body temperature and pulse rate of subjects in still air as compared with moving air, at temperatures from 90° to 100° F., and of 100 per cent relative humidity, the subjects at rest.

SUBJECTS USED IN THE INVESTIGATION.

In order to avoid the criticism that data taken upon investigators working in mines only intermittently would not be representative of results taken on everyday mine workers, there were used in the 1921 study, in addition to one of the previous investigators, two miners, one having just left employment as general mine laborer in some of the worst places in one of the hottest mines in the district, and the other having been employed in various capacities in the mines in which the experimental work was being conducted. These three subjects, who were the reagents supplying most of the data, were vigorous and in good health, and thoroughly accustomed to mining work in hot, humid air. All of them remained in good physical condition throughout the period of making the tests. In addition, during the underground field work, data were taken on various other underground employees of the mines entered.

[1] A preliminary study of the physiological effects of high temperatures and high humidities in metal mines, Public Health Reports, vol. 36, No. 4, Jan. 28, 1921, pp. 116–129. Reprint No. 639.

DATA RECORDED.

Blood pressure (taken with a Tycos sphygmomanometer), pulse rate, and rectal body temperature, together with any symptoms of dizziness, headache, weakness, perspiration, etc., were recorded. The air temperature and humidity were taken by a sling psychrometer, and the air velocities by an anemometer. The exact time of taking the readings was also noted. One of the investigators acted as recorder of all the data taken.

The outside, or surface, air temperature and humidity were usually observed before going underground, and the air temperature, body temperature, pulse rate, and blood pressure were taken in the washhouse or "dry" just before going underground. After going underground and before entering the place chosen for the test, a full set of readings was made in a near-by place where it was quiet enough to use the blood pressure apparatus. Such data were also taken in the test place, when feasible.

Incident to taking the physiological data on the subjects, Doctor Sayers necessarily participated in the stay in the hot places and, therefore, was able not only to observe the effect of conditions on the subjects, but also to experience the symptoms himself. Engineering data, such as psychrometric, barometric, and anemometric readings, were made by Mr. Harrington, who also acted as one of the subjects throughout the investigation.

The subjects sat still in the hot or test places, and during the test period exerted no physical effort other than the small amount involved in taking readings of blood pressure, pulse rate, body temperature, psychrometric data, etc. Often it was found necessary to omit taking blood pressure and pulse in the actual test place, in which cases this was done just before entering and just after leaving the test place. In a few instances the data obtained during the test were greatly influenced by a very slight amount of work done by a subject just before beginning the test.

In practically all of the above experimental work samples of the air were taken, the analyses of which showed nearly normal air as far as carbon dioxide and oxygen were concerned, and no carbon monoxide or other poisonous gases were found. The air in the place where the tests at 95° F. or over were made was as nearly absolutely saturated as can be obtained underground, and psychrometric readings were taken frequently enough to make certain that any changes occurring during the test would be discovered.

Figure 1 shows the effect on the body temperature of one subject (No. 5) of still air at 95°, 96°, and 100° F., and of moving air at 91¾°, 95°, 98½°, and 100° F. The effect of these various air temperatures is shown on the graph by using zero to represent the subject's tem-

perature at the time of starting the test and then indicating the elevation during the stay in the test place by degrees above zero. The time is calculated in minutes, beginning with zero as the time of entering the test place. The solid lines on the graph represent the air temperatures without any air movement; the dotted lines indicate those with air movement.

A similar graph made for the other subjects would show practically the same general results, so that the one representing the effects on the temperature of subject No. 5 may be considered fairly typical.

EFFECT WITHOUT AIR MOVEMENT.

Still saturated air at 91½° F. caused the following symptoms in a subject: (1) A definite rise in body temperature; (2) moderate increase in pulse rate (18); (3) profuse sweating and feeling of weakness. The after effects were dizziness and weakness.

Although subject No. 5 was the least readily affected of the three (2, 4, and 5), Figure 1 shows that there was a decided increase in his

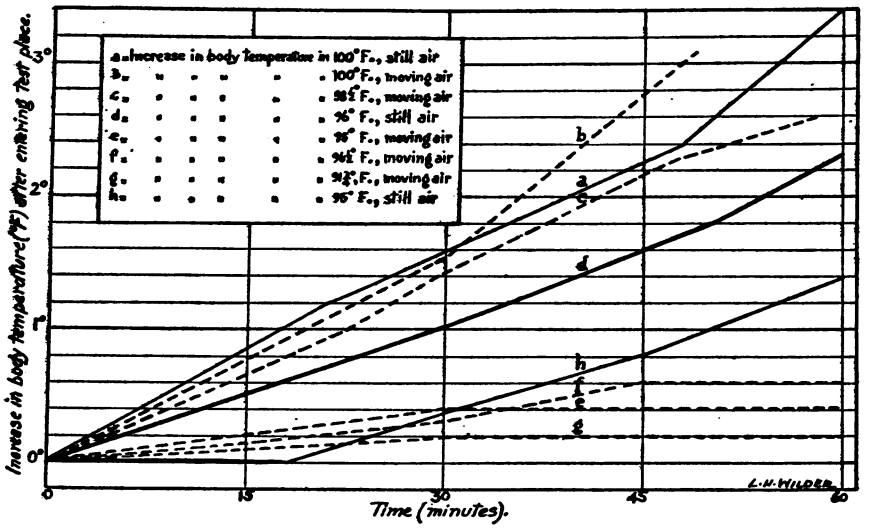

FIG. 1.—Effect of high temperatures and humidities on a subject in still and moving air.

body temperature in the still, saturated air—at the close of the experiment, the rise above the entrance temperature being as follows: At 95° there was an increase of 1.4°; at 96° an increase of 2.3°, and at 100° an increase of 3.4°. The effect of the still, saturated air on the pulse rate was similar to that on the temperature. The rate of increase at 95° and 96° was practically the same, although the rate at the end of the test in still, saturated air was slightly higher at 95° temperature than at 96°, probably due to slightly more exertion by the subject during the 95° test than during the 96° test. The 100°

still, saturated air increased the pulse rate very rapidly, the rate being 20 beats above that at 95° and 96° at the end of the test, or a total increase of 74 beats above normal.

While sitting approximately an hour in still, saturated air, with temperature at 95° (Table I A), all the subjects were decidedly distressed, the body temperature going to 101.4° with subject No. 5, to 101.5° with subject No. 2, to 102.5° with subject No. 1, and to 102.5° with subject No. 4, the two latter being somewhat adversely affected by having exerted a little more effort than Nos. 2 and 5 (No. 1 in taking the readings and No. 4 in walking and climbing previous to undergoing the test).

TABLE I A.—*Effects of resting one hour in still air at 95° wet bulb, 95° dry bulb (100 per cent relative humidity).*

Location.	Time of starting experiment.	Air conditions.					Gas analysis.	Subject No. 1.	Subject No. 2.				Subject No. 4.				Subject No. 5.				Remarks.
		Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).	Velocity.		Body temperature.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	
	a. m.					*Feet.*															
In office "dry"	8.05	49	60	24.38	47	.....	.....	99.0	126	80	98.4	88	118	74	98.6	108	110	78	99.3	96	All felt well; all had slept well, and apparently suffered no ill effects from previous day in 100° dead, saturated air.
At rest at safety station on 2,700 level.	10.00	87	89	24.38	92	20	.....	100.8	103	78	100.0	104	108	78	100.8	144	96	62	99.8	110	Spent from 9 to 10 a. m. trying to find a place to work and had to return to safety station. Subjects Nos. 1 and 4 had exercised considerably and were perspiring profusely; Nos. 2 and 5 were perspiring a little.
Same location in dead air.	10.32	95	95	24.38	100	0	CO_2 0.13 O_2 20.72 N 79.15	101.2	.....	.....	100.0	.....	.....	.....	101.2	.....	.....	.....	99.8	.....	At 10.15 all went into dead air at 95° and sat still. All were perspiring freely, but felt fairly well. There seemed to be some H_2S in the air, and the quality not very good. Place was damp, with many drippers, but not falling at actual place where readings were taken; water running on the floor was 98° F. At 10.32 all were sweating profusely but not feeling badly. No. 4 noted difficulty in breathing about 10.40 and was puffing a little: at 10.50 he was puffing and said he couldn't last much longer. All were perspiring very freely at 10.50 and said place was stuffy. No. 2 was dizzy while standing up to take air samples.
Same location	11.05	.....	.....	.....	.....	.....	.....	101.2	.....	.....	100.6	.....	.....	.....	102.0	.....	.....	.....	100.6	.....	At 11 Nos. 1, 2, and 4 said that the next 15 minutes were going to "seem like a year." All were perspiring very freely, especially Nos. 1 and 4; Nos. 2 and 4 had slight chilly sensations. All puffed on making very slight exertion and were breathing deeply.
Do	11.09	.....	.....	.....	.....	.....	.....	101.4	.....	.....	101.0	158	.....	.....	102.2	170	.....	.....	101.0	156	Left the hot location at 11.14.
Went 100 feet to air	11.19	87	89	24.38	92	20	.....	102.5	103	66	101.5	144	102	68	102.5	168	98	68	101.4	142	No. 2 complained of being chilly at resting place; No. 5 felt better but not good; Nos. 1 and 4 were dizzy.

While the subjects sat still for about an hour in this hot, humid, stagnant air the pulse rate increased from 104 to 158, or 54 beats for subject No. 2; from 144 to 170, or 26 beats for subject No. 4; and from 110 to 156, or 46 beats for subject No. 5.

All subjects perspired very profusely, their clothing being thoroughly saturated and their shoes being partly filled with sweat; they were weak and dizzy, and all "panted" or "puffed" upon making the slightest effort. Subject No. 4 had acute soreness of the chest or lungs which did not disappear until about 10 hours after leaving the hot location.

The resultant effects of sitting for an hour in the hot, humid air at 96° F. (Table II A) without air movement and doing no work other than occasional taking of body temperature or of temperature of the surrounding air, essentially checked those in still, saturated air at 95°; and all who underwent the hour test felt that it was a difficult experience.

TABLE II A.—*Effects of resting one hour in still air at 96° wet bulb, 96° dry bulb (100 per cent relative humidity).*

Location.	Time of starting experiment.	Air conditions.					Gas analysis.	Subject No. 1.	Subject No. 2.				Subject No. 4.				Subject No. 5.				Remarks.
		Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).	Velocity.		Body temperature.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	
	a. m.					*Feet.*															
In office "dry".....	8.00	53	72½	24.05	63	.....	.....	99.0	122	82	98.9	88	126	82	98.2	104	116	72	99.2	96	All were feeling fine. At 8.55 Nos. 2 and 5 only just moist. Nos. 1 and 4 were sweating fairly freely.
Went into dead air..	9.00	96	96	.....	100	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	All stood it well except for the profuse perspiration. Place was damp with drippers falling fairly freely and water running on floor. Nos. 1, 2, and 5 feeling well, but puffing a little. Heads were clear. No. 1 apparently not feeling quite as well as others; sweating heavily. No. 4 did not move from a reclining position and, while sweating freely, did not puff or get dizzy.
At 2,700 station, in dead air.	9.30	96	96	26.42	100	0	CO_2 0.08 O_2 20.69 N 79.23	99.7	.....	.....	100.0	.....	.....	.....	99.5	.....	.....	.....	100.0	.....	
Same location.....	9.50	.....	.....	.....	.....	.....	.....	100.0	.....	.....	100.7	.....	.....	.....	100.6	.....	.....	.....	100.8	.....	No. 1's head felt a little full and he was puffing some. No. 2 felt effort and puffed, but could stay much longer. No. 5 felt fine, but puffed some on standing up. No. 4 felt about normal until he arose to take pulse, then he felt somewhat dizzy and puffed a little. All were sweating very freely.
Do.....	9.57	.....	.....	.....	.....	.....	.....	100.4	.....	.....	101.2	128	.....	.....	101.7	134	.....	.....	101.3	132	
In moving air.....	10.05	87	89	26.42	92	20–30	.....	101.0	108	78	101.4	132	104	72	101.8	174	98	64	101.6	154	No. 1 was puffing perceptibly, felt a little dizzy, especially on standing, and was sweating very profusely. No. 2 had a little headache, especially on standing. No. 4 was slightly dizzy on standing, but felt he had had a comparatively easy time. No. 5 felt fairly well, but puffed on standing. All were perspiring *very freely*. No. 4 had much sweat in boots.

Sitting an hour in still, saturated air at 100° F. (Table III A) caused symptoms similar to those found at lower temperatures, but they appeared earlier. Each subject quickly had definite increase of body temperature and pulse rate, subjects Nos. 2 and 5 having a maximum body temperature of 102.3°, subject No. 1 of 103.3°, and subject No. 4 of 103.8°. Subject No. 2 had a maximum pulse rate of 152, subject No. 5 of 168, and subject No. 4 of more than 175.

All perspired very profusely (even the shoes being partly filled with perspiration) and were definitely weak and dizzy upon leaving the place of the test. The symptoms persisted for about an hour afterwards. This was a very trying test for all.

TABLE III A.—*Effects of resting one hour in still air at 100° wet bulb, 100° dry bulb (100 per cent relative humidity).*

Location.	Time of starting experiment.	Air conditions.					Gas analysis.	Subject No. 1.	Subject No. 2.				Subject No. 4.				Subject No. 5.				Remarks.
		Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).	Velocity.		Body temperature.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	
	a. m.					*Feet.*															
At 2,700 level in drift.	8.50	87	90	26.58	89	20	.....	99.8	128	84	99.6	90	118	78	99.5	130	106	74	98.8	104	Nos. 2 and 5 sweating just a little; Nos. 1 and 4 sweating profusely. Had taken no exercise except walking about 50 feet on the level. An Italian who had pushed a car a few hundred feet in this air for two months said he was about ready to quit; he was sweating profusely and looked thin; his skin felt hot. Another Italian was not even sweating; was apparently unaffected.
In 2,706 level, drippers falling from roof.	9.30	100	100	26.58	100	[1] 0	.....	100.3	....	....	100.2	....	....	....	100.6	....	....	....	100.0	....	All were sweating very profusely, but seemed to be feeling well as yet. Entered this place at 9.15. Skin of fingers shriveled at 9.40. No. 1 had chilly sensations on back at 9.40.
In same location.....	10.00	....	....	.....	....	[1] 0	.....	101.4	....	....	101.1	149	....	....	101.7	175	....	....	101.2	166	
Do.....	10.18	....	....	.....	....	[1] 0	.....	102.6	....	....	102.2	....	....	....	103.5	....	....	....	102.2	....	
In air.....	10.20	87	88½	26.58	94	[1] 0	.....	103.3	110	68	102.3	152	104	62	103.8	168	102	68	102.3	168	At this time all felt fit; were somewhat dizzy, but did not feel, in general, as badly as when leaving the hot location.

[1] Absolutely still.

EFFECT WITH AIR MOVEMENT.

In the moving air at 91¼° and 98 per cent relative humidity (no tests being made on subject No. 5 at this temperature in still air). Figure 1 shows that the body temperature of subject No. 5 increased very little by sitting still for an hour, but that it was definitely increased in moving, saturated air 95°, more seriously affected by moving, saturated air 96½°, and still more so by saturated air at 98½° temperature. Subject No. 5 (as well as the other subjects) was unable to endure for the full hour the moving, saturated air at 100°, and the graph shows that this air, though endured less than the usual hour, ran his body temperature 3.1 degrees above that at the beginning of the test, or to above 102° F.

As was the case in the still air, the effect of the moving air on the pulse of subject No. 5 was similar to the effect of the moving air on his temperature, except that in the 95° moving air his pulse did not rise as did his temperature, but fell slightly instead. This was probably due to the fact that his pulse was high at the beginning of this experiment on account of exertion in helping set the fan; otherwise it is probable that his pulse rate would have remained practically the same throughout this test. There was an increase, from the initial rate, of 12 beats in the 91¼° moving air, of 20 beats in the 96½° moving air, of 38 beats in the 100° moving air (in 49 minutes, as he could not remain the full hour), and 40 beats in the 98½° moving air.

