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## BENZOCAINE-CHAULMOOGRA OIL IN THE TREATMENT OF LEPROSY

**Preliminary Note on the Use of an Oil-Soluble Analgesic Which Renders Intramuscular Injections of Chaulmoogra Oil Painless**

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Chaulmoogra oil has been used for centuries and extensively in the treatment of leprosy; that it has some virtue in this respect may therefore be accepted.

The methods of administration, of which there have been many, are not completely satisfactory. Oral administration is accompanied by nausea, making large doses intolerable to most lepers; the intramuscular injection of the crude oil and its refined products is painful and can not be borne by many lepers. The intravenous route is considered unsatisfactory, because of the danger of embolism and pulmonary irritation, as well as local irritation and final blockage of the veins used; furthermore, it is impracticable to permit unskilled assistants to administer by such routes.

With the purpose of compensating for the various difficulties, search was made for some analgesic which might be added to chaulmoogra oil to allay the pain incident to repeated hypodermatic injections. Various water-soluble analgesics used in emulsion with the oil appeared to be completely unsatisfactory in that the water-soluble analgesic was absorbed before the chaulmoogra oil, leaving the bulk of the oil as a tumor and resulting in muscle soreness. Among the oil-soluble analgesics, benzocaine appeared to fulfill the requirements of a nontoxic, nonhabit-forming local anesthetic which when thoroughly mixed with chaulmoogra oil should remain in suspension and be slowly absorbed along with the therapeutic agent.

Benzocaine-chaulmoogra oil and other formulæ injected subcutaneously into rabbits showed the benzocaine formula to cause the least local inflammation. Human experimentation was then undertaken to determine the minimum benzocaine required for satisfactory analgesia. It was further determined that the benzocaine was more

readily soluble in olive oil than in chaulmoogra oil, and the following formula was adopted:

	Parts
Chaulmoogra oil.....	90
Olive oil.....	10
Benzocaine.....	3

The United States Dispensatory describes aethylis aminobenzoas, U. S. (benzocaine), as follows:

Small white or colorless crystals, or a white crystalline powder. It is odorless, and is stable in the air. One gram of ethyl aminobenzoate is soluble in about 2,500 c. c. of water, 5 c. c. of alcohol, 2 c. c. of chloroform, 4 c. c. of ether, and in from 30 to 50 c. c. of expressed oil of almond or olive oil, at 25° C. It is soluble in dilute acids. \* \* \*

Benzocaine is decomposed by prolonged boiling with water, but its oily solution can be boiled without change. It is incompatible with acids and acid salts.

*Uses.*—Ethyl aminobenzoate is remarkable among the local anesthetics, first for its comparative insolubility, and second for its lack of toxicity. Closson (Journ. Michigan State Med. Soc., 1914, XIII, 587) found that in oily solution, injected hypodermically, it required the enormous dose of 1.2 grams per kilo of body weight to kill the guinea pig, which would make it about one-twentieth as poisonous as cocaine. Kennel (B. K. W., December, 1902) has reported a case in which 40 grains were administered to a patient without apparent ill-effect. It also appears to be almost free of local irritating action, although the soluble salts that it forms with acids give rise to considerable irritation. According to the investigations of Closson, the anesthetic effect is almost entirely on the nerve terminals; that is, it has very little effect upon nerve trunks as compared, for example, to cocaine. Despite its sparing solubility, it is capable of passing through mucous membranes to a sufficient extent to lessen sensation. \* \* \*

#### METHOD OF PREPARATION

Three grams of benzocaine are added to 10 c. c. of olive oil and mixed with a stirring rod; this is then added to 90 c. c. of chaulmoogra oil previously warmed on water bath to 70° C.; the oil mass is then agitated in a flask until all remaining crystals of benzocaine are dissolved. The mixture is filtered through filter paper and then heated on water bath at 100° C. for one hour. Benzocaine goes into solution without increasing the volume of the finished mixture.

After experimentation to determine dosage and the most appropriate regions for repeated injections it was ascertained that the maximum, average, comfortably tolerated dose was the semiweekly injection of 5 c. c. into the deltoid regions, alternating with 8 c. c. into the buttocks, and this was adopted as routine. Certain muscular lepers tolerated 15 c. c. twice weekly with no reported discomfort other than that to be expected from the size and pressure of the mass of oil.

It was found that the oil was completely absorbed within 48 hours in the majority of patients, and rarely any evidence of the injection was noted after the third day.

The mixture is best given at body temperature, as this allows the oil to pass freely through a medium-sized needle, thus giving only a minimum of pain from the puncture.

#### REPORT OF CASES

On March 15, 1927, 24 patients were selected for treatment, and these patients have taken the injections consistently for six months. Of the 24 cases, there were but 6 who complained of any after effects other than the muscle soreness from the injection, such as any inert foreign material would cause.

Three abscesses developed (0.2 per cent of total injections), and these were incised and promptly healed. In three instances an indurated mass developed which remained highly inflamed for three days and subsided within five days without surgical interference and with a minimum of pain.

Treatment was started in one additional leper who apparently has a chaulmoogra oil intolerance. Minute injections of the benzocaine-chaulmoogra oil mixture caused inflammatory masses in this patient which were exquisitely tender, and no further treatment was attempted.

Of these 24 lepers (Table 1), 6 were markedly improved by the discontinuance of evanescent tubercles, the healing of ulcers, the reduction of size or complete disappearance of nodules, and the betterment of the general health. Twelve were moderately improved in that there was a reduction in attacks of leprous fever with coincident outcroppings of evanescent tubercles, a healing of small ulcers, a diminution in size of semipermanent lesions, and some improvement in the general health. Five were slightly improved in that progression of their leprous lesions had subsided and there was slight diminution in leprous nodules, with gradual fading of macules. One remained unchanged. This patient is a robust, hardy individual who had very little evidence of the disease when treatment was started.

TABLE 1.—Results of treatment with benzocaine-chaulmoogra oil mixture

Type	Number of cases	Marked improvement	Moderate improvement	Slight improvement	Unchanged	Worse
Anesthetic, active early.....	1	1	0	0	0	0
Anesthetic, active advanced.....	1	0	1	0	0	0
Nodular, active early.....	5	1	2	2	0	0
Nodular, moderately advanced.....	4	1	3	0	0	0
Nodular, advanced.....	6	2	4	0	0	0
Mixed, active early.....	2	0	1	0	1	0
Mixed, moderately advanced.....	1	0	0	1	0	0
Mixed, advanced.....	4	1	1	2	0	0
Total.....	24	6	12	5	1	0

† After completion of this report 1 patient died after a few days' illness from acute cardiac complications.

## ILLUSTRATIVE CASES

*Case 1-384.*—Male, Mexican, 34 years of age, active advanced, nodular type. At time treatment was started had a marked pharyngitis and laryngitis from leprous ulcerations, consequent dysphagia and dysphonia; many nodules over the body; on his face the nodules were confluent, giving a leonine countenance. General physical condition very poor, no appetite, and low morale.

Six months after beginning treatment, many of the smaller leprous ulcers in the mouth and pharynx have healed, leaving only slight evidence of one larger ulcer. Voice greatly improved and patient can speak in a more nearly normal tone. General health markedly improved, appetite good, muscular strength greatly increased, and morale excellent. Many of the nodules over body have completely disappeared and those on face have become smaller and softer in consistency. Weight has been stationary. It should be noted that daily applications of ultra violet have been made to throat coincident with the benzocaine-chaulmoogra oil treatment. (Footnote in table refers to this patient.)

*Case 3-429.*—Female, white, American, 66 years of age, active early anesthetic type. Complained of neuritis in both arms. Ulcer on plantar surface of right foot which had responded to no previous treatment; there were numerous bright red macules over both legs and right hip.

After six months' treatment, has no evidence of neuritis; ulcer of right foot has completely healed for the first time in over four years; macules of legs and hip have entirely disappeared. General health excellent and has no evidence of leprous activity, and in two recent monthly bacterioscopic examinations no *Bacillus leprae* found. Gained 3 pounds in weight.