TABLE I.—*Effects of resting one hour in moving air at 91½° wet bulb, 91¾° dry bulb (98 per cent relative humidity).*

Location.	Time of starting experiment.	Air conditions.					Gas analysis.	Subject No. 1.	Subject No. 2.				Subject No. 4.				Subject No. 5.				Remarks.
		Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).	Velocity.		Body temperature.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	
	a. m.					*Feet.*															
At 2,700 station.....	9.07	89	91	26.44	92	0	.....	100.2	108	78	99.7	96	116	74	98.8	112	104	78	98.8	112	All were sweating very freely, although they had done nothing but walk 1,200 feet along a level drift in air moving about 30 to 50 feet per minute.
In first-floor stope on 2,700 level.	9.55	91	91¼	26.44	100	200–1,000	CO_2 0.07; O_2 20.80; N 79.13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	All resting in moving air and felt very much cooler. The mucker, who was working in this place, said that without the fan he could stand it for about 15 minutes, then had to go down to air for about the same length of time; but he said that with fan he could stand it all day.
In same location.....	10.28	.....	.....	.....	.....	.....	.....	100.2	.....	.....	100.4	.....	.....	.....	99.5	.....	.....	.....	99.0	.....	By 10.15 the hands and arms of all subjects were free of sweat and they were sweating only a little at forehead and face.
Do.....	11.00	.....	.....	.....	.....	.....	.....	100.2	.....	.....	100.4	.....	.....	.....	100.0	.....	.....	.....	99.0	.....	The workmen went up into the stope at noon to eat where the fan was operating. The shift boss said the men would do twice as much work with the fan as without it.
At 2,700 station crosscut.	11.35	87	89	26.44	92	.....	.....	.....	122	76	102.0	142	.....	.....	100.0	.....	98	66	99.1	124	Just before readings, No. 2 had walked 3,500 feet on level in air about 90° saturated. Nos. 1, 4, and 5 had walked 1,200 feet just before readings.

All subjects felt well throughout the more than one hour spent in the moving, practically saturated air at 91¾° F. (Table I); there was no headache or dizziness and comparatively little perspiration. However, when the fan that produced the air movement was stopped, the place became oppressive immediately and perspiration quickly became profuse. The place in which this test was made was a stope just above a level 2,700 feet from the surface. The air was not quite saturated (91½° wet bulb and 91¾° dry bulb), but it was absolutely stagnant and so oppressive that the workers were accustomed to go to the level below to cool after having worked in the stope for about 15 or 20 minutes, returning to work after a rest of 15 to 30 minutes. A small compressed-air-driven fan, consuming about 20 cubic feet of air per minute, was introduced by the investigators to give local movement to about 5,000 cubic feet of air per minute from the place, merely recirculating the air essentially as is done by the ordinary office fan, the velocity being over 3,000 linear feet per minute at the fan, diminishing to a few hundred feet per minute at a point 25 or 30 feet distant from the fan. While the noise made by the fan was somewhat annoying, the decided improvement made by moving the air was apparent immediately. So definite was this improvement after the placing of the fan that not only did the stope workers discontinue the practice of going down to the level to cool, remaining at work in the stope practically continuously, but other workers in the more or less immediate locality, who were accustomed to congregate in the level below to eat or to cool, soon began to come into the stope, as the conditions in the stope when the fan was in operation were more comfortable than those on the level.

TABLE I B.—*Effects of resting one hour in moving air at 95° wet bulb, 95° dry bulb (100 per cent relative humidity).*

Location.	Time of starting experiment.	Air conditions.					Gas analysis.	Subject No. 1.	Subject No. 2.				Subject No. 4.				Subject No. 5.				Remarks.
		Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).	Velocity.		Body temperature.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	
	a. m.					*Feet.*															
On 2,700 level in safety dead end.	10.10	95	95	26.47	100	300–700	CO_2 0.11 O_2 20.72 N 79.17	100.0	....	....	99.8	....	....	....	99.4	....	....	....	99.6	....	All were perspiring profusely, but feeling fine. Air not at all oppressive. No dizziness was felt, even on standing.
In same location	10.30	....	....	....	....	....	....	100.0	....	....	99.9	....	....	....	99.7	....	....	....	100.0	....	All were feeling fine, although perspiring freely from face, body, and arms. Hands were hardly perspiring. No. 2 said that a man could work in this air to good advantage, yet at the same place in still air he puffed while trying to stand up after sitting or reclining for 30 minutes. At 10.40 No. 2 felt sleepy, but otherwise well.
Do	10.47	....	....	....	....	....	....	100.0	....	....	100.0	....	....	....	99.9	....	....	....	100.0	....	All were feeling fine, with no headache or dizziness. All said they could work in wet air.
Do	11.00	....	....	....	....	....	....	100.2	....	....	100.2	114	....	....	100.2	126	....	....	100.0	116	All feeling fine; no headache or other untoward symptoms; hair dry; hands damp, but not sweating profusely.
In air	11.10	87	89	....	92	20–30	....	100.8	116	78	100.2	108	108	72	100.3	132	102	76	100.2	114	All felt cooler on stepping into the moving air at 87°–89°. Subject No. 2 felt drowsy.

Data taken in the same place as for the 95° still air (Table I B), but with the use of the small fan to give motion to the air, 95° saturated; subject No. 2 sitting in air with velocity about 500 linear feet per minute as measured by an anemometer, subject No. 4 in a velocity of 250 to 300 feet, and subject No. 5 in a velocity of about 600 feet, show that the body temperature and pulse rate of the three subjects were scarcely affected, and, although all perspired some, there was no excessive perspiration and parts of the clothing remained dry. There was little or no dizziness experienced during the test or afterwards; no "panting" or "puffing," and no weakness. In fact, all subjects felt comparatively comfortable in this moving, saturated air at 95° F. (subject No. 2 felt that he could work fairly efficiently in it). On the other hand, all felt decidedly ill and uncomfortable in the same air *when it was still*, and all knew definitely that very little work could be done in the stagnant air. Figure 1 shows the decided difference in favor of moving 95° saturated air, as compared with the same an when still, as indicated by the effect on the body temperature of subject No. 5.

TABLE II B.—*Effects of resting one hour in moving air at 96° wet bulb, 96° dry bulb (100 per cent relative humidity.)*

Location.	Time of starting experiment.	Air conditions.					Gas analysis.	Subject No. 1.	Subject No. 2.				Subject No. 4.				Subject No. 5.				Remarks.
		Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).	Velocity.		Body temperature.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	
	a. m.					*Feet.*															
At 2,703, but in air ..	9.10	86	88	27.02	92	30	.....	99.6	112	78	99.7	88	108	72	99.0	114	106	70	100.0	124	Subjects Nos. 1 and 5 got up a "sweat" while setting the fan, but had cooled off in moving air before these readings were taken.
Same, in hot location.	10.00	96	96	27.02	100	50–650	CO_2 0.06. O_2 20.88. N 79.05..	99.6	....	....	100.4	....	....	....	99.7	....	....	....	100.3	....	All feeling fine, but still sweating profusely. Went into test place at 9.30.
Same location.....	10.15	....	....	.....	....	.....	.....	100.0	.....	....	100.5	....	.....	....	100.1	....	.....	....	100.2	....	All felt well; no headache or dizziness.
Do.....	10.25	....	....	.....	....	.....	.....	.....	.....	....	.....	128	.....	....	.....	132	.....	....	.....	120	
Do.....	10.30	....	....	.....	....	.....	.....	100.0	.....	....	100.8	....	.....	....	100.6	....	.....	....	100.6	....	No puffing, except No. 5 puffed a little when standing for pulse reading. No dizziness; very profuse sweating. Left hot location at 10.31. No. 5 had sweat in shoes; felt worse than in test at 95–95°.
In air.....	10.40	86	87	27.02	96	30	.....	100.3	104	72	101.0	124	106	74	100.7	138	96	64	101.1	144	No. 2 sat on a log and the perspiration ran down the log from his clothing. No puffing, dizziness, or headache.

The results on the subjects with moving 96° saturated air (Table II B), using the small fan, are described below. Subject No. 2 sat in this hot, humid air that was moving at a velocity of about 300 feet per minute; and, while perspiration was profuse, saturating clothing and even shoes, no "panting" or dizziness occurred and no headache was felt as when in still air of the same temperature, and little or no weakness was felt when the test was over. Subject No. 4 sat for an hour in 96° saturated air having a velocity of about 300 feet per minute and, although perspiring freely, did not have shoes partly filled with perspiration as occurred in the same air when there was no movement. In this test subject No. 4 also escaped the headache, dizziness, and "panting" which he experienced at the same temperature in still air. The table shows definitely less change in body temperature and pulse rate of subject No. 4 with the moving air than with the still 96° saturated air, though the other conditions as to air quality, effort exerted, etc., were essentially the same in both tests. On subject No. 5, the effect of sitting an hour in 96°-saturated air moving at the rate of 100 to 200 linear feet per minute is not in agreement with the effect on subjects Nos. 2 and 4 in air of the same temperature and humidity, but moving about 300 linear feet per minute. Subject No. 5 had exerted physical force to a certain extent for about 15 minutes trying to set the 50-pound fan for the test, and had somewhat increased his body temperature when, with the others, he entered the moving 96°-saturated air and sat down for the hour test. While subjects Nos. 2 and 4 had no headache, dizziness, or "puffing" in the moving air, subject No. 5, on this date, "puffed" a little on standing up, and, in addition to having his clothing saturated with perspiration (as did subjects Nos. 2 and 4), also had his shoes partly filled with perspiration (although subjects Nos. 2 and 4 were not thus affected). Subject No. 5 reported that this experience was much more difficult to endure than any of the other tests; but subjects Nos. 2 and 4 felt that it was not nearly as severe as those in still, saturated air. It is probable that the comparatively small amount of work done in setting the fan was responsible for the difficulty experienced by subject No. 5 in enduring the test condition on this occasion.

TABLE II.—*Effects of resting one hour in moving air at 98½° wet bulb, 98½° dry bulb (100 per cent relative humidity).*

Location.	Time of starting experiment.	Air conditions.					Gas analysis.	Subject No. 1.	Subject No. 2.				Subject No. 4.				Subject No. 5.				Remarks.
		Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).	Velocity.		Body temperature.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	
	a. m.					*Feet.*															
At 2,700 station	10. 05	98½	98½	26. 58	100	500–800	O_2 0.13. O_2 20.67. N 79.20..	100. 8	....	....	99. 4	....	....	....	100. 6	....	....	....	100. 0	....	All sweating profusely. Nos. 4 and 5 felt fine; No. 1 all right; No. 2 a little warm but not dizzy.
Same location	10. 16	....	....	....	....	....	....	101. 5	....	....	100. 1	....	....	....	101. 5	....	....	....	100. 6	....	No. 2 hot when standing up to take temperature. No. 5 O. K., but sweating freely, although hair on top of head just getting wet. No. 1 feeling well, but "nothing wonderful." No. 4 felt O. K., skin a little hot, hair not wet yet; would have had difficulty in breathing if he had exerted himself even a little; same was true of others to less extent. There was running water on the floor at a temperature of 100°, and "drippers" all around with a temperature of 98°–102°, and the air was absolutely saturated.
Do	10. 31	....	....	....	....	....	....	102. 0	....	....	100. 8	138	....	....	101. 2	168	....	....	101. 3	146	All were perspiring very freely. No. 2 was not dizzy, but didn't feel very good. No. 5 was dizzy on slight movement, face flushed, and perspiring very freely. No. 1 not feeling very well, and dizzy on slight movement. No. 4 O. K., but skin hot; hair not yet wet.
Same location, at end of hour.	....	....	....	....	....	....	....	102. 3	....	....	101. 3	....	....	....	102. 0	....	....	....	101. 6	....	No. 5 stated that he could easily work 6 hours out of an 8-hour shift in 95°–95° moving air, but would not care to work so hard in moving air at 98½°–98½°. No. 2 thought that half time in 95°–95° moving air could be easily done, but that not more than one-fourth time (2 hours out of 8) could be done at 98½°–98½°.
Same location in air	10. 50	87	89	26. 58	92	20–30	....	102. 6	108	74	101. 9	144	110	82	103. 0	183	110	78	101. 9	146	No. 1 still a little dizzy; No. 5 a "little heavy in the head;" No. 4 felt fair, not dizzy, trembled slightly (or more), head clear; No. 2 drowsy.

No data were obtained in still, saturated air at 98½° F., but in moving air under these conditions the following effects were noted (Table II): The body temperature of subject No. 1 rose to 102.3° after spending an hour in the test place. The body temperature of subject No. 2 rose from normal on the surface to 100° F. before going into the test place, due to a certain amount of leisurely walking on levels in still, nearly saturated air around 90° F. Body temperature rose from 100° to 101.3° F. after sitting still an hour in the 98½° swiftly moving, saturated air, and continued to rise even after the subject left the hot location. His pulse rate rose from 88 at the surface before going underground to 104 after walking around underground, as described above; and after sitting the hour in the moving 98½° saturated air it was 158. This swiftly moving (500 to 800 feet per minute) saturated air at 98½° made subject No. 2 feel decidedly dizzy upon even slight exertion or emotion, his skin felt hot, perspiration was very profuse (saturating clothing and nearly filling shoes), and though very strong physically he felt very weak after the test, and said it was far more oppressive than the experiences in moving, saturated air at 92°, 95°, or 96°, but was not as bad as still, saturated air at 95°.

The data for this test on subject No. 4 in the same velocity of air show that the body temperature went to 103° and the pulse rate to 183, these high readings being due probably to the fact that subject No. 4 had done some work setting the fan before entering on the test. Subject No. 4 also had hot skin, some dizziness, weakness, and trembling, and had clothing saturated with perspiration, his shoes being nearly full of sweat. He felt that the test was much more severe than in moving, saturated air at 95° or 96°, but not as bad as still air at 95° when saturated.

Data on subject No. 5 sitting still an hour in the 98½° saturated air, with velocity about 300 linear feet per minute, show that he had essentially the same unfavorable symptoms as subjects Nos. 2 and 4, his body temperature going to 101.9° and his pulse rate to 146. He also felt dizzy, weak, and had a "heaviness in the head." He pronounced it a trying experience, stating that he believed it would be impossible for him to work under such conditions.

TABLE III B.—*Effects of resting one hour in moving air at 100° wet bulb, 100° dry bulb (100 per cent relative humidity).*

Location.	Time of starting experiment.	Air conditions.					Gas analysis.	Subject No. 1.	Subject No. 2.				Subject No. 4.				Subject No. 5.				Remarks.
		Wet bulb.	Dry bulb.	Barometer.	Relative humidity (per cent).	Velocity.		Body temperature.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	Systolic.	Diastolic.	Body temperature.	Pulse.	
	a. m.					*Feet.*															
At 2,700 station, went into hot, moving air.	9. 43	100	100	26. 92	100	200–800	CO_2 0. 11 O_2 20. 72 N 79. 17	....	....	....	....	....	....	....	....	....	....	....	....	....	No. 5 in velocity of 650–700 feet; Nos. 4 and 5, 700–800 feet; No. 2, 200–300 feet.
Same location	9. 58	....	....	....	....	....	....	101. 8	....	....	100. 7	....	....	....	101. 5	....	....	....	....	....	No. 1 was puffing and visibly in distress to a slight extent at 10; No. 5 was fine; No. 2 O. K., but hot; same for No. 4. All sweating heavily; sitting upright in the hot moving air; No. 4 soon felt skin very hot; air "feeling like that from a furnace."
Do	10. 12	....	....	....	....	....	....	102. 6	....	....	101. 0	....	....	....	101. 6	....	....	....	100. 4	....	At 10.12 No. 1 dizzy and looking distressed; quit at end of 30 minutes, or at 10.18. No. 4 started to breathe hard at 10.18; No. 5 slightly dizzy and hot. No. 2's head "felt big" at 10.20; quit at 10.28. No. 4 quit at 10.23 on account of difficulty in breathing. No. 5 quit at 10.32 on account of temperature of 102°. No. 1's arms not sweating well at 10.18; he had chilly sensations about spine and was weak in legs as he walked out; had temperature of 103° 5 minutes after going out of hot location. No. 4's temperature was 102.4° about 3 minutes after coming out; he had difficulty in breathing for at least 10 minutes after coming out, and his pulse was 170; he was weak, dizzy, and puffing for 15 minutes. No. 2 came out after 40 minutes, temperature 5 minutes afterwards was 102.3°, taken in moving air, same as No. 1. No. 2 was weak and dizzy, especially on standing up. No. 5 came out after 43 minutes in hot air, with temperature of 102°; could have stayed 5

																						minutes or more longer, but was puffing, dizzy, and weak, with skin hot when he reached outside.
In air	10.43	88	89	26.92	96	.....	.....	101.8	102	66	102.7	144	90	60	102.5	162	108	72	102.2	142	All were perspiring very profusely, with clothing absolutely dripping with sweat and sweat in boots. All were dizzy, weak, and puffing. No. 4 was apparently in most distress, especially as to difficulty in breathing. No. 1 felt some nausea just before leaving the hot location. All said it was one of the hardest days spent in the investigation.

In the saturated air at 100° (Table III B), subject No. 2 sat at a point where the air had a velocity of 200 to 300 linear feet per minute, subject No. 4 in velocity of 700 to 800 feet, and subjcet No. 5 in velocity of 650 to 700 feet per minute. No one was able to remain the full hour in this moving, saturated air at 100°, subject No. 2 being compelled to leave after sitting still for 45 minutes, subject No. 4 leaving after 40 minutes, and subject No. 5 leaving after 49 minutes. All subjects began to feel ill in less than 30 minutes in this swiftly-moving, saturated air at 100°; all perspired excessively and felt dizzy and weak. All were convinced that to try to remain the full hour might result in collapse, and were united in the conviction that while it was advantageous to give motion to saturated air below 98° F., movement was a decided disadvantage to saturated air above 98° F. It will be noted that pulse rate and body temperature apparently did not have time to go to higher limits, though all subjects had body temperature over 102° F. and an increase in pulse rate of 40 per cent or over.

SUMMARY.

A. Remaining at rest in saturated air at 91½° F. for one hour,
With no air movement caused—
1. An increase in body temperature;
2. A moderate increase in pulse rate;
3. Profuse sweating;
4. After effects of dizziness and weakness.

With air movement caused—
1. Slight or no increase in body temperature;
2. Slight increase in pulse rate;
3. Slight perspiration;
4. No after effects;
5. No ill effects at any time; but the noise of the fan was annoying.

B. Remaining at rest in saturated air at 95° for one hour,
With no air movement caused—
1. An increase in body temperature;
2. A marked increase in pulse rate;
3. Very profuse sweating, clothing being saturated with perspiration and sweat in shoes of all subjects;
4. Dizziness on movement, and increase in depth and rate of respiration (puffing somewhat on slight movement); chilly sensations in some subjects.

With air movement (250 to 600 linear feet per minute) caused—
1. Slight or no rise in body temperature;
2. Slight or no rise in pulse rate;
3. Profuse sweating, but not sufficient to wet all clothing;
4. No untoward symptoms in subjects other than profuse sweating.

C. Remaining at rest in saturated air at 96°, still and moving, caused the subjects to experience symptoms practically the same as those felt in still or moving saturated air, repectively, at 95° F.

D. Remaining at rest in saturated air at 98½° F. for one hour,

With air movement caused—

1. An increase in body temperature;
2. An increase in pulse rate (in one case to 183);
3. Very profuse sweating, clothing being saturated (sweat could be poured from shoes);
4. Dizziness on movement. All felt that little work could be done at this temperature and that the conditions were much worse than in moving saturated air at 95°, but not as bad as moving saturated air at 100° F.

E. Remaining at rest in saturated air at 100° F.,

With no air movement caused—

1. A marked rise in body temperature, which reached 102.3° F.;
2. A marked rise in pulse rate, varying in different subjects from 152 to more than 175;
3. Profuse sweating, the shoes being partly filled with perspiration;
4. Early appearance of dizziness, weakness, and persistence of symptoms for about one hour after test. The test was very trying.

With air movement (200 to 800 linear feet per minute) caused—

All the above symptoms, and no subject remained a full hour.

The untoward effects upon man of almost saturated air with temperature above 90° F. and below 98° F. are much less when the air is moving than when it is still. Further, the output or work that can be done is greater when the air is moving than when it is still, with the above temperature and humidity.

No beneficial effects were found by moving saturated air at 98.6° or 100° F., even at high velocities; and there was apparently some disadvantage.

BIRTHS, DEATHS, AND INFANT MORTALITY, 1921 AND 1922.

PROVISIONAL FIGURES FOR 1922 AND RATES FOR 1921 AND 1922 IN THE BIRTH REGISTRATION AREA OF THE UNITED STATES.

The Bureau of the Census, Department of Commerce, has issued a pamphlet entitled "Summary of Provisional Birth and Mortality Figures, 1922," from which the table printed below is taken. Similar data are given in the pamphlet for 547 cities in the United States having more than 10,000 population.

It is stated that birth rates for 1922 were lower than for 1921 in every one of the 25 States for which figures for the two years are shown in the following summary. The highest 1922 birth rate (34.4 per 1,000 population) is shown for the cities of Wyoming and the lowest (16.5) for the rural districts of Connecticut.

Death rates for 1922 were slightly higher than for 1921 in 19 of the 27 States shown for both years. The highest 1922 death rate (21.8 per 1,000 population) is shown for the cities of Mississippi and the lowest (7.4) for the rural sections of Montana.

Infant mortality rates for 1922 on the whole balance those of 1921, only 10 of the 25 States showing higher rates in 1922 than in 1921. The highest 1922 infant mortality rate (105) appears for the cities of South Carolina and the lowest (55) for the rural districts of Nebraska. Infant mortality rates shown for both years for 51 cities of 100,000 population or more in 1920 are in 19 of these cities lower in 1922 than in 1921, the highest rate (107) appearing for Trenton and the lowest (50) for Seattle.

Births and deaths, 1922 (provisional figures), and birth, death, and infant mortality rates, 1921 and 1922, in the birth registration area of the United States.

Figures for Massachusetts and Utah are omitted because transcripts for the entire year have not been received. The term "cities" indicates municipalities of 10,000 inhabitants or more in 1920.]

Area.	Population, estimated as of July 1, 1922.	Births (exclusive of stillbirths).			Deaths (exclusive of stillbirths).			Deaths of infants under 1 year of age.		
		Total 1922.	Rate per 1,000 population.		Total, 1922.	Rate per 1,000 population.		Total, 1922.	Rate per 1,000 births.	
			1922	1921		1922	1921		1922	1921
States shown for both years [1]	66,935,800	1,519,595	22.7	24.3	798,893	11.9	11.7	115,648	76	76
Cities	32,905,781	732,201	22.3	23.9	412,035	12.5	12.2	58,289	80	78
Rural	34,030,019	787,394	23.1	24.8	386,858	11.4	11.2	57,359	73	74
REGISTRATION STATES.										
California	3,697,070	73,205	19.8	20.2	51,962	14.1	13.2	5,216	71	66
Cities	2,124,680	42,132	19.8	20.1	30,113	14.2	13.5	2,699	64	60
Rural	1,572,390	31,073	19.8	20.2	21,849	13.9	12.8	2,517	81	75
Connecticut	1,449,097	31,138	21.5	24.0	17,430	12.0	11.4	2,413	77	73
Cities	1,093,985	25,261	23.1	25.9	13,098	12.0	11.3	1,957	77	72
Rural	355,112	5,877	16.5	18.1	4,332	12.2	11.5	456	78	79
Delaware	228,330	4,711	20.6	22.4	3,004	13.2	13.1	473	100	98
Cities	115,568	2,479	21.5	23.5	1,393	12.1	12.0	247	100	93
Rural	112,762	2,232	19.8	21.3	1,611	14.3	14.3	226	101	103
Illinois	6,703,312	134,040	20.0	[2]	75,769	11.3	11.1	10,189	76	[2]
Cities	4,002,384	81,860	20.5	[2]	46,374	11.6	11.5	6,626	81	[2]
Rural	2,700,928	52,180	19.3	[2]	29,395	10.9	10.5	3,563	68	[2]
Indiana	2,989,493	64,088	21.4	23.0	35,684	11.9	11.9	4,328	68	71
Cities	1,251,073	26,649	21.3	23.2	14,851	11.9	12.0	2,028	76	79
Rural	1,738,420	37,439	21.5	22.9	20,823	12.0	11.8	2,300	61	66
Kansas	1,789,423	38,729	21.6	23.3	18,845	10.5	10.2	2,494	64	63
Cities	445,136	10,030	22.5	23.5	5,845	13.1	12.4	785	78	73
Rural	1,344,287	28,699	21.3	23.2	13,000	9.7	9.4	1,709	60	59
Kentucky	2,449,263	62,137	25.4	27.6	26,168	10.7	10.5	4,265	69	62
Cities	467,709	9,425	20.2	21.9	6,954	14.9	14.4	778	83	72
Rural	1,981,554	52,712	26.6	28.9	19,214	9.7	9.7	3,487	66	60
Maine	774,617	17,469	22.6	22.9	11,424	14.7	14.0	1,513	87	88
Cities	222,655	5,260	23.6	23.5	3,533	15.9	14.8	512	97	79
Rural	551,962	12,209	22.1	22.7	7,891	14.3	13.7	1,001	82	92

[1] Includes District of Columbia.

[2] Not in the birth registration area in 1921.

Births and deaths, 1922 (provisional figures), and birth, death, and infant mortality rates, 1921 and 1922, in the birth registration area of the United States—Continued.

Area.	Population, estimated as of July 1, 1922.	Births (exclusive of stillbirths). Total, 1922.	Births (exclusive of stillbirths). Rate per 1,000 population. 1922	1921	Deaths (exclusive of stillbirths). Total, 1922.	Deaths (exclusive of stillbirths). Rate per 1,000 population. 1922	1921	Deaths of infants under 1 year of age. Total, 1922.	Rate per 1,000 births. 1922	1921
REGISTRATION STATES—continued.										
Maryland	1,489,399	34,455	23.1	25.1	20,256	13.6	13.6	3,245	94	94
Cities	846,507	19,318	22.8	24.8	11,977	14.1	13.8	1,788	93	87
Rural	642,892	15,137	23.5	25.5	8,279	12.9	13.2	1,457	96	102
Michigan	3,889,418	90,174	23.2	25.3	43,664	11.2	11.6	6,707	74	79
Cities	2,116,697	48,917	23.1	25.8	22,463	10.6	10.8	3,965	81	81
Rural	1,772,721	41,257	23.3	24.8	21,201	12.0	12.6	2,742	66	75
Minnesota	2,467,318	57,022	23.1	23.6	23,538	9.5	9.4	3,299	58	59
Cities	863,362	20,503	23.7	24.1	10,065	11.7	11.5	1,238	60	59
Rural	1,603,956	36,519	22.8	23.4	13,473	8.4	8.2	2,061	56	59
Mississippi	[3] 1,790,618	43,527	24.3	25.8	19,385	10.8	11.1	2,967	68	68
Cities	139,716	3,513	25.1	25.7	3,048	21.8	21.6	307	87	95
Rural	1,650,902	40,014	24.2	25.8	16,337	9.9	10.3	2,660	66	66
Montana	593,396	10,873	18.3	(2)	5,063	8.6	8.2	763	70	(2)
Cities	121,919	2,677	22.0	(2)	1,611	13.2	11.9	212	79	(2)
Rural	471,477	8,196	17.4	(2)	3,472	7.4	7.2	551	67	(2)
Nebraska	1,323,193	30,080	22.7	24.5	12,397	9.4	9.2	1,764	59	59
Cities	297,276	6,737	22.7	24.4	3,872	13.0	13.1	478	71	74
Rural	1,025,917	23,343	22.8	24.6	8,525	8.3	8.0	1,286	55	54
New Hampshire	446,304	9,748	21.8	22.8	6,533	14.6	13.7	779	80	87
Cities	198,789	4,974	25.0	26.7	2,803	14.1	13.5	447	90	95
Rural	247,515	4,774	19.3	19.6	3,730	15.1	13.9	332	70	78
New Jersey	3,315,231	74,558	22.5	24.1	40,384	12.2	11.7	5,859	79	74
Cities	2,165,591	52,209	24.1	26.1	25,803	11.9	11.5	4,137	79	74
Rural	1,149,640	22,349	19.4	20.2	14,581	12.7	11.9	1,722	77	74
New York	10,712,680	231,383	21.6	22.7	139,035	13.0	12.3	17,824	77	75
Cities	8,427,411	186,705	22.2	23.4	104,811	12.4	11.8	14,624	78	76
Rural	2,285,269	44,678	19.6	20.0	34,224	15.0	14.3	3,200	72	74
North Carolina	2,649,982	79,920	30.2	33.8	30,446	11.5	11.3	6,471	81	75
Cities	336,528	9,380	27.9	29.3	5,385	16.0	15.8	913	97	97
Rural	2,313,454	70,540	30.5	34.5	25,061	10.8	10.6	5,558	79	72
Ohio	6,014,914	122,735	20.4	21.9	68,093	11.3	11.3	8,771	71	75
Cities	3,395,737	69,860	20.6	22.3	37,786	11.1	11.2	5,322	76	76
Rural	2,619,177	52,875	20.2	21.3	30,307	11.6	11.5	3,449	65	73
Oregon	811,875	14,969	18.4	19.3	9,341	11.5	10.4	871	58	51
Cities	313,888	6,115	19.5	20.4	4,210	13.4	12.2	359	59	50
Rural	497,987	8,854	17.8	18.7	5,131	10.3	9.2	512	58	52
Pennsylvania	8,991,666	214,347	23.8	25.8	110,700	12.3	12.4	18,896	88	88
Cities	4,616,305	106,815	23.1	25.3	60,227	13.0	13.0	9,491	89	86
Rural	4,375,361	107,532	24.6	26.4	50,473	11.5	11.7	9,395	87	89
Rhode Island	620,308	14,302	23.1	23.6	8,144	13.1	12.6	1,221	85	93
Cities	515,562	12,116	23.5	24.4	6,807	13.2	12.7	1,048	86	94
Rural	104,746	2,186	20.9	19.7	1,337	12.8	12.4	173	79	86
South Carolina	1,727,070	46,446	26.9	29.5	20,705	12.0	11.9	4,329	93	96
Cities	181,137	5,234	28.9	30.7	3,905	21.6	21.9	550	105	127
Rural	1,545,933	41,212	26.7	29.4	16,800	10.9	10.8	3,779	92	92
Vermont	352,428	7,520	21.3	22.5	5,169	14.7	14.2	550	73	78
Cities	48,514	1,183	24.4	25.5	767	15.8	15.4	116	98	102
Rural	303,914	6,337	20.9	22.0	4,402	14.5	14.0	434	68	73
Virginia	2,372,940	64,782	27.3	29.9	28,690	12.1	12.2	4,966	77	79
Cities	581,739	13,493	23.2	25.4	8,026	13.8	14.0	1,268	94	95
Rural	1,791,201	51,290	28.6	31.3	20,664	11.5	11.6	3,698	72	74
Washington	1,411,890	25,377	18.0	19.6	14,194	10.1	9.5	1,563	62	55
Cities	668,711	12,556	18.8	20.5	7,111	10.6	10.1	732	58	55
Rural	743,179	12,821	17.3	18.8	7,083	9.5	9.0	831	65	56
Wisconsin	2,708,858	57,700	21.3	23.0	27,397	10.1	10.3	4,104	71	72
Cities	1,006,509	22,265	22.1	23.9	10,867	10.8	10.9	1,730	78	79
Rural	1,702,349	35,435	20.8	22.5	16,530	9.7	9.9	2,374	67	68
Wyoming	206,875	5,188	25.1	(2)	1,931	9.3	(4)	398	77	(2)
Cities	28,958	995	34.4	(2)	412	14.2	(4)	101	102	(2)
Rural	177,917	4,193	23.6	(2)	1,519	8.5	(4)	297	71	(2)

[2] Not in the birth registration area in 1921.
[3] Population Jan. 1, 1920: no estimate made.
[4] Not in the death registration area in 1921.