*Case 8-352.*—Male, Mexican, 26 years of age, active advanced nodular type. Had outcroppings of evanescent tubercles constantly; suffered with severe neuritis in legs and arms; feet and hands edematous; many suppurating tubercles. Resistance very low and general health wretched; acute exquisitely painful iritis of left eye. Shortly after starting treatment was bedfast with nephritis and ascites and missed eight injections. (Plate I, fig. 2.) One year previous to starting this treatment patient was in comparatively good health, with very little activity of the disease. (Plate I, fig. 1.) Six months later he began to decline rapidly and lesions became very active.

After six months' treatment, general health much improved; smooth cicatrices remain as evidence of old ulcerating tubercles. Has had no neuritis or tubercles within past three months; iritis completely disappeared. (Plate I, fig. 3.) Gain in weight, 23½ pounds.

*Case 14-391.*—Female, white, American, 22 years of age, active early nodular type. Complained of gradual increase of small nodules, many of which were ulcerating. Over the face were numerous small discrete nodules distributed principally over chin, cheeks, forehead, and ear lobes (Plate II, fig. 1); also many nodules over arms and legs. Diffuse thickening of skin over face and forearms. brownish-red pigmentation over forehead, cheeks, chin, chest, arms, thighs, and legs. Anesthesia of both legs below knees and of little finger of both hands. Had marked scleroderma of both legs (Plate III, fig. 1) and an ulcer on inner surface of the right leg. Pharyngitis and laryngitis with slight dysphonia.

After six months' treatment, many of the nodules over face (Plate II, fig. 2), arms, hands, and legs have decreased in size and many have completely disappeared. The brown pigmentation over face, chest, arms, and legs (Plate III, fig. 2) has faded noticeably and remains as a light tan. All ulcerating nodules have completely healed. The huskiness of voice has completely cleared. Sensation in feet and hands noticeably improved; has much greater muscular strength; sleeps well, and has a good appetite; morale excellent. Gain in weight, 8 pounds.

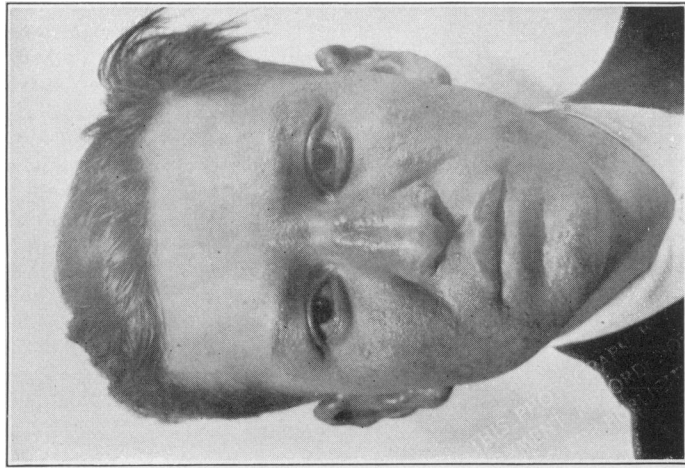


Fig. 1.—March 17, 1925. Numerous small discrete and confluent nodules scattered over face; general health excellent

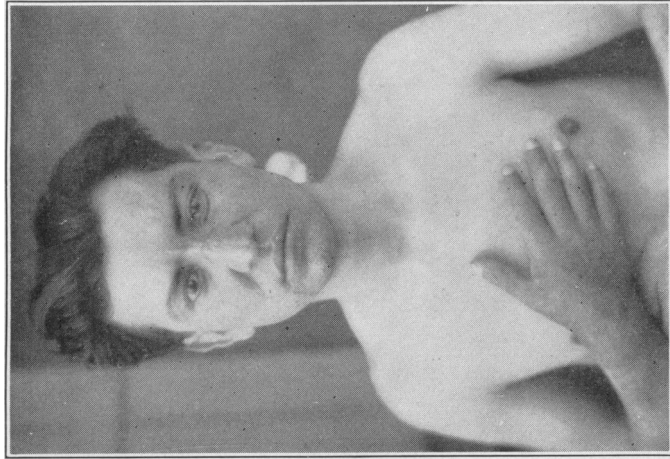


Fig. 2.—March 1, 1927. Leprosy unchanged; edema of hands and feet; general health poor



Fig. 3.—October 7, 1927. Many small nodules have disappeared; some larger ones reduced in size; general health excellent

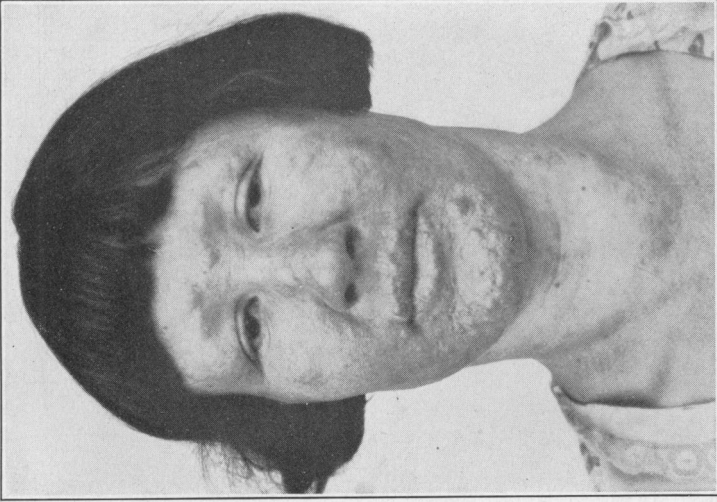


Fig. 1.—November 12, 1925. Numerous small, almost confluent, nodules scattered over entire face



Fig. 2.—October 9, 1927. Reduction in size and number of nodules; considerable smoothing of lips

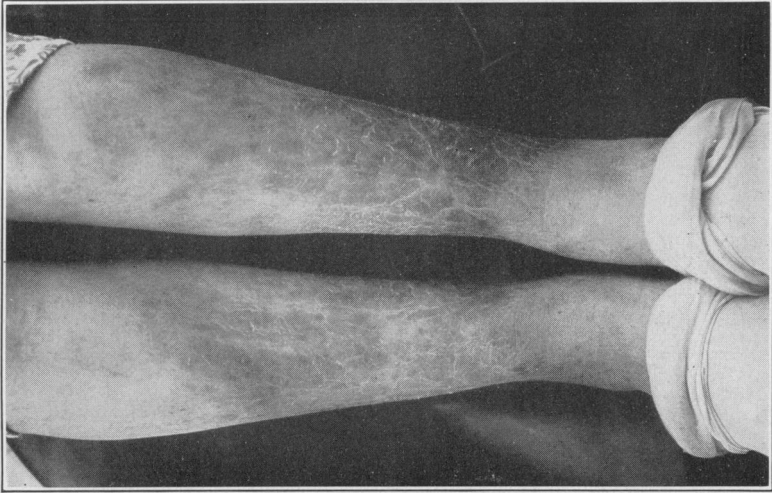


Fig. 1.—March 1, 1927. Marked scleroderma with considerable pigmentation



Fig. 2.—October 9, 1927. Scleroderma and pigmentation less marked

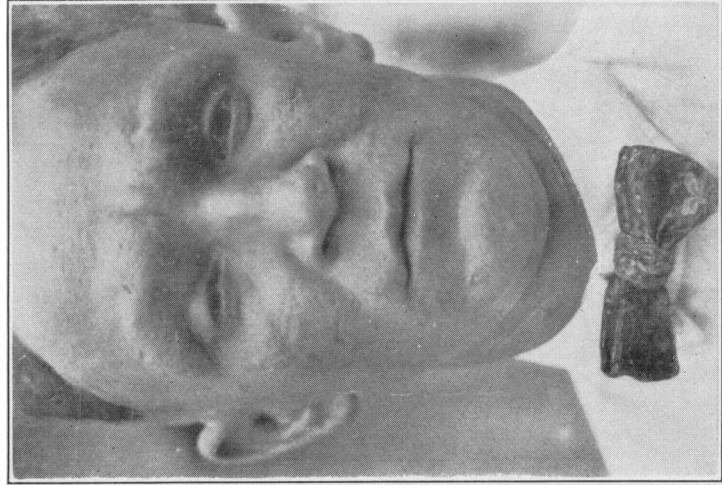


FIG. 1.—August 3, 1924. Slight evidence of leprosy; some loss of eyebrows; general health excellent