DEATH RATES IN A GROUP OF INSURED PERSONS.

COMPARISON OF DEATH RATES FOR PRINCIPAL CAUSES, APRIL AND MAY, 1923, AND MAY AND YEAR, 1922.

The accompanying table is taken from the Statistical Bulletin of the Metropolitan Life Insurance Co. for June, 1923, and presents the mortality experience of the industrial department of the company for the months of April and May, 1923, and May and year, 1922. The rates are based on a strength of approximately 14,500,000 insured persons.

The death rate for this group of persons declined 7.6 per cent in May from the rate for April and was 3 per cent lower than the rate for May, 1922.

With the exception of tuberculosis, which showed a slight rise, all of the diseases of numerical importance registered lower rates in May than in April, the largest declines being shown for influenza and pneumonia. Appreciable decreases were also shown for cancer, cerebral hemorrhage, organic heart diseases, and Bright's disease. The death rate for measles continued high during May, and it is stated that the mortality from that disease to date indicates that the death rate for 1923 for measles will be the highest that has been recorded for many years.

Death rates (annual basis) for principal causes of death per 100,000 lives exposed, April and May, 1923, and May and year, 1922.

Cause of death.	Death rate per 100,000 lives exposed.			
	May, 1923.	April, 1923.	May, 1922.	Year, 1922.[1]
Total, all causes	932.1	1,008.4	960.9	877.2
Typhoid fever	2.9	3.9	3.7	5.6
Measles	16.5	12.5	8.8	4.3
Scarlet fever	5.4	6.5	4.6	4.8
Whooping cough	5.4	6.8	2.3	2.6
Diphtheria	9.8	12.3	12.5	17.8
Influenza	24.4	47.7	20.8	21.5
Tuberculosis (all forms)	121.8	119.0	130.4	113.4
Tuberculosis of respiratory system	111.9	109.0	118.5	102.9
Cancer	69.8	74.6	75.5	71.5
Diabetes mellitus	18.9	21.3	(2)	17.0
Cerebral hemorrhage	61.5	65.9	62.2	62.4
Organic diseases of heart	133.9	139.3	140.4	126.0
Pneumonia (all forms)	82.9	108.2	81.9	73.3
Other respiratory diseases	14.2	15.7	17.5	13.6
Diarrhea and enteritis	6.4	8.7	7.8	10.7
Bright's disease (chronic nephritis)	72.3	78.3	72.2	69.9
Puerperal state	19.3	18.0	18.4	18.9
Suicides	9.0	7.0	8.2	7.4
Homicides	5.3	6.6	6.0	6.2
Other external causes (excluding suicides and homicides)	57.9	55.1	54.8	57.7
Traumatism by automobile	13.1	11.0	12.3	13.5
All other causes	194.4	201.1	233.1	172.6

[1] Based on provisional estimate of lives exposed to risk in 1922.
[2] Not available.

DEATHS DURING WEEK ENDED JULY 7, 1923.

Summary of information received by telegraph from industrial insurance companies for week ended July 7, 1923, and corresponding week of 1922. (From the Weekly Health Index, July 10, 1923, issued by the Bureau of the Census, Department of Commerce.)

	Week ended July 7, 1923.	Corresponding week, 1922.
Policies in force	54,327,751	49,632,235
Number of death claims	8,263	6,245
Death claims per 1,000 policies in force, annual rate	7.9	6.6

Deaths from all causes in certain large cities of the United States during the week ended July 7, 1923, infant mortality, annual death rate, and comparison with corresponding week of 1922. (From the Weekly Health Index, July 10, 1923, issued by the Bureau of the Census, Department of Commerce.)

City.	Week ended July 7, 1923.		Annual death rate per 1,000, corresponding week, 1922.	Deaths under 1 year.		Infant mortality rate, week ended July 7, 1923.[2]
	Total deaths.	Death rate.[1]		Week ended July 7, 1923.	Corresponding week, 1922.	
Total	5,728	10.3	10.6	665	812	.....
Akron, Ohio	32	8.0	8.5	3	9	36
Albany, N. Y.[3]	28	12.4	14.8	5	2	111
Atlanta, Ga	81	18.9	17.1	14	11	.....
Baltimore, Md.[3]	181	12.2	15.0	16	42	47
Birmingham, Ala	52	13.8	17.5	6	10	.....
Boston, Mass	146	9.9	12.3	19	25	54
Bridgeport, Conn	18	6.5	6.5	3	1	41
Buffalo, N. Y	101	9.8	10.7	15	20	63
Cambridge, Mass	24	11.2	11.3	4	1	71
Camden, N. J.[3]	28	11.8	13.3	4	1	66
Chicago, Ill	505	9.1	8.4	51	72	.....
Cincinnati, Ohio	111	14.2	15.6	11	16	72
Cleveland, Ohio [3]	157	9.2	9.0	16	20	44
Columbus, Ohio	52	10.4	9.5	2	4	21
Dallas, Tex	36	10.6	13.0	5	4	.....
Dayton, Ohio	29	9.1	11.0	1	9	16
Denver, Colo	53	10.2	13.4	3	8	.....
Des Moines, Iowa	29	10.7	.....	1	.....	.....
Detroit, Mich	196	10.3	9.8	41	27	82
Duluth, Minn	10	4.9	.....	1	.....	23
Erie, Pa	27	12.5	8.6	1	0	20
Fall River, Mass.[3]	23	9.9	13.4	1	7	14
Flint, Mich	17	7.5	.....	3	.....	60
Fort Worth, Tex	14	5.1	8.6	0	2	.....
Grand Rapids, Mich	23	8.2	7.6	6	2	95
Houston, Tex	40	13.5	10.4	5	4	.....
Indianapolis, Ind	106	16.1	10.3	5	6	38
Jacksonville, Fla	41	21.4	13.9	6	3	.....
Kansas City, Kans	30	13.5	10.1	3	1	69
Kansas City, Mo	94	13.9	12.9	14	7	.....
Los Angeles, Calif	174	13.6	15.8	11	32	41
Lowell, Mass	22	10.0	10.5	3	5	52
Lynn, Mass	18	9.1	.....	3	.....	79
Memphis, Tenn	78	23.9	16.5	9	7	.....
Milwaukee, Wis	62	6.7	8.3	11	15	55
Minneapolis, Minn	71	9.0	10.0	8	13	43
Nashville, Tenn.[3]	48	20.7	16.5	10	4	.....
New Bedford, Mass	19	7.6	6.1	2	2	31
New Haven, Conn	35	10.6	10.7	2	7	26
New Orleans, La	112	14.4	14.9	16	16	.....
New York, N. Y	1,010	8.9	9.7	118	166	47
Bronx Borough	124	7.7	7.2	9	18	32
Brooklyn Borough	353	8.5	9.2	44	58	47
Manhattan Borough	429	9.9	11.2	59	74	57
Queens Borough	76	7.4	8.9	6	10	32
Richmond Borough	28	11.4	13.0	0	6	0
Newark, N. J	81	9.6	10.0	5	18	23

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1922. Cities left blank are not in the registration area for births.
[3] Deaths for week ended Friday, July 6, 1923.

Deaths from all causes in certain large cities of the United States during the week ended July 7, 1923, infant mortality, annual death rate, and comparison with corresponding week of 1922. (From the Weekly Health Index, July 10, 1923, issued by the Bureau of the Census, Department of Commerce.)—Continued.

City.	Week ended July 7, 1923.		Annual death rate per 1,000, corresponding week, 1922.	Deaths under 1 year.		Infant mortality rate, week ended July 7, 1923.
	Total deaths.	Death rate.		Week ended July 7, 1923.	Corresponding week, 1922.	
Norfolk, Va	29	9.5	15.0	8	6	141
Oakland, Calif	39	8.5	9.4	4	3	51
Omaha, Nebr	52	13.3	12.2	3	2	32
Paterson, N. J	28	10.5	10.2	0	4	0
Philadelphia, Pa	329	8.9	10.5	42	50	54
Pittsburgh, Pa	125	10.6	11.2	17	26	59
Portland, Oreg	57	10.9	11.2	8	7	81
Providence, R. I	53	11.4	9.1	15	2	122
Richmond, Va	53	15.3	17.2	8	14	98
Rochester, N. Y	50	8.2	9.9	2	6	16
St. Louis, Mo	177	11.5	10.4	14	8	.....
St. Paul, Minn	46	9.9	8.5	5	7	46
Salt Lake City, Utah [3]	20	8.3	10.1	5	3	81
San Antonio, Tex	48	13.5	14.3	9	16	.....
San Francisco, Calif	135	13.1	12.1	8	5	48
Seattle, Wash	59	9.8	6.9	3	3	27
Spokane, Wash	30	15.0	9.0	4	3	87
Springfield, Mass	26	9.4	7.8	1	1	14
Syracuse, N. Y	46	13.0	11.5	6	5	78
Tacoma, Wash	16	8.2	.....	2	.....	50
Toledo, Ohio	53	10.3	7.6	7	5	71
Trenton, N. J	27	11.1	12.5	3	6	51
Utica, N. Y	13	6.6	.....	1	.....	21
Washington, D. C	102	12.2	10.4	12	13	69
Wilmington, Del	19	8.4	9.5	1	6	20
Worcester, Mass	38	10.3	11.1	1	4	11
Yonkers, N. Y	13	6.3	8.9	2	6	43
Youngstown, Ohio	31	12.2	9.1	8	2	109

[3] Deaths for week ended Friday, July 6, 1923.

PREVALENCE OF DISEASE.

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

UNITED STATES.

CURRENT STATE SUMMARIES.

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

Reports for Week Ended July 14, 1923.

ALABAMA.	Cases.
Diphtheria	8
Dysentery	52
Influenza	6
Malaria	174
Measles	86
Paratyphoid fever	1
Pellagra	17
Pneumonia	8
Scarlet fever	1
Tuberculosis	25
Typhoid fever	101
Whooping cough	16

ARIZONA.	
Diphtheria	1
Measles	1
Mumps	1
Scarlet fever	5
Smallpox	3
Tuberculosis	35
Typhoid fever	2
Whooping cough	5

ARKANSAS.	
Diphtheria	1
Hookworm disease	1
Influenza	4
Malaria	156
Measles	37
Mumps	2
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pellagra	20
Scarlet fever	3
Smallpox	4
Trachoma	2
Tuberculosis	20
Typhoid fever	35
Whooping cough	90

CALIFORNIA.	Cases.
Cerebrospinal meningitis:	
San Francisco	1
Visalia	1
Diphtheria	62
Influenza	6
Lethargic encephalitis—San Diego	1
Measles	307
Scarlet fever	42
Smallpox:	
Chino	11
Scattering	7
Typhoid fever	7
Typhus fever—Redlands	1

COLORADO.	
(Exclusive of Denver.)	
Chicken pox	5
Diphtheria	4
Measles	38
Mumps	1
Rabies	1
Scarlet fever	5
Tuberculosis	152
Typhoid fever	6
Whooping cough	8

CONNECTICUT.	
Cerebrospinal meningitis	4
Chicken pox	23
Diphtheria	31
German measles	2
Influenza	1
Lethargic encephalitis	2
Malaria	1
Measles	51
Mumps	3
Pneumonia (lobar)	6
Scarlet fever	31

CONNECTICUT—continued.

	Cases.
Septic sore throat	1
Tetanus	1
Tuberculosis (pulmonary)	32
Typhoid fever	7
Whooping cough	114

FLORIDA.

Diphtheria	5
Malaria	12
Ophthalmia neonatorum	1
Pneumonia	1
Typhoid fever	8

GEORGIA.

Chicken pox	2
Conjunctivitis (infectious)	2
Diphtheria	8
Dysentery (bacillary)	1
Hookworm disease	7
Influenza	4
Malaria	34
Measles	63
Pneumonia	1
Scarlet fever	2
Septic sore throat	2
Smallpox	1
Tuberculosis (pulmonary)	6
Typhoid fever	33
Whooping cough	39

ILLINOIS.

Cerebrospinal meningitis—Bureau County	1
Diphtheria:	
Cook County (including Chicago)	69
Chicago	63
Scattering	24
Influenza	6
Pneumonia	103
Poliomyelitis—Fulton County	1
Scarlet fever:	
Cook County (including Chicago)	36
Chicago	32
Scattering	20
Smallpox	10
Typhoid fever	24
Whooping cough	251

INDIANA.

Diphtheria	9
Influenza	4
Measles	99
Pneumonia	1
Scarlet fever	12
Smallpox	18
Tuberculosis	43
Typhoid fever	9

IOWA.

Diphtheria	23
Scarlet fever	19
Smallpox	23
Typhoid fever	1

KANSAS.

Chicken pox	8
Diphtheria	7

KANSAS—continued.

	Cases.
Malaria	1
Measles	95
Mumps	7
Pneumonia	3
Scarlet fever	23
Septic sore throat	1
Smallpox	3
Tuberculosis	66
Typhoid fever	8
Whooping cough	80

LOUISIANA.

Diphtheria	11
Malaria	14
Measles	19
Scarlet fever	1
Smallpox	2
Typhoid fever	23
Whooping cough	5

MAINE.

Chicken pox	5
Diphtheria	5
German measles	1
Measles	65
Scarlet fever	12
Septic sore throat	5
Tuberculosis	3
Typhoid fever	8
Whooping cough	15

MARYLAND.[1]

Anthrax	1
Chicken pox	21
Diphtheria	18
Dysentery	11
German measles	1
Malaria	4
Measles	223
Mumps	8
Paratyphoid fever	1
Pneumonia (all forms)	16
Scarlet fever	27
Tetanus	1
Tuberculosis	75
Typhoid fever	21
Whooping cough	81

MASSACHUSETTS.

Actinomycosis	2
Cerebrospinal meningitis	3
Chicken pox	69
Conjunctivitis (suppurative)	12
Diphtheria	139
German measles	3
Influenza	1
Measles	273
Mumps	82
Ophthalmia neonatorum	24
Pellagra	2
Pneumonia (lobar)	14
Poliomyelitis	3
Scarlet fever	108
Smallpox	2
Tetanus	2
Trachoma	1

[1] Week ended Friday.

MASSACHUSETTS—continued.

	Cases.
Tuberculosis (all forms)	146
Typhoid fever	10
Whooping cough	138

MICHIGAN.

Diphtheria	104
Measles	617
Pneumonia	64
Scarlet fever	135
Smallpox	17
Tuberculosis	357
Typhoid fever	19
Whooping cough	263

MINNESOTA.

Chicken pox	4
Diphtheria	41
Influenza	1
Measles	56
Pneumonia	1
Scarlet fever	83
Smallpox	14
Tuberculosis	138
Typhoid fever	4
Whooping cough	9

MISSISSIPPI.

Diphtheria	6
Smallpox	2
Typhoid fever	34

MISSOURI.

Chicken pox	6
Diphtheria	37
Epidemic sore throat	1
Measles	121
Mumps	9
Poliomyelitis	1
Scarlet fever	20
Smallpox	5
Tetanus	3
Tuberculosis	45
Typhoid fever	22
Whooping cough	248

MONTANA.

Rocky Mountain spotted fever—Forsyth	1
Scarlet fever	9
Smallpox	6

NEW JERSEY.

Chicken pox	62
Diphtheria	66
Influenza	3
Malaria	6
Measles	197
Pneumonia	22
Poliomyelitis	5
Scarlet fever	31
Smallpox	1
Trachoma	1
Typhoid fever	10
Whooping cough	96

NEW MEXICO.

Diphtheria	25
Malaria	1

NEW MEXICO—continued.

	Cases.
Measles	8
Pneumonia	3
Tuberculosis	10
Typhoid fever	7
Whooping cough	1

NEW YORK.

(Exclusive of New York City.)

Diphtheria	96
Lethargic encephalitis	4
Measles	970
Pneumonia	76
Poliomyelitis	2
Scarlet fever	137
Smallpox	3
Typhoid fever	19
Whooping cough	214

NORTH CAROLINA.