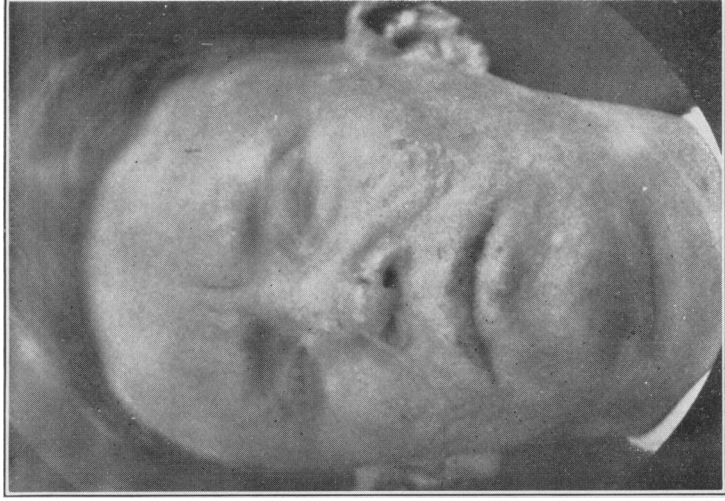


FIG. 2.—March 1, 1927. Considerable general infiltration of entire face, erosion of ear lobes and saddle nose, and marked photophobia; general health poor

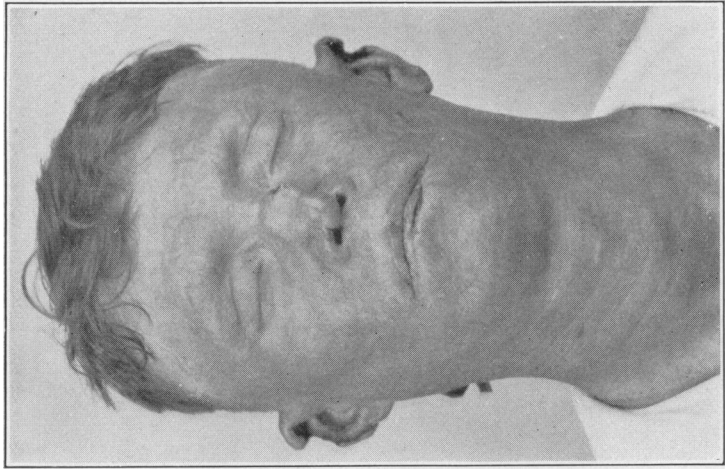


FIG. 3.—October 9, 1927. Retrogression arrested; some nodules have disappeared; less photophobia; general health good





Fig. 1.—March 1, 1927. Marked scleroderma of both hands

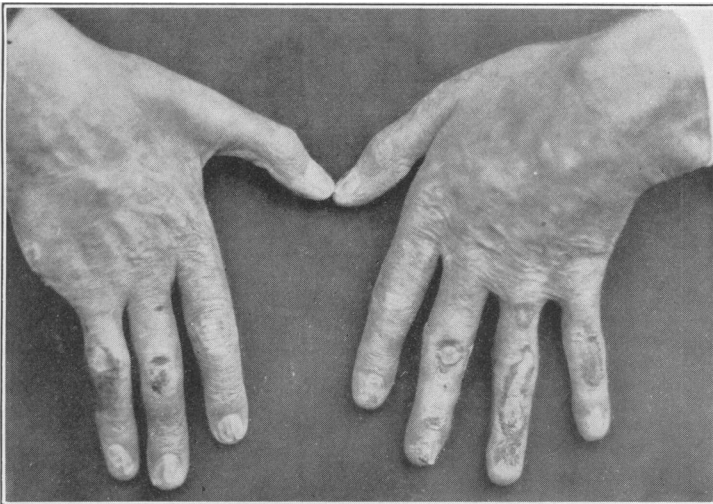


Fig. 2.—October 9, 1927. Hands smooth, with almost no scarring

*Case 22-307.*—Male, white, American, 33 years of age, active, early, nodular type. Had been suffering incessantly with neuritis in both knees and elbows and periodic attacks of evanescent tubercles. General condition unsatisfactory, poor appetite, no initiative, and much muscular weakness. Several small nodules over legs and considerable thickening of skin over face, hands, arms, and legs.

After six months' treatment, general health markedly improved; muscular strength greatly increased; has considerable energy; morale excellent. Has had no evidence of neuritis or evanescent tubercles since first month of treatment, the first time in two years. Gain in weight, 6 pounds.

*Case 24-83.*—Male, white, American, 27 years of age, active, advanced, nodular type. (Plate IV, fig. 2.) General condition extremely poor; suffered greatly from iritis of both eyes and neuritis in both legs. Almost never free from evanescent tubercles, many of which were ulcerating; both ears, hands, arms, and legs swathed in bandages. (Plate V, fig. 1.) Entire body covered with brown pigmentation. Two years previous to beginning this treatment patient was in very good physical condition (Plate IV, fig. 1), being an orderly in the hospital, and it was at this time that he began a decline until six months ago, when he was apparently tending toward dissolution.

After six months' treatment, patient shows marked improvement in general health and in lesions (Plate IV, fig. 3); appetite and strength greatly increased and has been completely free from neuritis. Iritis almost disappeared and has suffered no pain in the eyes for the past three months. No ulcerations on any part of body (Plate V, fig. 2), these having begun to heal soon after starting treatment. Weight stationary.

#### SUMMARY

Crude chaulmoogra oil in combination with benzocaine dissolved for convenience in olive oil has been injected into 24 lepers in comparatively large doses twice weekly over a period of six months, with a negligible amount of pain, slight discomfort from pressure, and only a few oil abscesses (0.2 per cent, such as are not infrequently encountered when an oil is injected intramuscularly).

This preparation has the advantage of not causing pain and of absorbing readily, thereby giving the patient a uniform amount of chaulmoogra oil over a definite period of time.

Of the 24 cases, 6 showed marked improvement; 12 showed moderate improvement; 5 showed slight improvement; 1 was unchanged, and none became worse.

#### COMMENT

The contributor is well aware that temporary improvement may take place in lepers coincident upon the administration of any new treatment; retrogression usually follows in inverse ratio. In this experiment the enthusiasm of the patients is progressive and there is not the frequent complaint that the cure is worse than the disease.

Since the treatment was started, 36 patients have been added, making a total at this time of 60 who are taking the injections semi-weekly as routine treatment.

In reporting these cases no claim is made that the injection of chaulmoogra oil with benzocaine will cure leprosy. It is felt, however, that the method suggested is worthy of further use, and this preliminary report is submitted for such consideration and trial as may seem appropriate.

The use of benzocaine in gastric ulcer for relief of pain and vomiting when due to gastric irritation, and its use in counteracting the emetic effects of antimony (United States Dispensatory, twenty-first edition), presented the suggestion that its use with chaulmoogra oil for oral administration might allay the gastric irritation coincident in many patients with this form of medication. At the present time this experiment is being carried out with encouraging results, a report of which will be submitted at a later date.

#### ACKNOWLEDGMENTS

It is desired to make acknowledgments to Surg. (R) O. E. Denney, medical officer in charge, for suggesting the work here reported and for his assistance in the preparation of this paper, and to Sister Hilary Ross, United States Marine Hospital No. 66, for her valuable assistance.

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### ON THE SIGNIFICANCE OF SPLEENS PALPABLE ON DEEP INSPIRATION IN THE MEASUREMENT OF MALARIA

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Malariologists have generally held with Ross (1911) that widespread splenomegaly (enlarged spleens in excess of 1 or 2 per cent of those examined) is due to malaria—in the absence of kala azar. In assuming this point of view they have interpreted the word "splenomegaly" as meaning a spleen "enlarged sufficiently to be easily detected by the fingers passed under the ribs on the left side—and anyone, hospital assistants, nurses, and laity, can detect it" (Ross (1911) p. 220). At the same time it was recognized that "the spleen of healthy infants is sometimes so easily palpable that the unskilled observer may think that it is enlarged."

In palpating for enlarged spleens as an index of malaria infection in southern United States, Barber and Coogle (1921), Maxcy and Coogle (1923), Veldee (1923), Barber, Komp, and Hayne (1926), and Coogle (1927) have used a method similar to that advocated by Ross, Christophers, and their coworkers (1911, 1914, 1915) in India. The subject was examined standing; the spleen was considered enlarged if the edge could be plainly and definitely outlined at or

below the costal margin, and could be demonstrated to any other physician who happened to be present.

The least degree of enlargement recorded with this method, then, corresponded with Class II of the central committee in India—"palpable or one finger's breadth below the costal margin"—Class I being "not palpable" (Christophers, 1911).

In the examination of school children in many parts of southern United States it was found that in some areas where malaria was supposed to exist the spleen rate was not more than 1 or 2 per cent, and the parasite rate was correspondingly low. On the other hand, in certain areas definitely malarious, spleen rates varying up to 25 or 30 per cent were demonstrated with parasite rates of the same order. The common experience in malarious sections in this country, however, was to find a low spleen rate, ranging around 5 to 10 per cent—and a parasite rate of about the same range—wherever a large group of children was taken into consideration.

Recently the hypothesis was advanced (Darling (1924, 1925, 1926)) that, in view of the light endemicity of the disease in southern United States, the technique of spleen examination should be made as delicate as possible to detect the least degree of splenic enlargement. Using such a technique a proportionately large number of the spleens palpated fell into a newly created classification of "spleen just palpable on deep inspiration." This class of spleens was thought to be just as significant in the measurement of malaria as the spleens palpable below the costal margin.

The validity of this hypothesis was questioned by the authors. It seemed possible, in the first place, that if the method of spleen examination be made sufficiently delicate, a certain number of normal spleens would be felt, not only in infants, but also in the higher age groups. That such is actually the case has already been indicated by the work of Zamkin (1926) in New York City. Second, the work of Oudendal (1925), "An Enquiry into Spleen Palpation, Based on the Weight, Situation, Shape and Dimensions of the Enlarged Spleen in Post Mortem," suggests very strongly that *a palpable spleen is not necessarily enlarged* and vice versa, that many enlarged spleens are not palpable. In the third place, it seemed possible that common diseases which had not hitherto been taken into account by malarialogists, might cause slight degrees of enlargement, or render spleens more easily palpable, for a short period of time after recovery. This is true of at least one very common contagious disease, measles, according to Fort (1926) and Bleyer (1926 and 1927).

The observations herewith reported were undertaken with a view to evaluating under field conditions the more delicate method of spleen palpation in the measurement of malaria.

## METHODS

The more delicate method of spleen examination suggested (Darling, 1926) was as follows:

\* \* \* place the child to be examined in a recumbent position with the thighs and legs flexed and with the head to the examiner's left. The clothing should previously be loosened so that the hand or fingers of the examiner may be easily and freely placed upon the bare skin of the abdomen. If the spleen is not palpable the child is instructed to take a deep breath. With the tips of the fingers of the right hand held just below the costal margin, slight pressure is made as the child takes a deep breath. At this moment, if the spleen is enlarged, it may be felt descending, being pushed down by the diaphragm. It is important that the child draw a full breath, and care must be taken not to press too deeply, for tension on the abdominal wall will prevent the spleen from being felt as it moves under the tips of the fingers.

Using this method, all of the spleen examinations reported in this paper, except as noted, were made by the same individual in order that the personal factor might be held constant. In like manner, all of the examinations of blood smears for malarial parasites were made by the same individual, using the same thick smear technique throughout.

The following classification has been used to express the result of spleen examination:

Class I. Negative—not palpable.

Class II. Tip palpable on inspiration.

Class III.—Palpable—at costal margin on normal respiration but not more than one finger's breadth below.

Class IV.—Palpable—more than one finger's breadth below costal margin.

Class IV has not been defined further, because the very large spleens extending down toward the umbilicus or beyond are so rare in this country as to form a very small group. This study is concerned with the significance in the measurement of malaria of Class II.

## RESULTS

In a series of preliminary examinations of school children in Leflore County, Miss.—a malarious section—an attempt was made to gauge the difference in the percentage of positive spleens found by this more delicate method of examining the child lying down and thoroughly relaxed, and that found by making the examination with the child in the standing position. It was found very difficult, however, to eliminate bias if the same individual examined the same children by both methods; and if one individual was examined by one method and another by the other, it was impossible to hold the personal factor constant. This comparison is, therefore, not given in detail, since it is not considered statistically accurate. It became evident, however,

that though occasionally in the examination of children standing a spleen was detected which was missed when the child was lying down, the balance was generally in the opposite direction. From 10 to 20 per cent more spleens were palpable with the children lying down and thoroughly relaxed. The difference was almost entirely in those spleens which were barely palpable on deep inspiration (Class II), as would have been expected.

The observations presented herewith in tables were made with a view to ascertaining what the spleen rates would show when the more delicate method was used (1) in a malarious section, and (2) in a nonmalarious section.

1. OBSERVATIONS IN A MALARIOUS DISTRICT (LEFLORE COUNTY, MISS.)

(a) *Comparison of urban and rural school children.*—Although malaria is lightly endemic throughout the rural districts of Leflore County, in the urban district immediately surrounding the city of Greenwood (population 7,793 in 1920), previous observations over a period of years have indicated that there is comparatively little, if any, transmission of malaria. Such cases as occur in this urban district are, for the most part, relapses or imported infections. The spleen examinations were made in every instance with the child lying down. In Table 1 the spleen and blood findings in children of schools located in the rural, presumably malarious, sections of the country are compared with those of the two urban schools, white and colored, in the city of Greenwood.

TABLE 1.—*Summary of spleen and blood rates in school children, Leflore County, Miss., 1926*

Race and district	Month, 1926	Spleen		Blood	
		Number examined	Per cent palpable, all classes	Number examined	Per cent positive
White:					
Urban.....	{April.....	115	25.2	29	0
	{October.....	106	26.4	106	3.8
Rural.....	{April.....	133	26.4	172	1.2
	{October.....	131	25.2	131	2.3
Colored:					
Urban.....	{April.....	86	11.6	10	0
	{October.....	101	7.0	101	2.9
Rural.....	{February.....	283	14.5	26	128.9
	{April.....	66	16.6	60	8.3

<sup>1</sup> Blood smears taken only from children having palpable spleens.

It will be noted in this table (1) that the spleen rate is out of all proportion greater than a parasite rate based upon thick blood smears and carefully examined; (2) that in the same group of children there was little difference in the spleen rate recorded in the spring (low season) from that found in the fall at the conclusion of the active period of transmission in this country, when the spleen

rate should, theoretically, be maximum; (3) that the spleen rate is uniformly higher in the white children than in the colored, although the latter are known to be more highly infested, as is indeed indicated by the parasite rates here obtained.

(b) *The spleen classification of the urban and rural groups.*—In order to ascertain to what extent these differences, or lack of differences, were due to the more delicate method of spleen examination, the palpable spleens have been arranged according to class in Table 2. It is evident that spleens "palpable on inspiration" (Class II) form by far the larger group, so large indeed as to obscure any differences which would be revealed by the more definitely pathological spleens palpable at, or below, the costal margin (Class III and Class IV). If attention be confined to the latter groups (leaving out of consideration Class II) it appears that the definitely enlarged spleens are more common in rural than in urban school children, and particularly in the colored rural, although the numbers are too small for statistical comparisons.

TABLE 2.—*Spleen classification of school children examined while lying down, Leflore County, Miss., 1926*

School	Date, 1926	Number examined	Number with spleen negative Class I	Number with spleen palpable—			Per cent palpable, all classes
				Class II—on inspiration	Class III—At costal margin	Class IV—Below costal margin	
White urban: Greenwood	April	115	86	24	5	0	25.2
	October	106	79	25	2	0	25.2
White rural:							
Swittown	February	69	50	17	1	1	27.5
	April	59	38	18	3	0	35.6
Money	February	29	21	5	1	2	27.6
	October	22	17	4	1	0	17.2
Morgan City	October	52	45	2	5	0	13.4
Long Shot	April 13	18	14	1	2	1	22.2
	April 21	22	13	7	2	0	40.1
	October	6	6	0	0	0	0.0
Litton	April 13	17	14	2	1	0	17.6
	April 21	51	38	11	2	0	25.5
	October	11	9	0	2	0	18.2
Colored urban: Greenwood	April	86	77	8	1	0	14.6
	October	101	94	6	1	0	7.0
Colored rural:							
Swittown	February	63	53	6	1	3	15.8
Browning	February	39	33	3	1	2	15.4
Big Sand	February	17	16	1	0	0	5.9

(c) *Correlation of spleen classification with blood findings.*—Bringing together the figures for all of the schools in which the spleen classification was recorded and blood smears were taken on all of the children examined, in order that the groups might be made as large as possible for comparison, the correlation of blood findings with the spleen classification is shown in Table 3.