Chicken pox	12
Diphtheria	19
German measles	1
Measles	400
Ophthalmia neonatorum	2
Scarlet fever	9
Septic sore throat	5
Smallpox	23
Typhoid fever	79
Whooping cough	324

OREGON.

Chicken pox	2
Diphtheria	2
Influenza	2
Lethargic encephalitis	[1] 1
Measles	2
Pneumonia	[1] 5
Scarlet fever	10
Smallpox:	
Clackamas County	8
Portland	9
Scattering	5
Tuberculosis	[1] 2

SOUTH DAKOTA.

Chicken pox	1
Diphtheria	4
Measles	23
Pneumonia	1
Poliomyelitis	1
Scarlet fever	12
Tuberculosis	13
Typhoid fever	2
Whooping cough	1

TEXAS.

Chicken pox	7
Dengue	3
Diphtheria	15
Dysentery	8
Influenza	7
Leprosy	1
Measles	47

[1] Deaths.

TEXAS—continued.

	Cases.
Mumps	2
Paratyphoid fever	1
Pellagra	2
Pneumonia	2
Rabies	1
Scarlet fever	7
Smallpox	9
Tuberculosis	21
Typhoid fever	30
Whooping cough	70

VERMONT.

Chicken pox	10
Diphtheria	7
Measles	189
Mumps	10
Pneumonia	2
Scarlet fever	10
Whooping cough	19

VIRGINIA.

Poliomyelitis:	
Fredericksburg and vicinity	14

WASHINGTON.

Chicken pox	14
Diphtheria	16
German measles	1
Measles:	
Seattle	32
Spokane	10
Scattering	11
Mumps	21
Scarlet fever	16
Smallpox:	
Spokane	9
Scattering	14
Tuberculosis	20
Typhoid fever	5
Whooping cough	35

WEST VIRGINIA.

	Cases.
Diphtheria	4
Scarlet fever	8
Typhoid fever	5

WISCONSIN.

Milwaukee:	
Cerebrospinal meningitis	1
Chicken pox	12
Diphtheria	12
Measles	9
Pneumonia	1
Scarlet fever	30
Tuberculosis	5
Whooping cough	21
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	18
Diphtheria	33
Influenza	2
Measles	323
Ophthalmia neonatorum	1
Pneumonia	1
Poliomyelitis	2
Scarlet fever	80
Smallpox	8
Tuberculosis	40
Typhoid fever	3
Whooping cough	96

WYOMING.

Chicken pox	1
Measles:	
Natrona County	24
Sheridan County	10
Scattering	5
Mumps	1
Poliomyelitis	1
Rocky Mountain spotted fever	2
Tuberculosis	3
Typhoid fever	2
Whooping cough	1

Reports for Week Ended July 7, 1923.

DISTRICT OF COLUMBIA.

	Cases.
Chicken pox	18
Diphtheria	2
Measles	27
Scarlet fever	6
Tuberculosis	25
Whooping cough	15

NEW MEXICO.

Chicken pox	1
Diphtheria	19
Dysentery	1
Lethargic encephalitis	1
Measles	11
Paratyphoid fever	5

NEW MEXICO—continued.

	Cases.
Pneumonia	1
Scarlet fever	1
Tuberculosis	9
Typhoid fever	13
Whooping cough	1

NORTH DAKOTA.

Chicken pox	5
Diphtheria	3
Measles	31
Scarlet fever	4
Smallpox	2
Tuberculosis	3
Whooping cough	7

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.
May, 1923.										
Montana	1	25	30	.....	117	.....	.....	62	34	11
New Mexico	.....	79	3	.....	141	.....	.....	25	16	2
Oklahoma	1	34	154	12	850	9	1	37	251	11
June, 1923.										
Arizona	.....	17	.....	.....	56	1	.....	64	4	11
Arkansas	1	18	24	397	537	76	.....	7	37	30
Florida	4	18	21	77	378	7	2	4	18	54
Massachusetts	5	613	11	2	2,985	.....	4	1,057	.....	44
New Jersey	7	345	3	18	2,442	.....	3	345	1	65
North Carolina	7	73	.....	.....	5,457	.....	2	60	239	149
Vermont	.....	16	.....	.....	924	.....	.....	37	6	4

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

State.	Number of cases reported.								
	Chicken pox.	Diphtheria.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Tuberculosis.	Typhoid fever.	Whooping cough.
Alabama	196	69	6,841	33	28	57	200	117	451
Arizona	15	20	163	18	68	6	686	8	6
Arkansas	111	9	1,479	50	15	53	54	38	.....
California	1,331	791	6,165	159	875	169	743	67	1,088
Colorado	113	216	2,362	140	172	2	83	12	233
Connecticut	220	295	1,035	82	348	1	175	12	295
Delaware	13	19	114	1	42	.....	16	1	17
District of Columbia	97	27	1,825	.....	137	0	122	7	179
Florida	43	29	664	4	7	21	151	89	115
Georgia [1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Idaho	31	16	13	3	11	3	23	.....	37
Illinois	743	678	12,049	925	739	67	1,009	54	947
Indiana	.....	162	5,421	.....	271	243	109	14	.....
Iowa	62	72	738	53	387	153	8	[2]	69
Kansas	189	109	3,347	298	175	53	254	22	240
Kentucky [1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisiana	16	53	345	17	12	80	181	64	118
Maine	61	19	833	5	143	21	48	6	108
Maryland	380	140	4,419	319	678	.....	179	35	588
Massachusetts	611	594	4,360	1,051	1,472	.....	762	51	1,240
Michigan	568	360	8,237	363	1,130	91	523	35	817
Minnesota	286	240	3,741	.....	707	117	351	21	173
Mississippi	349	40	3,995	143	23	9	263	125	1,300
Missouri [1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montana	41	25	117	3	62	34	60	11	9
Nevada [3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire [3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Jersey	838	403	4,400	.....	617	3	485	20	449
New Mexico	28	79	141	12	25	16	77	2	34
New York	2,139	1,224	13,646	1,636	2,308	20	1,979	122	1,515
North Carolina	358	78	10,791	.....	78	385	.....	54	2,042
Ohio	830	500	11,008	166	1,534	313	680	59	929
Oklahoma	63	34	850	.....	37	251	61	11	.....
Oregon	95	70	13	23	63	111	58	3	147
Pennsylvania	1,317	939	11,819	701	1,153	32	621	49	1,252
Rhode Island	11	56	487	10	96	.....	110	5	35
South Carolina	28	74	386	9	7	23	33	23	53
South Dakota	35	44	405	10	156	17	16	13	20
Tennessee [3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas [1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah [3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vermont	.....	21	1,412	111	64	6	34	4	165
Virginia	389	131	9,893	.....	85	99	255	59	.....
Washington	306	91	370	123	127	170	286	18	516
West Virginia	69	79	2,765	.....	91	22	58	33	128
Wisconsin	247	211	5,449	.....	1,522	179	205	22	424
Wyoming	14	6	47	1	34	1	4	3	5

[1] Reports received weekly. [2] Not notifiable. [3] Reports received annually.

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

State.	Case rates per 1,000 population.								
	Chicken pox.	Diphtheria.	Measles.	Mumps.	Scarlet fever.	Smallpox.	Tuberculosis.	Typhoid fever.	Whooping cough.
Alabama	0.95	0.34	33.23	0.16	0.14	0.28	0.97	0.57	2.19
Arizona	.46	.62	5.04	.56	2.10	.19	21.20	.25	.19
Arkansas	.72	.06	9.59	.32	.10	.34	.35	.25	.....
California	4.12	2.45	19.08	.49	2.71	.52	2.30	.21	3.37
Colorado	1.34	2.57	28.08	1.66	2.04	.02	.99	.14	2.77
Connecticut	1.75	1.79	8.25	.65	2.78	.01	1.40	.10	1.79
Delaware	.66	.97	5.82	.05	2.15	.....	.82	.05	.87
District of Columbia	2.40	.67	45.15	.....	3.39	.....	3.02	.17	4.43
Florida	.48	.33	7.47	.05	.08	.24	1.70	1.00	1.29
Georgia [1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Idaho	.78	.40	.33	.08	.23	.08	.58	.....	.93
Illinois	1.29	1.18	20.89	1.60	1.28	.12	2.79	.09	1.64
Indiana	.....	.63	21.18	.....	1.06	.95	.43	.05	.....
Iowa	.30	.34	3.52	.25	1.85	.73	.04	[2]	.33
Kansas	1.24	.71	21.92	1.95	1.15	.35	1.66	.14	1.57
Kentucky [1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisiana	.10	.34	2.20	.11	.08	.51	1.15	.41	.75
Maine	.92	.29	12.62	.08	2.17	.32	.73	.09	1.64
Maryland	2.97	1.10	34.56	2.50	5.30	.....	1.40	.27	4.60
Massachusetts	1.79	1.74	12.75	3.07	4.30	.....	2.23	.15	3.63
Michigan	1.68	1.07	24.38	1.07	3.34	.27	1.55	.10	2.42
Minnesota	1.35	1.13	17.62	.....	3.33	.55	1.65	.10	.81
Mississippi	2.30	.26	26.31	.94	.15	.06	1.73	.82	8.56
Missouri [1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montana	.79	.48	2.25	.06	1.19	.65	1.16	.21	.17
Nevada [3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire [3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Jersey	2.92	1.40	15.33	.....	2.15	.01	1.69	.07	1.56
New Mexico	.89	2.50	4.46	.38	.79	.51	2.44	.06	1.08
New York	2.32	1.33	14.82	1.78	2.51	.02	2.15	.13	1.64
North Carolina	1.57	.34	47.30	.....	.34	1.69	.....	.24	8.95
Ohio	1.60	.96	21.19	.32	2.95	.60	1.31	.11	1.79
Oklahoma	.34	.19	4.63	.....	.20	1.37	.35	.06	.....
Oregon	1.36	1.00	.19	.33	.90	1.59	.83	.03	2.10
Pennsylvania	1.70	1.21	15.29	.91	1.49	.04	.80	.12	1.62
Rhode Island	.21	1.05	9.15	.19	1.80	.....	2.07	.06	.66
South Carolina	.19	.50	2.61	.06	.05	.16	.22	.18	.36
South Dakota	.63	.79	7.20	.18	2.80	.31	.29	.23	.36
Tennessee [3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas [1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah [3]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vermont	.....	.70	47.34	3.72	2.15	.20	1.14	.13	5.53
Virginia	1.91	.64	48.57	.....	.42	.49	1.45	.29	.....
Washington	2.51	.75	3.04	1.01	1.04	1.49	2.35	.15	4.24
West Virginia	.52	.60	20.99	.....	.69	.17	.44	.25	.97
Wisconsin	1.06	.91	23.42	.....	6.54	.77	.88	.09	1.82
Wyoming	.78	.33	2.61	.06	1.89	.06	.22	.17	.23

[1] Reports received weekly.
[2] Not notifiable.
[3] Reports received annually.

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923.

ANTHRAX.

City.	Cases.	Deaths.
Louisiana:		
New Orleans	1	.....

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

CEREBROSPINAL MENINGITIS.

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

City.	Median for previous years.	Week ended June 30, 1923.		City.	Median for previous years.	Week ended June 30, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
California:				Minnesota:			
Alameda	0	1	.....	Duluth	0	1	.....
Los Angeles	0	1	.....	Minneapolis	0	1	1
San Francisco	1	1	.....	New York:			
Colorado:				Lackawanna	0	1	.....
Pueblo	0	1	.....	New York	6	3	1
Illinois:				Ohio:			
Chicago	2	2	.....	Canton	0	.....	1
Maryland:				Cleveland	1	1	1
Baltimore	0	1	.....	Pennsylvania:			
Massachusetts:				Philadelphia	1	2	1
Boston	1	1	2	Wisconsin:			
Michigan:				Milwaukee	0	1	1
Kalamazoo	0	.....	1				

DIPHTHERIA.

See p. 1654; also Current State summaries, p. 1643, and Monthy summaries, by States, p. 1647.

INFLUENZA.

City.	Cases.		Deaths, week ended June 30, 1923.	City.	Cases.		Deaths, week ended June, 30, 19_3.
	Week ended July 1, 1922.	Week ended June 30, 1923.			Week ended July 1, 1922.	Week ended June 30, 1923.	
Alabama:				Massachusetts:			
Birmingham	.....	1	.....	Holyoke	1	.....	.....
Arkansas:				Springfield	.....	1	.....
Little Rock	.....	1	.....	Michigan:			
California:				Detroit	.....	.....	1
Los Angeles	.....	3	1	Missouri:			
Oakland	2	.....	.....	Kansas City	.....	1	1
Connecticut:				New Jersey:			
New Haven	.....	1	.....	Newark	4	.....	.....
Florida:				New York:			
Tampa	3	.....	.....	New York	6	3	2
Georgia:				Ohio:			
Atlanta	.....	1	.....	Cleveland	.....	.....	1
Illinois:				East Cleveland	1	.....	.....
Chicago	1	1	1	Pennsylvania:			
Danville	1	.....	.....	Philadelphia	.....	1	1
Freeport	.....	1	.....	Tennessee:			
Springfield	1	.....	.....	Memphis	.....	2	2
Indiana:				Nashville	.....	.....	1
Indianapolis	.....	.....	2	Texas:			
Kentucky:				San Antonio	.....	1	.....
Louisville	1	.....	.....				
Louisiana:							
New Orleans	.....	1	.....				

LETHARGIC ENCEPHALITIS.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Nebraska:			Wisconsin:		
Omaha	.....	1	Eau Claire	1	.....
Oregon:			Kenosha	1	.....
Portland	.....	1	Milwaukee	2	.....

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

MALARIA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Alabama:			Maryland:		
Birmingham	5	2	Baltimore	1	.....
Mobile	1	.....	Michigan:		
Montgomery	1	.....	Muskegon	1	.....
Arkansas:			Missouri:		
Little Rock	3	.....	Kansas City	1	.....
California:			New Jersey:		
Berkeley	1	.....	Hoboken	1	.....
Los Angeles	1	.....	New York:		
Connecticut:			New York	1	.....
New Haven	1	.....	Oklahoma:		
New London	1	.....	Oklahoma	.....	1
Georgia:			Tennessee:		
Albany	1	.....	Memphis	7	.....
Augusta	3	.....	Texas:		
Macon	1	.....	Beaumont	.....	1
Rome	2	.....	San Antonio	.....	2
Louisiana:			Virginia:		
New Orleans	1	.....	Danville	1	.....

MEASLES.

See p. 1654; also Current State summaries, p. 1643, and Monthly summaries by States, p. 1647.

PELLAGRA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Alabama:			North Carolina:		
Birmingham	1	.....	Durham	.....	1
Arkansas:			Oklahoma:		
Little Rock	1	.....	Oklahoma	.....	1
North Little Rock	1	.....	South Carolina:		
California:			Columbia	.....	4
Oakland	.....	1	Tennessee:		
Georgia:			Memphis	.....	1
Macon	1	.....	Nashville	1	.....
Louisiana:			Texas:		
New Orleans	1	1	Dallas	.....	1

PNEUMONIA (ALL FORMS).

Alabama:			Georgia:		
Birmingham	.....	6	Atlanta	12	10
Mobile	.....	1	Augusta	.....	2
Montgomery	.....	1	Savannah	1	.....
Arkansas:			Illinois:		
Little Rock	1	.....	Bloomington	.....	1
California:			Chicago	102	39
Berkeley	1	.....	East St. Louis	.....	1
Glendale	.....	1	Freeport	2	.....
Los Angeles	22	16	Jacksonville	.....	1
Oakland	.....	2	Oak Park	.....	1
Pasadena	.....	1	Pekin	1	.....
Riverside	.....	2	Indiana:		
Sacramento	.....	3	Anderson	.....	3
San Bernardino	.....	1	East Chicago	.....	2
San Diego	4	2	Fort Wayne	.....	1
San Francisco	11	4	Frankfort	.....	1
Santa Barbara	.....	1	Hammond	.....	1
Stockton	.....	1	Indianapolis	.....	6
Colorado:			Logansport	.....	1
Denver	.....	5	Muncie	.....	1
Connecticut:			Iowa:		
Bristol	.....	1	Muscatine	1	.....
New Haven	.....	1	Kansas:		
Waterbury	3	2	Kansas City	4	.....
District of Columbia:			Wichita	.....	1
Washington	.....	8	Kentucky:		
Florida:			Covington	.....	3
Tampa	1	.....	Lexington	.....	1
			Louisville	.....	5

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

PNEUMONIA (ALL FORMS)—Continued.