TABLE 3.—*Correlation between spleen classification and the finding of parasites in blood smears, Leflore County, Miss., 1926*

Race	Spleen negative Class I			Spleen palpable									Total
	Number	Blood positive		Class II—On inspiration			Class III—At costal margin			Class IV—Below costal margin			
		Number	Per cent	Number	Blood positive		Number	Blood positive		Number	Blood positive		
					Number	Per cent		Number	Per cent		Number	Per cent	
White.....	375	5	1.3	130	4	3.1	26	2	7.7	3	0	0.0	594
Colored.....	226	18	7.9	32	6	18.7	2	2	100.0	1	1	100.0	261
<b>Total.....</b>	<b>601</b>	<b>23</b>	<b>3.8</b>	<b>162</b>	<b>10</b>	<b>6.2</b>	<b>28</b>	<b>4</b>	<b>14.3</b>	<b>4</b>	<b>1</b>	<b>25.0</b>	<b>795</b>

The blood rate of 601 children whose spleens were not palpable (Class I) was 3.8 per cent. Out of 194 spleens which were palpable, approximately 83 per cent fell into Class II, "palpable on inspiration." For the 162 children in this class the rate was 6.2 per cent—slightly higher than for those in Class I; yet it is evident that Class II contains an indefinite number of children who are not suffering from acute or chronic malaria. This is shown by comparison with the group of 32 children whose spleens were easily palpable (Class III and Class IV), in which examination of a single thick smear revealed 15.6 per cent with malarial parasites in the peripheral blood.

(d) *Correlation of palpable spleen with a history of malaria.*—Could it be possible that the children with barely palpable spleens were suffering with malaria masked by the liberal use of quinine and "chill tonics"? It seemed that some light might be thrown on this point by visiting the homes of a large number of the children who had been examined in the schools to ascertain as far as possible whether the history of a previous attack of malaria was more common in the children with palpable spleens as compared with those without. Field workers visited the homes of 369 colored children and 233 white.<sup>1</sup> Careful inquiry was made regarding the illnesses which the child had had. Besides malaria, a record was made of the history of the occurrence of other common contagious diseases. The results are shown in Table 4.

<sup>1</sup> The authors desire to express their appreciation to Mr. T. B. Hayne for data collected in this canvass.



TABLE 4.—Correlation of palpable spleens with history rates of malaria and common infectious diseases in school children, Leflore County, Miss., 1926

Spleen class group	Total number	Per cent of total number in group with previous history of—											
		Malaria		Influenza		Scarlet fever		Chicken pox		Typhoid fever		Whooping cough	
		At any time	During 1926 and spring of 1926	At any time	During 1925 and spring of 1926	At any time	During 1925 and spring of 1926	At any time	During 1925 and spring of 1926	At any time	During 1925 and spring of 1926	At any time	During 1925 and spring of 1926
II, III, and IV, spleen palpable....	138	62.3	27.5	58.7	8.0	2.2	0.0	43.5	11.6	2.9	0.7	66.7	2.2
I, spleen negative....	464	56.0	20.9	52.6	7.0	3.0	0.4	34.9	7.3	3.7	0.0	53.0	3.9

In this table all the children with palpable spleens (Classes II, III, and IV) are grouped together and compared with the group (Class I) in which the spleen could not be felt. The fact that the former group is dominated by the 83 per cent belonging to Class II, "palpable on inspiration," should be borne in mind.

The percentage of children with a palpable spleen who gave a history of malaria during the preceding year was 27.5 per cent; with spleen negative, was 20.9 per cent. The difference is in the direction expected, but surprisingly small. Moreover, a difference equally great is found in the percentage of children with palpable spleens who have had chicken pox as compared with the history of this disease in the spleen negative group, and yet chicken pox is not characterized by the production of splenomegaly. If a large proportion of the palpable spleens were due to malaria which could not be demonstrated by blood smears on account of the use of quinine, then a much higher malaria history rate would have been expected in this group as compared with the spleen negative group.

In addition to the above considerations repeated blood examinations of the same children in a few selected schools failed to increase appreciably the percentage of positives. The evidence obtained by blood examination and inquiry into the previous history of malaria suggests, therefore, that a large proportion of the spleens which were palpable, especially those in Class II, were not due to "masked malaria" but to other causes.

*Correlation of palpable spleen with a history of measles.*—In view of the work of Fort (1926) and Bléyer (1926) careful inquiry was made into the history of measles during the canvass mentioned above, and these data have been tabulated separately in Table 5. Of 138 children whose spleens were palpable, less than 8 per cent gave a history of measles within the preceding year, and the rate for this

group is not significantly higher than the group of children whose spleens were not palpable. It does not appear, therefore, that measles could have played an appreciable rôle in the large percentage of children found to have palpable spleens.

TABLE 5.—*Analysis of measles history of children with palpable spleens and those without, Leflore County, Miss., 1926*

Group	Total number	Per cent of total number in group with previous history of measles						
		At any time	During month of examination	During month preceding examination	During 2 months preceding examination	During spring of 1926	During 1925	Before 1925
Classes II, III, and IV—Spleen palpable.....	138	60.8	0.0	0.7	0.7	1.4	5.1	52.9
Class I—Spleen negative.....	464	57.7	0.2	0.2	0.2	0.4	2.6	54.1

2. OBSERVATIONS IN A NONMALARIOUS DISTRICT (WASHINGTON, D. C., AND HAGERSTOWN, MD.)

The results of the examinations in Leflore County, Miss., left considerable doubt in our minds as to the significance of spleens "palpable on inspiration" in the measurement of malaria. As a control over the observations made on school children in this malarious district, spleen examinations were made on similar groups in two nonmalarious areas.<sup>1</sup>

(a) *Washington series.*—In Table 6 is shown the result of the examination of 193 white children living in Washington, D. C., June to August, 1926. So far as is known that city is entirely free from endemic malaria, and has been for a number of years. The children examined were applicants for admission to fresh-air camps, and came from four different sections of the city. In 29, or 15 per cent of these children, the spleen was palpable. All of the palpable spleens except 3 would fall into the class described as "palpable on inspiration." The remaining 3 were easily palpable below the costal margin, but not more than one finger's breadth. One of these children was just erupting with measles, another had had measles two months previously; in the third the enlarged spleen was due to an undetermined cause.

Of the 29 children with palpable spleens, only 7 gave a history of measles within the preceding six months. So far as could be ascertained, the other 22 were normal, healthy children who had had no contagious or infectious disease within the preceding year.

<sup>1</sup> The authors wish to express their appreciation to Surg. Grover Kempf for the privilege of examining the school children in Hagerstown, Md., and to Dr. J. A. Murphy, of the District health department, for examination of the Washington group.

TABLE 6.—*Spleen examinations of 193 children applying for admission to the fresh-air camps, Washington, D. C., June to August, 1926*

Age	Boys		Girls		Both	
	Number examined	Number with palpable spleens	Number examined	Number with palpable spleens	Number examined	Number with palpable spleens
5.....	6	2	6	0	12	2
6.....	15	3	8	2	23	5
7.....	9	2	10	2	19	4
8.....	12	1	10	2	22	3
9.....	4	0	19	3	23	3
10.....	13	3	14	1	27	4
11.....	19	3	14	2	33	5
12.....	16	2	18	1	34	3
Total.....	94	16	99	13	193	29

(b) *Hagerstown series*.—In like manner 215 school children living in Hagerstown, Md., were examined in May, 1926. Malaria is unknown in that section of the State. In 25, or 11.6 per cent, the spleen was palpable. In all instances except one the spleen was "just palpable on deep inspiration." In a single instance the spleen was palpable below the costal margin with normal respiration, but did not project more than one finger's breadth.

There had been no measles epidemic in this community within the year preceding, and none of the children with palpable spleens gave a history of measles within the nine months preceding the examination. So far as could be judged they were normal, healthy school children.

TABLE 7.—*Spleen examinations of 215 school children at Hagerstown, Md., May, 1926*

Age	Boys		Girls		Both	
	Number examined	Number with palpable spleens	Number examined	Number with palpable spleens	Number examined	Number with palpable spleens
6.....	13	2	12	5	25	7
7.....	16	3	15	3	31	6
8.....	14	2	17	1	31	3
9.....	17	2	15	1	32	3
10.....	18	0	15	2	33	2
11.....	16	2	16	0	32	2
12.....	15	2	16	0	31	2
Total.....	109	13	106	12	215	25

Combining both series of observations it appears that in a non-malarious locality, using the more delicate method of spleen palpation, with the child reclining and thoroughly relaxed, the tip of the spleen is palpable in about 13 per cent of children ranging in age from 5 to 12 years. The rate is highest in the lower ages and decreases as the age increases. These findings are in accordance with those of Zamkin (1926).

## DISCUSSION

The observations here reported have led to doubt as to the value of refining the technique of spleen examination. There is much evidence to indicate that in the spleen classification "tip just palpable on inspiration" are included many normal spleens. The fact that a spleen is palpable does not of necessity indicate that it is pathologically enlarged. Evidently in early life, long beyond the period of infancy, the tip of the spleen can be felt in a progressively decreasing percentage of children, if sufficient care and skill be applied in the examination.<sup>1</sup> After measles and possibly other of the common infections, the spleen may be slightly enlarged, or at least more palpable than previously. In the measurement of malaria, if this group of spleens be included in the rate which is obtained, useful comparisons are obscured.

On the other hand, if dependence be placed in the cruder method of examining children standing, making no attempt to discover those spleens which are "just palpable on inspiration," one is likely to miss a few spleens which are enlarged as the result of malaria. There is an imponderable error.

It would seem desirable, in order that one may be as accurate as is consistent with the method, to use the more delicate technique if field conditions permit, classifying separately those spleens with tip just palpable on deep inspiration. It is equally obvious that the malaria field worker should be aware of the significance or lack of significance of this class of spleens. Probably the best plan is for each worker to control his spleen technique by examining a large number of children in a nonmalarious locality for comparison with his results in a malarious locality.

So far as spleens which are easily palpable on normal respiration at the costal margin or below are concerned, the same significance applies in the United States as has been found to apply in the very extensive observations which have been conducted in tropical countries. There are a sufficient number of such spleens in many sections of our malaria belt to make a rate, based on these, large enough to be statistically significant. It is this group of spleens which are of value in the measurement of malaria.

As in this country, so in most parts of Europe, malaria has a low endemicity, a short seasonal prevalence, and the use of quinine is general. The spleen rate is correspondingly low. In 1920 an attempt was made<sup>2</sup> in some parts of the Netherlands to overcome the difficulty by arranging to examine the children while they were lying down, with proper attention given to detail. The result was considered

<sup>1</sup> The control groups reported in this paper were white children. It does not necessarily follow that the same proportion of spleens are palpable in colored children of the same age groups.

<sup>2</sup> Second General Report of the Malaria Commission, League of Nations, Geneva, 1927.

unsatisfactory and the method abandoned because it was thought to be "tedious" when applied on a large scale, and because the deductions drawn from such low spleen indices might be erroneous. Distinctions of the type recorded above were not considered.

#### SUMMARY

In the United States where malaria is lightly endemic and there is a widespread use of quinine, the spleen and blood rates are low in comparison with tropical countries. If the technique of spleen examination be made more delicate, there are included with the definitely pathological spleens a large number of normal spleens which are just palpable on inspiration, and spleens slightly enlarged or rendered more palpable by a recent infection, such as, for instance, measles. The inclusion of this class of spleens tends to obscure comparisons which may be made of the malaria spleen rate in different population groups. It is the spleens which are easily palpable at the costal margin or below, on normal respiration, which are of significance in the measurement of malaria. Field workers should control their spleen technique by observations made in a nonmalarious locality, and show the spleen composition or classification in all examinations made in malarious localities.

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## FLUCTUATION OF THE DIABETES DEATH RATE IN BOSTON

In the Monthly Bulletin for October, 1927, issued by the health department of the city of Boston, Frederick L. Hoffman, consulting statistician of the department, notes a reduction in the number of deaths from diabetes in Boston during the first six months of 1927 (104) as compared with the corresponding period of 1926 (123). This is equivalent to a reduction in the annual death rate for diabetes from 31 to 26 per 100,000 population. This latter rate is still much higher, however, than that for the registration area, 16.6 in 1924 and 16.9 in 1925, and above the average rate for large cities in 1925, namely, 19.2. Many deaths from diabetes in Boston hospitals occur in nonresidents who have come there for treatment with the disease far advanced; but even excluding these deaths there still remains an excess in the Boston death rate for diabetes which must be attributed to other factors as yet undetermined.

The mortality rates per 100,000 population for diabetes in Boston from 1915 to 1926 are given as follows:

1915.....	26.15	1919.....	22.80	1923.....	24.27
1916.....	25.73	1920.....	23.29	1924.....	23.68
1917.....	19.82	1921.....	19.66	1925.....	21.19
1918.....	17.80	1922.....	29.05	1926.....	26.17

In commenting on these rates Mr. Hoffman states:

"A striking fact of this table is the low death rate from diabetes during the war year 1918 and during the year of industrial depression of 1921. During both of these years food consumption was unquestionably much reduced in proportion to the population. In a recent address of mine on cancer and overnutrition, I have included some data as regards the per capita sugar consumption in the United

States which has increased from 79.7 pounds in 1909 to 83.2 pounds in 1912 and to 116.3 pounds in 1924. It is probable that during the last two years there has been a further increase which may well arrest attention. Sugar consumption in the United States is much above the average for many other countries and the results of excessive consumption are apparently traceable in our higher death rate from diabetes, which is far above the average for all civilized countries combined. This fact was clearly brought out some 10 years or more ago by Mr. Knud Stouman in an address delivered before the American Public Health Association."

Whatever the factors involved, the drop shown in the Boston death rate for diabetes during the war year of 1918 is also found in the rates for the general population in the registration area and for the industrial policyholders of the Metropolitan Life Insurance Co. In both of these groups, however, the lowest rate for the 11-year period is not for 1918 but for 1919, as shown in the following table:

*Death rates for diabetes per 100,000 population*

Year	Boston	United States registration area	Industrial insurance department, Metropolitan Life Insurance Co.	Year	Boston	United States registration area	Industrial insurance department, Metropolitan Life Insurance Co.
1915.....	26.15	17.5	15.1	1921.....	19.7	16.8	15.5
1916.....	25.73	17.1	15.9	1922.....	29.0	18.4	17.2
1917.....	19.82	17.0	15.3	1923.....	24.3	17.9	16.2
1918.....	17.80	15.9	14.0	1924.....	23.7	16.6	15.1
1919.....	22.80	14.9	13.4	1925.....	21.2	16.9	15.5
1920.....	23.3	16.1	14.1	1926.....	28.2	-----	17.0

Attention is called by Mr. Hoffman to the fact that the first indications of diabetes are usually revealed by a urinalysis indicating abnormal quantities of sugar in the urine, and he emphasizes the importance of having periodic examinations made by competent persons. Early detection and treatment of the condition by dietary and other measures are of the greatest importance in reducing the severity of the disease and prolonging life.

### CROSS CONNECTIONS HELD RESPONSIBLE FOR THREE TYPHOID OUTBREAKS

Recent typhoid fever outbreaks in three New York cities, "all presumably the result of illegal cross connections between public water supplies and polluted supplies," are reported in the Health News for November 21, 1927, issued by the New York State Department of Health.

The largest of the outbreaks was in the city of Cohoes, where 42 cases were reported. Two of these were contact cases, but for the remainder there was no apparent common cause other than the city water supply. All of the cases were in one section of the city, and an investigation revealed in an industrial plant a defective cross connection between the public water supply and water from the Mohawk River, which receives untreated sewage from Schenectady. *B. coli* was found in the water in the public mains in the affected section, whereas no evidence of pollution was found in the water elsewhere in the city. After a thorough flushing of the water mains in the affected area *B. coli* was absent and the total bacterial count was reduced.