City.	Cases.	Deaths.
Louisiana:		
New Orleans	9	8
Maine:		
Biddeford		1
Lewiston		1
Portland	1	
Sanford		1
Maryland:		
Baltimore	16	11
Cumberland	2	
Massachusetts:		
Boston		12
Cambridge	2	
Everett	1	
Fall River		1
Greenfield		1
Haverhill		2
Holyoke		2
Lawrence		1
Lowell		4
New Bedford		8
Somerville		1
Southbridge		1
Taunton		2
Watertown	2	
Worcester		5
Michigan:		
Detroit	43	31
Flint		2
Grand Rapids	5	
Highland Park	1	
Jackson		1
Kalamazoo	1	
Muskegon		1
Pontiac	1	
Port Huron	2	1
Saginaw		1
Sault Ste. Marie		1
Minnesota:		
Duluth		3
St. Paul		4
Missouri:		
Kansas City		3
St. Joseph		4
Montana:		
Missoula		1
Nebraska:		
Lincoln	1	
Omaha		4
Nevada:		
Reno		1
New Hampshire:		
Concord		1
Manchester		1
New Jersey:		
Bayonne	1	
East Orange	2	
Elizabeth		2
Hoboken		2
Kearny	1	
Montclair	1	
Morristown		1
Newark	13	5
Paterson	1	
Perth Amboy		1
Plainfield		1
Trenton		3
West New York		1
New Mexico:		
Albuquerque		1
New York:		
Albany	7	
Buffalo		7
New York—Continued.		
Cohoes	1	
Geneva		1
Glens Falls		1
Ithaca	3	
Lackawanna	6	3
Mount Vernon	2	
New York	112	89
Niagara Falls		1
Rochester	8	3
Rome	2	
Schenectady	3	1
Syracuse	11	2
Troy		2
Watertown	3	
Yonkers		2
North Carolina:		
Greensboro		1
Raleigh		1
Wilmington		2
Winston-Salem		1
Ohio:		
Akron	2	
Cincinnati	17	15
Cleveland	22	8
Columbus		5
Dayton	1	
Hamilton		1
Mansfield		1
Newark		1
Niles	2	1
Toledo		3
Youngstown		6
Oregon:		
Portland		2
Pennsylvania:		
Philadelphia	48	30
Pittsburgh		24
Rhode Island:		
Cranston		1
Cumberland		1
Providence		4
South Carolina:		
Charleston		2
Columbia		1
Tennessee:		
Memphis		2
Nashville		2
Texas:		
El Paso		2
Houston		4
San Antonio		1
Utah:		
Provo	3	1
Salt Lake City		2
Vermont:		
Burlington		1
Virginia:		
Alexandria	1	
Charlottesville		1
Norfolk		3
Petersburg		1
Richmond		6
Roanoke		1
West Virginia:		
Charleston		1
Wheeling		1
Wisconsin:		
Janesville		1
Kenosha		1
Oshkosh		1
Superior		2

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

POLIOMYELITIS (INFANTILE PARALYSIS).

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

City.	Median for previous years.	Week ended June 30, 1923.	
		Cases.	Deaths.
Illinois:			
Evanston	0	1	.....
Louisiana:			
New Orleans	0	1	.....
Massachusetts:			
Lowell	0	2	1
New York:			
New York	3	3	2
Yonkers	0	1	1
Pennsylvania:			
Washington	0	1	.....
Texas:			
Houston	0	1	.....

RABIES IN ANIMALS.

City.	Cases.
California:	
Los Angeles	15
Kentucky:	
Louisville	1
New Jersey:	
Montclair	1
Texas:	
Dallas	1

SCARLET FEVER.

See p. 1654; also Current State summaries, p. 1643, and Monthly summaries by States, p. 1647.

SMALLPOX.

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

City.	Median for previous years.	Week ended June 30, 1923.	
		Cases.	Deaths.
California:			
Los Angeles	1	5	.....
Georgia:			
Atlanta	4	8	.....
Savannah	0	2	.....
Illinois:			
Chicago	1	3	.....
Indiana:			
Fort Wayne	0	1	.....
Huntington	0	1	.....
Indianapolis	4	5	.....
Logansport	0	1	.....
Mishawaka	0	4	.....
Muncie	0	4	.....
South Bend	0	2	.....
Iowa:			
Davenport	0	7	.....
Waterloo	1	1	.....
Michigan:			
Detroit	7	7	.....
Highland Park	0	1	.....
Holland	0	1	.....
Port Huron	0	1	.....
Minnesota:			
Hibbing	0	1	.....
Minneapolis	11	2	.....
St. Paul	3	2	.....
Missouri:			
Kansas City	4	2	.....
Montana:			
Great Falls	4	1	.....
North Carolina:			
Winston-Salem	0	4	.....
Ohio:			
Barberton	0	2	.....
Marion	0	1	.....
Middletown	0	1	.....
Sandusky	0	1	.....
Oklahoma:			
Oklahoma	3	3	.....
Oregon:			
Portland	6	9	.....
Pennsylvania:			
Johnstown	0	1	.....
Philadelphia	0	1	.....
Tennessee:			
Chattanooga	0	2	.....
Knoxville	0	2	.....
Memphis	1	1	.....
Texas:			
Dallas	0	1	.....
Fort Worth	1	1	.....
Houston	2	1	.....
San Antonio	.....	8	4
Vermont:			
Burlington	0	1	.....
Virginia:			
Lynchburg	0	1	.....
Roanoke	0	2	.....
Washington:			
Aberdeen	3	1	.....
Seattle	4	2	.....
Wisconsin:			
Kenosha	0	6	.....

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

TETANUS.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Georgia:			Pennsylvania:		
Augusta		1	Pittsburgh	2	1
Illinois:			South Carolina:		
Chicago	1		Charleston		1
Massachusetts:			Texas:		
North Adams	1		Dallas		1
Waltham	1		San Antonio		1

TUBERCULOSIS.

See p. 1654; also Current State summaries, p. 1643.

TYPHOID FEVER.

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

City.	Median for previous years.	Week ended June 30, 1923.		City.	Median for previous years.	Week ended June 30, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				Michigan—Continued.			
Birmingham	2	1		Grand Rapids	1	2	
Mobile	2	1	1	Jackson	0	1	
Montgomery	1	1		Muskegon	0		1
California:				Minnesota:			
Berkeley	0	1		Duluth	0	1	
Los Angeles	1	7	1	St. Paul	0	2	
Oakland	1		2	Missouri:			
Sacramento	1		1	St. Louis	3	1	1
San Francisco	1	1		Nebraska:			
Stockton	0	1		Omaha	0		1
Connecticut:				New Hampshire:			
Bridgeport	0	1		Nashua	0	1	
Waterbury	0	1		New Jersey:			
District of Columbia:				Morristown	0		1
Washington	1	2		Newark	1	1	
Georgia:				New Mexico:			
Atlanta	5	5		Albuquerque	0	1	1
Augusta	0	5		New York:			
Brunswick	0	1		Albany	0	2	
Macon	4	1		Glens Falls	0	1	
Illinois:				New York	19	12	2
Aurora	0	1		Syracuse	0	4	
Chicago	5	4		North Carolina:			
Jacksonville	0	1		Greensboro	0	2	
Indiana:				Ohio:			
Indianapolis	1	2		Ashtabula	0	1	
Logansport	0	1		Ballaire	0	1	
Kansas:				Cambridge	0	1	1
Kansas City	1	2		Cincinnati	2	1	
Kentucky:				Cleveland	2	5	
Henderson	0		1	Columbus	0	1	
Louisville	3	4		Toledo	2	3	1
Louisiana:				Oklahoma:			
New Orleans	9	4	1	Oklahoma	0	3	
Maine:				Pennsylvania:			
Bangor	0	1		Butler	0	2	
Biddeford	0	1		Easton	0	1	
Portland	1	1		Farrell	0	4	
Maryland:				New Castle	0	1	
Baltimore	4	3		Norristown	0	1	
Massachusetts:				Pottsville	0	1	
Boston	2	2		Washington	0	1	
Fall River	2	4		York	0	1	
Lowell	0	1	1	South Carolina:			
Quincy	0	2		Charleston	6	2	
Somerville	0	1		Columbia	1	1	
Michigan:				Tennessee:			
Alpena	0	1		Chattanooga	0	1	
Detroit	5	2	1	Knoxville	5	1	

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

TYPHOID FEVER—Continued.

City.	Median for previous years.	Week ended June 30, 1923. Cases.	Deaths.	City.	Median for previous years.	Week ended June 30, 1923. Cases.	Deaths.
Tennessee—Continued.				Washington:			
Memphis	3	4	.....	Everett	0	1	.....
Nashville	5	1	.....	West Virginia:			
Texas:				Charleston	1	4	1
Amarillo	.....	.....	1	Huntington	0	.....	1
Dallas	5	2	1	Martinsburg	0	1	.....
El Paso	1	2	1	Wisconsin:			
Fort Worth	2	1	.....	Janesville	0	4	.....
Houston	1	3	.....	Milwaukee	2	1	.....
San Antonio	.....	23	2	Superior	0	1	.....
Virginia:				Wausau	0	1	.....
Lynchburg	0	2	.....				
Richmond	1	5	2				

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria. Cases.	Deaths.	Measles. Cases.	Deaths.	Scarlet fever. Cases.	Deaths.	Tuberculosis. Cases.	Deaths.
Alabama:										
Birmingham	178,806	66	.....	.....	34	2	.....	.....	8	7
Mobile	60,777	19	.....	.....	.....	.....	.....	.....	.....	.....
Montgomery	43,464	18	.....	.....	6	.....	.....	.....	1	2
Tuscaloosa	11,996	.....	.....	.....	5	.....	.....	.....	.....	.....
Arkansas:										
Little Rock	65,142	.....	.....	.....	7	.....	.....	.....	1	.....
North Little Rock	14,048	.....	.....	.....	2	.....	.....	.....	.....	.....
California:										
Alameda	28,806	2	3	.....	16	.....	.....	.....	.....	.....
Berkeley	56,036	10	3	.....	15	.....	2	.....	.....	.....
Glendale	13,536	13	.....	.....	.....	.....	.....	.....	.....	2
Long Beach	55,593	15	.....	.....	12	.....	4	.....	1	2
Los Angeles	576,673	178	64	.....	71	.....	27	1	97	16
Oakland	216,261	48	8	3	20	1	4	.....	2	1
Pasadena	45,354	14	1	.....	7	.....	4	.....	1	.....
Richmond	16,843	4	3	.....	2	.....	1	.....	.....	.....
Riverside	19,341	9	.....	.....	.....	.....	1	.....	.....	.....
Sacramento	65,908	16	1	.....	34	1	1	.....	1	.....
San Bernardino	18,721	13	.....	.....	3	.....	2	.....	1	4
San Diego	74,683	29	7	.....	8	.....	2	.....	5	3
San Francisco	506,676	140	21	3	104	2	6	.....	19	8
Santa Ana	15,485	2	.....	.....	1	.....	1	.....	.....	.....
Santa Barbara	19,441	7	.....	.....	.....	.....	.....	.....	.....	.....
Santa Cruz	10,917	7	.....	.....	.....	.....	.....	.....	.....	.....
Stockton	40,296	9	.....	.....	3	.....	1	.....	.....	.....
Vallejo	21,107	1	.....	.....	.....	.....	.....	.....	.....	.....
Colorado:										
Denver	256,491	76	29	2	53	2	7	.....	.....	10
Greeley	10,958	3	.....	.....	.....	.....	.....	.....	.....	1
Pueblo	43,050	13	.....	.....	1	.....	.....	.....	.....	1
Trinidad	10,906	.....	1	.....	1	.....	.....	.....	.....	.....
Connecticut:										
Bridgeport	143,555	22	8	1	8	.....	13	.....	1	3
Bristol	20,620	5	.....	.....	.....	.....	2	.....	3	.....
Derby	11,238	1	.....	.....	.....	.....	.....	.....	.....	.....
Manchester (town)	18,370	1	1	.....	.....	.....	.....	.....	.....	.....
Meriden (city)	29,867	.....	1	.....	2	.....	.....	.....	2	.....
Milford (town)	10,193	1	.....	.....	1	.....	.....	.....	.....	.....
New Haven	162,537	32	2	.....	7	.....	2	.....	7	3
New London	25,683	3	.....	.....	1	.....	.....	.....	1	.....
Waterbury	91,715	18	3	.....	5	1	3	.....	3	1
District of Columbia:										
Washington	437,571	109	3	.....	47	.....	8	.....	19	.....
Florida:										
Key West	18,749	4	.....	.....	.....	.....	.....	.....	.....	.....
St. Petersburg	14,237	6	.....	.....	.....	.....	.....	.....	.....	1
Tampa	51,608	13	.....	.....	.....	.....	.....	.....	.....	.....

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Georgia:										
Albany	11,555				2				2	
Atlanta	200,616	63	3		7	2	2		7	2
Augusta	52,548	27			15				1	5
Brunswick	14,413	1								
Macon	52,995				6		1			
Rome	13,252				9		1			
Savannah	83,252	27	1		7	1			5	2
Idaho:										
Boise	21,393	7			1					
Illinois:										
Alton	24,682	12			2		1			1
Aurora	36,397	11			6		1			4
Bloomington	28,725	15			5				4	
Blue Island	11,424	5	1		17					
Centralia	12,491	4			2					
Chicago	2,701,705	623	73		219	9	33		230	51
Cicero	44,995	5	1		1					
East St. Louis	66,767	17	1				1		1	2
Elgin	27,454	7			10					1
Evanston	37,234	10			21					
Freeport	19,669	9			14		3			
Galesburg	23,834	10								
Jacksonville	15,713	8							1	1
Kewanee	16,026	4			3				1	
La Salle	13,650	3								
Mattoon	13,552		1		4					
Oak Park	39,858	8			26					
Peoria	76,121	25								
Quincy	35,978	14			6		1		1	
Rock Island	35,177	2			32					
Springfield	59,183	13			2				2	
Indiana:										
Anderson	29,767	6								1
Bloomington	11,525	9					1		1	2
Crawfordsville	10,139	3								1
East Chicago	35,967	9			5		2			1
Elwood	10,790	3								1
Fort Wayne	86,549	28	1	1				3		1
Frankfort	11,585	2			6		1			
Hammond	36,004	13	1		4		1			
Huntington	14,600	4								
Indianapolis	314,194	85	4		106				7	7
Kokomo	30,067	11	1		3					1
La Fayette	22,486	3			11					
Logansport	21,026	4	1		2					
Michigan City	19,457	8								1
Mishawaka	15,195	2					1		3	
Muncie	36,524	9			34					
South Bend	70,983	8	2				2		5	
Terre Haute	66,083	19			1		2			
Iowa:										
Burlington	24,057	7			4					
Cedar Rapids	45,566						1			
Davenport	56,727	1	2		14			1		
Des Moines	126,468		1		2					
Dubuque	39,141		1		2					
Iowa City	11,267		1				1			
Muscatine	16,068	3								
Ottumwa	23,063		3							
Sioux City	71,227				3					
Waterloo	36,230	1	3	1	2					
Kansas:										
Atchison	12,630						1			
Coffeyville	13,452	4	1		1					
Fort Scott	10,033	7								
Kansas City	101,177				63				6	
Lawrence	12,456	1			1					
Topeka	50,022	9	1		51				1	
Wichita	72,217	23			34					
Kentucky:										
Covington	57,121	23			10		1		1	3
Henderson	12,169	7								1
Lexington	41,534	12			4					2

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Kentucky—Continued.										
Louisville	234,891	72	1	.....	15	1	1	.....	23	7
Owensboro	17,424	.....	1	.....	.....	.....	.....	.....	1	.....
Louisiana:										
New Orleans	387,219	125	5	.....	7	.....	.....	.....	19	11
Maine:										
Auburn	16,985	1	.....	.....	8	.....	1	.....	.....	.....
Bangor	25,978	.....	.....	.....	8	.....	.....	.....	1	.....
Bath	14,731	3	.....	.....	.....	.....	.....	.....	.....	.....
Biddeford	18,008	2	.....	.....	.....	.....	.....	.....	.....	.....
Lewiston	31,791	13	.....	.....	10	.....	2	.....	.....	.....
Portland	69,272	14	4	.....	1	.....	2	.....	.....	2
Sanford (town)	10,691	9	.....	.....	.....	.....	.....	.....	.....	.....
Waterville	13,351	.....	1	.....	1	.....	.....	.....	1	.....
Maryland:										
Baltimore	733,826	204	13	1	170	1	40	.....	43	17
Cumberland	29,837	4	.....	.....	2	.....	.....	.....	.....	.....
Frederick	11,066	6	1	.....	5	.....	1	.....	1	.....
Massachusetts:										
Adams (town)	12,967	3	.....	.....	.....	.....	.....	.....	1	.....
Amesbury (town)	10,036	3	.....	.....	.....	.....	.....	.....	.....	.....
Arlington (town)	18,665	2	2	.....	4	.....	1	.....	2	.....
Attleboro	19,731	7	.....	.....	.....	.....	.....	.....	.....	.....
Belmont (town)	10,749	2	.....	.....	19	.....	.....	.....	3	.....
Beverly	22,561	4	.....	.....	.....	.....	2	.....	1	1
Boston	748,060	201	58	1	110	2	52	.....	42	20
Braintree (town)	10,580	2	.....	.....	24	.....	.....	.....	.....	.....
Brockton	66,254	3	2	.....	30	.....	1	.....	2	1
Brookline	37,748	11	1	.....	2	.....	1	.....	2	.....
Cambridge	109,694	23	1	.....	13	.....	4	1	4	1
Chelsea	43,184	13	1	.....	2	.....	4	.....	.....	.....
Chicopee	36,214	6	1	.....	.....	.....	.....	.....	1	1
Clinton	12,979	7	.....	.....	.....	.....	.....	.....	.....	.....
Dedham	10,792	2	.....	.....	.....	.....	.....	.....	.....	.....
Easthampton	11,261	.....	.....	.....	1	.....	1	.....	.....	.....
Everett	40,120	4	1	.....	3	.....	2	.....	2	.....
Fall River	120,485	18	.....	.....	4	.....	3	.....	4	2
Framingham	17,033	6	.....	.....	.....	.....	1	.....	1	1
Gardner	16,971	2	.....	.....	3	.....	.....	.....	1	.....
Greenfield	15,462	2	.....	.....	.....	.....	.....	.....	.....	.....
Haverhill	53,884	6	1	.....	18	.....	5	.....	1	.....
Holyoke	60,203	15	2	.....	3	.....	4	.....	2	.....
Lawrence	94,270	12	1	.....	15	.....	.....	.....	1	.....
Leominster	19,744	3	.....	.....	19	.....	.....	.....	1	1
Lowell	112,759	32	.....	.....	8	.....	6	.....	4	.....
Lynn	99,148	12	5	.....	1	.....	2	.....	2	.....
Medford	39,038	14	2	.....	1	.....	1	.....	.....	.....
Melrose	18,204	3	1	.....	14	.....	1	1	1	.....
Methuen	15,189	10	.....	.....	5	.....	1	.....	6	1
New Bedford	121,217	33	2	.....	1	.....	.....	.....	9	.....
Newburyport	15,618	5	.....	.....	6	.....	.....	.....	.....	.....
Newton	46,054	10	.....	.....	13	.....	4	.....	1	.....
North Adams	22,282	3	.....	.....	.....	.....	.....	.....	.....	.....
Northampton	21,951	8	.....	.....	.....	.....	2	.....	.....	.....
Peabody	19,552	1	1	.....	.....	.....	1	.....	1	.....
Pittsfield	41,763	4	.....	.....	.....	.....	.....	.....	.....	.....
Plymouth	13,045	2	.....	.....	.....	.....	.....	.....	.....	.....
Quincy	47,876	7	.....	.....	8	.....	9	.....	3	.....
Salem	42,529	0	7	.....	.....	.....	.....	.....	2	.....
Saugus	10,874	1	.....	.....	2	.....	.....	.....	1	.....
Somerville	93,091	15	4	1	3	.....	2	.....	4	1
Southbridge	14,245	3	.....	.....	12	1	.....	.....	.....	.....
Springfield	129,614	25	2	.....	3	.....	3	.....	8	2
Taunton	37,137	10	.....	.....	.....	.....	4	.....	4	.....
Wakefield	13,025	1	.....	.....	3	.....	.....	.....	1	1
Waltham	30,915	7	.....	.....	2	.....	.....	.....	1	1
Watertown	21,457	1	4	.....	19	.....	1	.....	.....	.....
West Springfield	13,443	1	.....	.....	.....	.....	.....	.....	.....	.....
Westfield	18,604	4	1	1	.....	.....	.....	.....	.....	.....
Winthrop	15,455	5	4	.....	1	.....	.....	.....	.....	.....
Woburn	16,574	3	.....	.....	.....	.....	.....	.....	.....	.....
Worcester	179,754	31	4	.....	.....	.....	17	.....	3	3

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Michigan:										
Ann Arbor	19,516	21			58					
Battle Creek	36,164	0	1		37		3			
Detroit	993,678	257	29	4	147	5	24		65	21
Flint	91,599	20	4		48		2	1	3	1
Grand Rapids	137,634	32	3		124		1		1	1
Highland Park	46,499	13	1		12		2			
Holland	12,183	2	1	1	1		3		1	
Ironwood	15,739	3	2				1			
Jackson	48,374	11			12		2			
Kalamazoo	48,487	14	3		40					1
Marquette	12,718	4					1			
Muskegon	36,570	12	1		13					
Pontiac	34,273	12	4		19		7		3	
Port Huron	25,944	6			6					1
Saginaw	61,903	13			56		2		3	
Sault Ste. Marie	12,096	3								
Minnesota:										
Duluth	98,917	12	2		3		6		1	1
Hibbing	15,089		2							
Minneapolis	380,582	71	7		25	2	15		19	7
Rochester	13,722	16			2					
St. Cloud	15,873		3				1		1	
St. Paul	234,698	54	17	2	15		3		5	3
Winona	19,143	6			2					
Missouri:										
Cape Girardeau	10,252	4								
Joplin	29,902				3					
Kansas City	324,410	95	5		93		3	1	11	6
St. Joseph	77,939	31	3		19					
St. Louis	772,897	221	17		12	1	3		37	11
Springfield	39,631	7								1
Montana:										
Billings	15,100	5							1	1
Great Falls	24,121	4								
Helena	12,037	2			5					
Missoula	12,668	11					1		1	1
Nebraska:										
Lincoln	54,948	17			7				1	
Omaha	191,601	51	6		5		1			
Nevada:										
Reno	12,016	4								
New Hampshire:										
Concord	22,167	6			28		2		1	
Dover	13,029	1								
Keene	11,210	2			7					
Manchester	78,384	20	1		1					2
Nashua	28,379	9			24				1	1
New Jersey:										
Asbury Park	12,760	2			1					
Bayonne	76,754								2	
Belleville	15,060				4					
Bloomfield	22,019	2					2		1	
Clifton	26,270	4			1					
East Orange	50,710	9			17				1	1
Elizabeth	95,783		3	1	1		1		1	1
Englewood	11,925	4			5		1			
Garfield	19,381	6	1				1			1
Hackensack	17,067	3			8				1	
Hoboken	68,166	21	2	1	1			1	2	1
Jersey City	298,103		8		2		5		9	
Kearny	25,124	3	1		2					
Montclair	28,410	6			17					
Morristown	12,548	4							1	
Newark	414,524	83	11		58		8		33	13
Orange	33,268	4	2				1			1
Passaic	63,841	8	1		2				1	
Paterson	135,875		7		37		1		12	
Perth Amboy	41,707	3	3		2		1		4	
Phillipsburg	16,623	4							1	
Plainfield	27,700	2			3				1	1
Summit	10,174	10								
Trenton	119,289	54	8				1		2	5
Union (town)	20,651						1			

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
New Jersey—Continued.										
West Hoboken	40,074	3	2		6					
West New York	29,926	7			1					
West Orange	15,573	2			1		1			
New Mexico:										
Albuquerque	15,157	9	1							2
New York:										
Albany	113,344		1		77		5		8	
Amsterdam	33,524	2	1		17					
Auburn	36,192	5			5				1	2
Buffalo	506,775	108	7		47		17		19	8
Cohoes	22,987	7			9					
Dunkirk	19,336	4			6					
Geneva	14,648	6								
Glens Falls	16,638	1					1		1	
Hornell	15,025	2			18		1			
Hudson	11,745	3	1						1	1
Ithaca	17,004	6			24					
Lackawanna	17,918	5			51					
Little Falls	13,029	0								
Middletown	18,420								2	
Mount Vernon	42,726	10					1		1	
New York	5,620,048	1,213	198	12	447	7	120	1	[1] 196	[1] 81
Newburgh	30,366	6			1					
Niagara Falls	50,760	19	1		16	1	3			
North Tonawanda	15,482	4	1		6		1			
Peekskill	15,868	4								1
Rochester	295,750	57	6		42	2	10		12	4
Rome	26,341	4			4		2			1
Saratoga Springs	13,181	4	1							
Schenectady	88,723	19	1		61	2			7	1
Syracuse	171,717	48	7		206	3	3		2	
Troy	72,013	17	2		7		1		3	1
Watertown	31,285	10			35		1		3	2
White Plains	21,031	2			3		1			
Yonkers	100,176	23	2	1	9	1	4			2
North Carolina:										
Durham	21,719	7			3					2
Greensboro	43,525	13			18		1			1
Raleigh	24,418	21			4					1
Rocky Mount	12,742	8								
Salisbury	13,884	3								
Wilmington	33,372	10			9					
Winston-Salem	48,395	22			126		1		5	1
North Dakota:										
Grand Forks	14,010				1		2			
Ohio:										
Akron	208,435	12	3		9					
Alliance	21,603	5					1			
Ashtabula	22,082	3			1				1	
Barberton	18,811	2								1
Bellaire	15,061	3			2		3		2	
Bucyrus	10,425	4	2		1		1			1
Cambridge	13,104	2	1				1		1	1
Canton	87,091	10			9					
Cincinnati	401,247	126	2		79	1	4		34	6
Cleveland	796,841	177	25		119		23	1	30	16
Cleveland Heights	15,236				1				1	
Columbus	237,031	65	1		7		5		7	6
Coshocton	10,847								1	
Dayton	152,559	33	5		2		4		1	
East Cleveland	27,292	5			2					
East Youngstown	11,237	2								
Findlay	17,021	7								
Fremont	12,468	3			2		1			
Hamilton	39,675	12								
Kenmore	12,683				5				1	
Lancaster	14,706	7			1	1	1			1
Lorain	37,295				2		1		2	
Mansfield	27,824	4			11					
Marion	27,891		1				1			
Martins Ferry	11,634	2	1							
Middletown	23,594	2								

[1] Pulmonary only.

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Ohio—Continued.										
New Philadelphia	10,718				7		1			
Newark	26,718	9			5					1
Niles	13,080	2			1					
Norwood	24,966	3			2				1	
Piqua	15,044	5								
Salem	10,305	3	2		11					
Sandusky	22,897	13			1					1
Springfield	60,840	11								
Steubenville	28,508	10			1		1		1	
Tiffin	14,375	4			3				1	
Toledo	243,164	58	5		17		18	1	6	5
Youngstown	132,358	28	19	3	27	1	2		2	1
Zanesville	29,569	9	1		1					
Oklahoma:										
Oklahoma	91,295	43			5				1	2
Tulsa	72,075				1		1			
Oregon:										
Portland	258,288	54	2		1		2		4	5
Pennsylvania:										
Allentown	73,502		2		9				5	
Altoona	60,331		1							
Ambridge	12,730				6		3			
Beaver Falls	12,802				2		1		2	
Berwick	12,181		1		1					
Bethlehem	50,358		2		16				2	
Braddock	20,879				1					
Bradford	15,525				4					
Bristol	10,273				1					
Carrick	10,504						1		1	
Chester	58,030		1		2		2			
Coatesville	14,515						1			
Dickson	11,049		1							
Duquesne	19,011		1		1					
Easton	33,813		1		2					
Erie	93,372		2		74		1		8	
Farrell	15,586		1							
Harrisburg	75,917		2		3					
Hazelton	32,277				3					
Homestead	20,452								1	
Johnstown	67,327		6		24		3			
Lancaster	53,150		1		5				1	
Lebanon	24,643		3							
McKees Rocks	16,713		2						1	
McKeesport	46,781								5	
Meadville	14,568				7					
Nanticoke	22,614		1		3		1		1	
New Castle	44,938		1		1		1			
Norristown	32,319		1		5		1			
North Braddock	14,928		1							
Oil City	21,274				1					
Philadelphia	1,823,779	494	41	3	19		25	1	67	49
Phoenixville	10,484				3					
Pittsburgh	588,343	133	20	1	51		13			9
Pittston	18,497		1		1					
Pottsville	21,876		1		3					
Scranton	137,783		2		6				5	
Sharon	21,747						3			
Steelton	13,428						1			
Sunbury	15,721				2					
Swissvale	10,908		1		3					
Tamaqua	12,363				6					
Uniontown	15,692		1							
Warren	14,272		1		5		1		1	
Washington	21,480				12					
West Chester	11,717				2					
Wilkes-Barre	73,833		2		8		1		1	
Williamsport	36,198		2		9				1	
Woodlawn	12,495				1					
York	47,512		1						2	
Rhode Island:										
Cranston	29,407	5			1		1			
Cumberland (town)	10,077	1								
East Providence (town)	21,793						1			

CITY REPORTS FOR WEEK ENDED JUNE 30, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Rhode Island—Continued.										
Newport	30,255	3	4							
Pawtuchet	64,248	6	3							1
Providence	237,595	50	5	1	9		6			7
South Carolina:										
Charleston	67,957	27			14					3
Columbia	37,524	21			3				3	
Greenville	23,127	8			1					
South Dakota:										
Sioux Falls	25,202	7	2		3					
Tennessee:										
Knoxville	77,818				3				1	1
Memphis	162,351	67			2		2		17	6
Nashville	118,342	54			1		1		5	3
Texas:										
Amarillo	15,494	10							1	
Beaumont	40,422	10								2
Dallas	158,976	43	3	1	9		1			1
El Paso	77,560	42			4				7	13
Fort Worth	106,482	12	1		1		2		5	
Galveston	44,255	3	1							
Houston	138,276	26	2		4					2
San Antonio	161,379	50	1		8		1		3	5
Waco	38,500	9					1			1
Utah:										
Provo	10,303	2								
Salt Lake City	118,110	23	2	1	9					1
Vermont:										
Burlington	22,779	24			26		1			3
Virginia:										
Alexandria	18,060	3			3					2
Charlottesville	10,688	6	1	1						
Danville	21,539	7								
Lynchburg	30,070	2			2				1	
Norfolk	115,777				56				6	3
Petersburg	31,012	15			8				1	1
Richmond	171,667	63	1		128	1	1		5	4
Roanoke	50,842	13			6	1				2
Washington:										
Everett	27,644						1			
Seattle	315,312		1		30		3		34	
Spokane	104,437		1		17		3			
Tacoma	96,965		2				3			
West Virginia:										
Bluefield	15,282	7			1					
Charleston	39,608	25	1		2					
Clarksburg	27,869	10			34				2	
Fairmont	17,851		1		2					
Huntington	50,177	22			6	2				2
Morgantown	12,127				1				2	
Parkersburg	20,050	3			1					
Wheeling	56,208	18			5		2		1	1
Wisconsin:										
Appleton	19,561	6	1		7					
Ashland	11,334	7			15		11	2		
Beloit	21,284	1			4		3			1
Eau Claire	20,906		1		20		1			
Fond du Lac	23,427	6							1	
Green Bay	31,017		1		6		4			
Janesville	18,293	7							1	
Kenosha	40,472	6	3							
La Crosse	30,421				8		3			
Madison	38,378	3			20		1			
Manitowoc	17,563				11					
Marinette	13,610				4					
Milwaukee	457,147	87	15	2	9		28	1	11	5
Oshkosh	33,162	14			29				1	
Racine	58,593	5	4		3		2			
Sheboygan	30,955	9	3		1				3	
Superior	39,671	5			2		3			
Waukesha	12,558				6		1			
Wausau	18,661				5					
West Allis	13,745						2		2	
Wyoming:										
Cheyenne	13,829	3			1		1		1	1

FOREIGN AND INSULAR.