An outbreak of typhoid fever was occurring in Albany when the Health News went to press, 14 cases having been reported in the northern part of the city and 3 more in other sections, with no connection revealed between the two outbreaks at that time. On October 14 an outbreak of diarrhea occurred, with approximately 170 cases, apparently confined largely to the employees of two factories and to children attending one school in the northern part of the city. The public water supply in the northern section of the city was polluted, while that elsewhere did not show pollution. Investigation revealed three illegal cross connections between the city water supply and polluted waters, one connection being between raw Hudson River water and the filtered and chlorinated public supply. After the cross connections had been eliminated and the water mains thoroughly flushed prompt improvement in the sanitary quality of the water followed.

The third outbreak of typhoid fever occurred in a factory in Oswego, with 8 cases reported to November 1, 1927. This outbreak is thought to have been due to a cross connection between the drinking-water supply and heavily polluted water from Oswego Harbor used for fire-protection purposes. The drinking-water supply showed pollution before but not after the removal of the cross connection.

The State sanitary code of New York prohibits cross connections between public water supplies and polluted water, except for temporary use and under specified conditions.

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## COURT DECISIONS RELATING TO PUBLIC HEALTH

*City charter provision relating to collection and disposal of garbage construed.*—(West Virginia Supreme Court of Appeals; State ex rel. Eckhart et al. v. Neal, Mayor, et al., 139 S. E. 640; decided September 20, 1927.) The charter of the city of Huntington provided:

Before entering into any contract for the collection and disposal of garbage, the board of commissioners shall advertise the same in two newspapers of opposite



politics of general circulation in the city once a week for three weeks, and shall award such contract to the lowest responsible bidder, who shall be required to furnish a surety bond in an amount not less than 40 per cent of the total annual contract price, conditioned for the faithful performance of such contract.

The supreme court of appeals held that it was not the intention of the said provision to prohibit the board of commissioners "from collecting and disposing of the garbage through the regular employees of the city, using its equipment."

*Statute relating to tuberculin testing of dairy cattle upheld.*—(New York Supreme Court; *Ryder v. Pyrke*, State Commissioner of Department of Farms and Markets, 224 N. Y. S. 289; decided September 30, 1927.) Under section 78 of the farms and markets law (now agriculture and markets law), prior to a 1927 amendment, the commissioner of farms and markets had a right to have made a physical examination by a competent veterinarian, of dairy cows whose milk was marketed in liquid form or manufactured into butter, cheese, or other food for human consumption. Such physical examination could be made as frequently as available funds permitted and as conditions necessitated. Under a 1927 amendment, the commissioner was authorized to make a tuberculin test in conjunction with a physical examination of the herd. An action was brought by a dairy herd owner to restrain the commissioner from subjecting plaintiff's bovine animals to the tuberculin test until and unless 90 per cent of the herds or 90 per cent of all the cattle in the town wherein he resided had been tested or the county wherein said town was located had become a tested county. In passing upon a motion by the defendant commissioner to vacate a temporary restraining order and for judgment on the pleadings, the court, with reference to the constitutionality of the above-mentioned section 78, stated:

The act under which the defendant is proceeding in March, 1927, just prior to the aforementioned amendment to section 78, was declared constitutional. (*People v. Teuscher*, 129 Misc. Rep. 94, 221 N. Y. S. 20.) \* \* \*

Plaintiff further contends that section 78, as amended, must be read together with sections 76 and 79, and construed to give authority to the commissioner for testing only in a tested town where 90 per cent of the cattle have already been tested; in other words, it is the claim of the plaintiff that the defendant has no legal authority to forcibly test herds in an untested town. Plaintiff also contends that the amendment to section 78 is unconstitutional in that it provides for the condemnation and confiscation of his property without reimbursement. The said amendment to section 78, in my opinion, is constitutional. I also think that the commissioner has a right to cause a physical examination of, when the funds necessary for such purpose are available, and to administer the tuberculin test to, any dairy [cattle] in the State, whether it is located in a tested or an untested town. \* \* \*

## PUBLIC HEALTH ENGINEERING ABSTRACTS

**Mosquitoes a Nuisance.** Anon. *Good Health*, vol. 62, No. 9, September, 1927, p. 39.

"In what is believed to be the first case of its kind, the sheriff court of Paisley, Scotland, has held that if a landowner leaves ditches in a stagnant condition, so that they become a breeding ground for mosquitoes in such numbers as to cause annoyance and injury to local residents, it is a nuisance that may be legally dealt with. The public health act of Scotland includes within its list of 'nuisances' any street, pool, ditch, gutter, watercourse, in such a state as to be a nuisance or injury or danger to health. The ditches of which complaint was made had through neglect become encumbered with silt and vegetation to such an extent as to make them ineffective as watercourses, and the water which they should have conveyed had overflowed upon the surrounding ground, which thus became the breeding place for mosquitoes."

**Thermophilic Bacteria in Milk.** Martha Oliver Eckford. *American Journal of Hygiene*, vol. 7, No. 3, May, 1927, pp. 201-221. (Abstract by P. R. Carter.)

The object of this research was to determine the distribution of thermophilic bacteria in Baltimore milk; their reaction to Pasteurization; their effect upon milk, their pathogenicity; the heat resistance of their spores; and to describe their morphology and cultural characteristics so that other investigators may recognize them when found in subsequent work.

A brief historical sketch, definitions, and the methods used in isolating, examining, and classifying the thermophilic bacteria in milk are given. The experimental work consisted of bacteriological examinations of 450 samples of raw and Pasteurized milk, cream, butter, cheese, and condensed milk.

The optimum temperature for these organisms was 50°-60° C., while the maximum temperature for most of them was around 70° C. A few, which grew at a minimum temperature around 42° C., were called true thermophiles. Those thermophilic bacteria which grew at temperatures below this minimum were classed as thermotolerants. Most of the organisms described in literature belong to this latter group.

Milk may be contaminated by thermophilic and thermotolerant bacteria from the intestinal tract, soil, cereals, and water. If this is correct, the presence of thermophiles in milk would serve as a check on the sanitation of conditions under which milk is produced. From this research the following results and conclusions were given: (1) Of the samples of milk examined, about 70 contained thermophilic bacteria. (2) None were found in evaporated or canned milk. As long as the can remains air-tight, they could not develop even though they had survived the canning process. (3) The thermophilic bacteria isolated from the Baltimore milk supply were all aerobic spore-forming bacteria. They were similar morphologically; culturally, they differed in their reactions in gelatin, milk, and the sugars. Most of them were only weakly fermentative. Only two groups fermented lactose. (4) A thermophilic streptothrix was isolated which was proteolytic and, therefore, may be of significance in the ripening of cheese. (5) The three thermotolerant bacilli were very similar to certain thermophiles previously isolated and cultured. The four obligate thermophiles have not been described previously. (6) The thermophilic bacteria survived Pasteurization and even 100° C. to 120° C. for 15 minutes. This explains their presence in butter, cheese, and other dairy products. Obligate thermophiles had a greater resistance to high temperatures than thermotolerant organisms. Furthermore, among the thermotolerant organisms there was a direct relation between the high maximum growth and greater resistance of spores. (7) The thermotolerant organisms may cause annoyance to Pasteurizing plants by

multiplying during the process and giving the milk a high count. They may cause pinpoint colonies at 37° C.

**The Standard Milk Ordinance in North Carolina.** Malcolm Lewis. *Health Bulletin*, North Carolina State Board of Health, vol. 42, No. 6, June, 1927, pp. 13-18. (Abstract by P. R. Carter.)

In 1924, as a result of a preliminary survey, it was found that 21 North Carolina cities had adopted a milk ordinance of some sort and were carrying on control measures. A study of the ordinances brought out very strongly the fact that there existed a great variance in the requirements.

Since it was almost impossible to bring about a uniformity in all the ordinances, the State board of health recommended to the cities the United States Public Health Service Standard Milk Ordinance. This was done for the following reasons: (1) Uniform standards of quality were considered to be of basic importance; (2) uniform standards of milk sanitation were advocated; (3) the ordinance was found to be complete, fair, and practical; (4) classification of milk by grades is sound principle on which to base the establishment of widespread uniformity of milk-sanitation standards; (5) it was recognized that the services of an official correlating agency, such as the United States Public Health Service, was essential to the widest adoption of uniform, reliable standards.