COLOMBIA.

Quarantine for Protection of North Coast Cities.

Information dated June 2, 1923, shows that on May 26 a four days' quarantine was established by the Government of the Republic of Colombia at a point one day out from Bucaramanga, for protection of travel to the Magdalena River and the north coast cities against yellow fever infection.[1]

CUBA.

Communicable Diseases—Habana.

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

Disease.	June 21-30, 1923.		Remaining under treatment June 30, 1923.
	New cases.	Deaths.	
Chicken pox	3		5
Diphtheria	3		1
Leprosy			[1] 12
Malaria	39	2	[2] 31
Measles	6		9
Paratyphoid fever	2		5
Scarlet fever	1		3
Typhoid fever	19	2	[3] 38

[1] From abroad, 1.
[2] From the interior, 14.
[3] From the interior, 26.

MADAGASCAR.

Plague.

During the period April 16 to 30, 1923, 29 cases of plague with 29 deaths were reported in the island of Madagascar, occurring in the Province and town of Tananarive, the distribution being as follows: Province—cases 17, deaths 17; town of Tananarive—cases 12, deaths, 12.

[1] Public Health Reports, Mar. 23, 1923, p. 650; May 11, 1923, p. 1045; June 1, 1923, p. 1222; June 15, 1923, p. 1376.

PERSIA.

Vaccination Against Animal Anthrax.

Information received under date of May 14, 1923, shows that arrangements were being made at that date for carrying out vaccination of animals against anthrax in certain villages in Persia, with a view to popular education in the use of anthrax serum. It was stated that high mortality from anthrax was reported among animals in Persia.

PERU.

Plague—May 16–31, 1923.

During the period May 16 to 31, 1923, plague was reported present in Peru, with 36 cases and 16 deaths, occurring in 10 localities. For distribution of cases and deaths according to locality, see page 1663.

POLAND.

Communicable Diseases—March 4–17, 1923.

Communicable diseases have been notified in Poland as follows:

MARCH 4–10, 1923.

Disease.	Cases.	Deaths.	District and city showing greatest mortality.
Cerebrospinal meningitis	12	10	Upper Silesia.
Diphtheria	71	5	Pomerania.
Measles	609	22	Lodz.
Scarlet fever	194	24	Stanislawow.
Smallpox	10	1	Do.
Tuberculosis	119	287	Lwow.
Typhoid fever	269	28	Lodz.
Typhus fever	541	40	Lwow.
Typhus fever, recurrent	84	2	Polesia and Volhynia.
Whooping cough	64	10	Warsaw.

MARCH 11–17, 1923.

Cerebrospinal meningitis	18	11	Lodz.
Diphtheria	70	13	Warsaw.
Measles	694	21	Lwow.
Scarlet fever	220	42	Stanislawow.
Smallpox	19	1	Krakow.
Tuberculosis	141	214	Warsaw.
Typhoid fever	210	17	Lodz.
Typhus fever	501	30	Lwow and Tarnopol.
Typhus fever, recurrent	60	1	Nowogrodek.
Whooping cough	81	16	Lwow.

Other Diseases—Anthrax—Dysentery—Rabies.

During the week ended March 10, 1923, one case of anthrax with one death was reported in Poland, occurring in the district of Lublin. During the week ended March 17, 1923, nine cases of dysentery with two deaths, occurring in the districts of Bialystok and Pomerania, and one death from rabies, occurring in the district of Lwow, were reported in Poland.

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

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

Reports Received During Week Ended July 20, 1923.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India				Apr. 22-June 2, 1923: Cases, 5,775; deaths, 5,523.
Calcutta	May 20-June 2	117	91	Epidemic.
Rangoon	May 20-26	6	5	
Philippine Islands:				
Province—				
Laguna	June 3-9	1		
Siam:				
Bangkok	May 13-19	3	4	

PLAGUE.

British East Africa:				
Kenya—				
Tanganyika	May 6-12	1	1	
Ceylon:				
Colombo	May 13-26	7	7	Plague rats, 32.
China:				
Amoy	May 20-26		2	
Hongkong	May 20-26	23	10	
India:				
Bombay	Apr. 29- May 19	261	214	
Calcutta	May 20-June 2	7	6	
Karachi	May 27-June 2	21	15	
Madras Presidency	May 27-June 2	71	35	
Rangoon	May 20-26	19	14	
Madagascar				Apr. 16-30, 1923: Cases, 29; deaths, 29. Bubonic, pneumonic, septicemic.
Province—				
Tananarive	Apr. 16-30	17	17	
Tananarive	do	12	12	
Peru				May 16-31, 1923: Cases, 36; deaths, 16.
Locality—				
Ayacaba	May 16-31	2		
Callao	do	1		
Canete	do	2	2	
Cerro Azul	do	1	1	
Chiclayo	do	3	2	
Huancabamba	do	15	7	
Lima (city)	do	4	1	
Lima (country)	do	3	2	
Salaverry	do	4		
Trujillo	do	1	1	
Siam:				
Bangkok	May 13-26	11	10	

SMALLPOX.

Bolivia:				
La Paz	Apr. 1-30	1	2	
British East Africa:				
Kenya—				
Mombasa	May 20-26	1		From vessel from Bombay.
Tanganyika	Apr. 29-May 5	2		
Canada:				
British Columbia—				
Vancouver	May 27-June 23	31		
Ceylon:				
Colombo	May 13-19	5		
Chile:				
Concepcion	May 22-28		2	
Valparaiso	May 7-June 2		107	
China:				
Amoy	May 20-26		1	
Chungking	May 20-June 2			Present.
Hongkong	May 20-26	14	10	

[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 July 20, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Chosen (Korea):				
Chemulpo	May 1-31	1		
Fusan	do	1		
Gensan	do	1		
Seoul	do	33	9	
Greece:				
Patras	Apr. 24-May 13		11	
Saloniki	Apr. 30-May 20	2	2	
India				Apr. 22-May 5, 1923: Cases, 3,193; deaths, 933.
Bombay	Apr. 29-May 19	110	50	
Calcutta	May 20-26	2	1	
Karachi	May 27-June 2	11		
Madras	do	3	3	
Rangoon	May 20-26	20	5	
Japan:				
Kobe	June 4-10	1		
Java:				
East Java—				
Soerabaya	May 6-12	45	6	
West Java—				
Batavia	May 12-25	3	2	Province.
Mexico:				
Chihuahua	June 18-24	2		
Palestine:				
Jaffa	June 5-11	1		
Portugal:				
Lisbon	May 28-June 9	8	2	
Oporto	June 13-19		1	
Siam:				
Bangkok	May 13-19	22	8	
Sierra Leone:				
Pujehun	May 16-31	1		In Sembehun district.
Switzerland:				
Basel	June 3-9	1		
Berne	do	5		
Tunis:				
Tunis	June 11-17	1		
Turkey:				
Constantinople	May 13-29		29	
On vessel:				
S. S. Karagola	May 20-26	1		At Mombasa, British East Africa; vessel arrived from Bombay, Mar. 25, 1923.

TYPHUS FEVER.

Chile:				
Concepcion	May 22-June 4		2	
Valparaiso	May 7-June 2		13	
Egypt:				
Alexandria	June 4-10	2	1	
Germany:				
Königsberg	May 27-June 2	1		
Greece:				
Patras	Apr. 24-May 13		18	
Saloniki	Apr. 30-May 27	27	4	Recurrent typhus: Cases, 3; deaths, 3.
Hungary:				
Budapest	May 27-June 2		1	
Poland				Mar. 4-17, 1923: Cases, 1,042; deaths, 70. Recurrent typhus: Cases, 144; deaths, 3.
Spain:				
Madrid	May 1-31		1	
Tunis:				
Tunis	June 11-17		1	
Turkey:				
Constantinople	May 13-26		13	

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

Reports Received from June 30 to July 13, 1923.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India				Apr. 15–21, 1923: Cases, 3,475: deaths, 2,603.
Calcutta	May 6–19	89	80	
Rangoon	May 13–19	1	1	
Philippine Islands:				
Province—				
Mountain	Mar. 25–31	1	1	

PLAGUE.

Australia:				
Sydney	June 30	1	1	
Azores:				
St. Michael Island	May 6–26	12	5	In one locality.
Canary Islands:				
Las Palmas	June 7	1		
Ceylon:				
Colombo	May 6–12		3	
China:				
Amoy	May 13–19		1	
Hongkong	Apr. 29–May 12	6	4	
Ecuador:				
Guayaquil				May 16–31, 1923: Rats examined, 4,800; found infected, 21.
Hawaii:				
Hamakua				Plague-infected rats: Pohakea, May 23, 1923, 1 rat; vicinity of Pacific Sugar Co. mill, June 2, 1 rat.
India:				
Calcutta	May 6–19	6	6	
Karachi	May 13–26	60	46	
Madras Presidency	do	159	93	
Rangoon	May 6–19	66	62	
Java:				
East Java—				
Soerabaya	Apr. 1–30	487	487	
Soerakarta				May 16, 1923: Epidemic in five districts.
Madagascar				Apr. 1–15, 1923: Cases, 22; deaths, 19. Bubonic, 5; pneumonic, 1; septicemic, 16.
Province—				
Tananarive	Apr. 1–15	22	19	
Mexico:				
Tampico				Apr. 15–21, 1923: 1 plague rat.
Peru				May 1–15, 1923: Cases, 21; deaths, 11.
Locality—				
Callao	May 1–15	2	1	
Cerro Azul	do	2		
Chiclayo	do	5		
Cutervo	do	2	1	
Huancabamba	do	3	6	
Lima (city)	do	1		
Lima (country)	do	2	1	
Salaverry	do	3	2	
Trujillo	do	1		
Siam:				
Bangkok	Apr. 29–May 12	5	4	
Straits Settlements:				
Singapore	May 6–12		2	

SMALLPOX.

Algeria:				
Algiers	May 1–31	2		
Arabia:				
Aden	May 27–June 2		1	
Brazil:				
Pernambuco	May 6–19	3		
Rio de Janeiro	May 13–26	4	1	

[1] From medical officers of the Public Health Service, American consuls, and other sources. For reports received from Dec. 30, 1922, to June 29, 1923, see Public Health Reports for June 29, 1923. The tables for epidemic diseases are terminated semiannually and new tables begun.

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

Reports Received from June 30 to July 13, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Canada:				
Alberta—				
Calgary	May 27-June 2	1		Infection from Deer Lodge, Mont.
Quebec—				
Quebec	June 10-16	1		Varioloid.
Ceylon:				
Colombo	May 6-12	18		From outside city.
China:				
Amoy	May 13-19		1	
Antung	May 14-20	1		
Chungking	May 13-19			Present.
Foochow	May 13-26			Do.
Hongkong	Apr. 29-May 12	19	21	
Manchuria—				
Dairen	May 21-27	1		
Harbin	May 7-27	2		
Mukden	May 13-20	1		
Nanking	May 13-26			Present.
Shanghai	May 21-June 3	4		Foreign.
Czechoslovakia				Jan.-Mar., 1923: Cases, 15.
Ecuador:				
Guayaquil	May 16-31	1		
Finland				May 1-15, 1923: 1 case.
Great Britain:				
Cardiff	June 3-9	5		
India				Apr. 15-21, 1923: Cases, 1,780; deaths, 491.
Calcutta	May 13-19	3	3	
Karachi	May 13-19	7	6	
Madras	May 13-26	14		
Rangoon	May 6-19	60	27	
Iraq (Mesopotamia):				
Bagdad	Apr. 1-30	10		
Italy:				
Turin	May 28-June 3	1		
Jamaica				May 27-June 9, 1923: Cases, 124 (reported as alastrim).
Kingston	May 27-June 9	17		
Japan:				
Kobe	May 28-June 3	1		
Java:				
East Java—				
Soerabaya	Apr. 22-28	27	4	
West Java—				
Batavia	May 5-11	6		Province.
Mexico:				
Mexico City	May 19-26	36		Including municipalities in Federal District.
Chihuahua	June 11-17	5		
Persia:				
Tabriz	Apr. 1-14		1	District.
Portugal:				
Lisbon	May 20-June 2	20		
Oporto	June 10-16	4	2	
Portuguese West Africa:				
Angola—				
Loanda	Apr. 1-21		2	
Rhodesia (British Africa):				
Northern Rhodesia	May 8-14	21	8	
Southern Rhodesia	May 3-16	4	2	
Siam:				
Bangkok	Apr. 29-May 12	21	8	
Sierra Leone:				
Kaballa	May 1-15	1		
Spain:				
Barcelona	May 31-June 6		1	
Valencia	May 15-June 16	25	1	
Switzerland:				
Basel	May 27-June 3	1		
Berne	May 20-26	1		
Lucerne	May 1-31	29		
Zurich	May 20-June 2	6		
Syria:				
Damascus	May 15-21	2		
Union of South Africa:				
Cape Province	May 6-12			Outbreaks.
Orange Free State	Apr. 29-May 14			Do.
On vessel:				
S. S. Makura	May 26	2		Two cases, in quarantine (reported as alastrim). Vessel left Victoria, B. C., Apr. 28, 1923. Touched at Honolulu.

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

Reports Received from June 30 to July 13, 1923—Continued.

TYPHUS FEVER.

Place.	Date.	Cases.	Deaths.	Remarks.
Algeria:				
Algiers	May 1-31	41	14	
Chile:				
Talcahuano	May 13-19	1		
China:				
Hankow	May 19-25	1		
Manchuria—				
Harbin	May 6-13	1		
Mukden	May 14-20	2		
Czechoslovakia				Jan.-Mar., 1923: Cases, 191; deaths, 6.
Egypt:				
Alexandria	May 14-20	1	2	
Germany:				
Coblenz	May 27-June 2		1	
Hamburg	May 20-26	3		
Königsberg	May 13-19	1		
Stettin	May 27-June 2		1	
Guatemala:				
Guatemala City	Apr. 1-May 31		4	
Hungary				Jan. 1-May 19, 1923: Cases, 318; deaths, 36. In 11 counties.
Budapest	Jan. 1-May 26	48	11	
Iraq (Mesopotamia):				
Bagdad	Apr. 1-30	2		
Mexico:				
Mexico City	May 20-26	15		Including municipalities in Federal district.
Palestine:				
Jaffa	May 22-28	2		
Jerusalem	do	1		
Persia:				
Tabriz	Apr. 1-14	2		
Poland				Mar. 18-Apr. 7, 1923: Cases, 1,211; deaths, 102. Recurrent typhus: Cases, 194; deaths, 3.
Portugal:				
Oporto	June 10-16	1		
Russia (Soviet)				Feb. 1-28, 1923: Cases, 17,577. Recurrent, Jan. 1-Feb. 28, 1923: Cases, 43,540.
Syria:				
Aleppo	May 20-26	3	1	
Beirut	May 1-10	1		
Tunis:				
Tunis	May 28-June 10	3		
Union of South Africa:				
Cape Province	Apr. 29-May 12			Outbreaks.
Orange Free State	May 6-12			Do.
Transvaal	do			Do.

YELLOW FEVER.

Brazil:				
Bahia	May 13-June 2	16	5	