Of the 21 cities in 1924 that had milk ordinances, 17 have adopted the Standard Milk Ordinance in place of the ordinance formerly in force. In addition, 16 other cities have adopted the Standard Milk Ordinance, thus making a total of 33 cities in which the standard ordinance is in effect. Ten cities with populations between 5,000 and 10,000 and eight cities with populations less than 5,000 have adopted this ordinance.

The main features of the Standard Milk Ordinance are given, together with a discussion of the importance of further safeguarding a high-grade raw milk by proper Pasteurization, since health authorities are now convinced that no milk can be considered entirely safe in its raw state, no matter how carefully its production is safeguarded.

**The Bacterial Flora of Market Oysters.** J. C. Geiger, Winfred E. Ward and M. A. Jacobson. *Journal Infectious Diseases* 38 (3):273-280 (1926). Taken from abstract by J. C. Geiger in *Biological Abstracts*, vol. 1, No. 1, December, 1926. pp. 768-775.

"A study of the bacterial flora of market oysters during the Chicago typhoid outbreak of 1924, in which oysters were suspected as being the source of infection, revealed no *Bacillus typhosus* in 784 samples of shucked and 328 samples of shell oysters; 150 cultures of organisms from colorless colonies on Endo's medium were studied and cultural and serologic studies showed 81 organisms of types closely related to the typhoid dysentery group. Eight strains were *B. coli*, giving atypical colonies on Endo's medium. Several strains of *B. proteus*, *B. fecalis alkaligenes*, *B. cloacae*, and *B. fluorescens* were identified. One organism culturally identical with Flexner's dysentery bacillus failed to agglutinate with the Flexner or the Shiga antidyenteric sera. A group of 15 organisms resembling the paratyphoid group in their fermentation reactions but failing to agglutinate with sera of *B. paratyphosus* A or B, *B. suispestifer*, and *B. enteritidis*, were not classified definitely. Oysters may be a more important factor in food poisoning outbreaks of unknown origin than has hitherto been realized. A brief résumé of similar work is given, with references noted."

**A suggested Bacteriological Standard for Ice Cream.** F. W. Fabian. *Special Bulletin* No. 158, Agricultural Experiment Station, Michigan State College of Agriculture and Applied Science, August, 1926. pp. 1-18. (Abstract by J. R. Hoffert.)

The author clearly indicates the importance and value of bacteriological standards for food products, and reviews the results of the bacterial examination of ice cream, giving tables of results, and detailed results of ice cream examination in certain Michigan cities. He concludes that the bacterial count generally parallels the sanitary conditions of the materials used and of the plant; that a bacteriological standard for ice cream is a much needed measure, of benefit alike to the producer and consumer; that epidemics of infectious diseases are known to have been caused by ice cream; that Pasteurization at 150° F. for 30 minutes of the ice cream mix itself should be required by law; and that with proper and practical precautions ice cream can be consistently made to contain not over 100,000 bacterial colonies per gram using standard agar 37° 48-hour counts with the American Public Health Association methods.

**A Study of the Waste Water of Paper Mills**, Natsuhiko Watanabe. *Journal of the Public Health Association of Japan*, vol. 3, No. 7, July, 1927, pp. 1-17. (Abstract by C. H. Kibbey.)

The author reports a number of studies and experiments made by himself on waste waters from paper mills in an effort to determine the significance of this particular industrial waste as affecting the health of the population in certain areas, its effect on fish life in streams into which it is discharged, and its possible application to soil as a fertilizer-carrying irrigation water to growing crops.

Three kinds of waste were experimented with, designated by the author as follows: (I) Straw and lime, or paper-board refuse; (II) manila hemp, broussonetia kashinoki, sieb, and other materials used in the making of Japanese papers; (III) wastes in which the above-mentioned two are combined.

Interesting charts and tabulations of the detail technique are given covering each type of experimental study and the author's conclusions are given below:

Effects of waste water on—

(1) *Pathogens*.—This experiment was limited to a study of the effect of paper-mill waste on *B. typhosus*, cholera vibrio, and dysentery bacilli. No apparent germicidal power was noted in fluids Nos. I and III, but fluid No. II destroyed the cholera vibrio in 8 hours, typhoid bacilli in 4 to 8 hours, and dysentery bacilli in 2 to 4 hours when used in its original form (without dilution). Diluted to one-half strength it destroyed cholera spirilla in 8 to 18 hours, typhoid bacilli in 8 hours, and dysentery bacilli in 4 to 8 hours.

(2) *Fishes*.—This series of experiments indicates that "fish die in the waste water when the latter decomposes to degeneration," that it does not destroy them in a short time, and, that "the fish which lived long in such waste water acquired some peculiar odor and were unfit for eating."

(3) *Animals*.—Rabbits were used as the experimental animals and it is interesting to note that the animals fed with fluids No. I and No. II showed a gain in weight of from 31 to 78 grammes more than control animals which were given "plain water" to drink.

(4) *Plants*.—The author assumes that paper-mill wastes should be an excellent medium for the fertilization of growing crops when used for irrigating land, since they contain the essential elements of plant food and are "almost free from injurious elements." Unfortunately, his experimental rice field was attacked and destroyed by rats during the course of his experiment and the continuation of this study is left to the prefectural experimental firm under the guidance of which the Seihl Paper Mill is now conducting similar experiments.

*Experiments on decolorization of waste water*.—A considerable number of experiments were conducted with different chemical agents and varying dilutions of the waste in order to determine the most effective method of accomplishing decolorization. Local inhabitants appear to object more strenuously to the filthy appearance of water polluted by such waste than to its actual chemical

composition. The author concludes that "decolorization by means of sodium bisulphite and dilute sulphuric acid can not be thoroughly effective."

*Experimental dilution of waste water.*—Dilutions of paper-mill waste of varying strengths from 1:100 to 1:600 were made of fluids Nos. I, II, and III, and the dilutions were examined as to appearance, odor, and reaction, and were analyzed for the presence of sulphuric and nitric acids, ammonia, chlorine, lime, and organic matter. These experiments are carefully tabulated.

The conclusion is that "said waste water becomes drinkable if diluted to six hundred times with distilled water, and seven hundred times with water from the river Matsubara."

*Course taken in decomposition of waste water.*—This series of experiments was made to determine the effect of dilution alone on the putrescibility of waste waters. It was observed that, while the original fluid decomposed and changed color by the third day, 1:5 dilution on the tenth day, and 1:10 on the fifteenth day, "It was also seen that the progress of decomposition depended much on temperature and sunshine." A dilution of 1:20 never decomposes or changes, even in the month of August.

*The effect on sanitation of the districts along the river into which the waste waters flow.*—(1) Mosquito breeding increased and the breeding season was prolonged. (2) Fishing, swimming, and such recreations were interfered with or made impossible. River changed from a beautiful, clear stream to one of filthy, foul, malodorous character. Fish were entirely destroyed. (3) A variety of gases are generated in the water. Air along the river bank contained 1 part per 3,000,000 of hydrogen sulphide. The foul odor varies according to the day, hour, and place.

It is the author's opinion that some means should be devised for using paper mill waste for fertilizer unless it can have dilution in the stream receiving it of at least 1 to 500.

**Sewage Treatment Tank.** Bulletin No. 4, Bureau of Engineering, Florida State Board of Health. (Abstract by A. F. Allen.)

This 30-page pamphlet, recently issued, contains a general discussion of household septic tanks; sketches for a rectangular concrete septic tank with one partition wall; dimensions of tanks for schools, apartments, residences and tourist camps, based upon the number of people served; and the recently promulgated State board of health regulations for septic tanks and absorption beds. The sketches show a tank having inlet and outlet T connections, the vertical legs of which are of equal length, and the partition walls pierced by a few small openings at mid-water depth. The regulations specify a basis of 50 gallons per person tank capacity, with a minimum of 250 gallons for a tank for residential use, and a minimum length of drain line of 75 feet.

**The Treatment of Sludge.** A. P. I. Cotterell. *Surveyor*, vol. 72, No. 1853 July 29, 1927, pp. 97-98. (Abstract by D. E. Kepner.)

This is a nontechnical description of sludge treatment, taking up individually the following processes: Pouring crude sewage on land or over special material such as straw, spreading the sludge over land in a semi-liquid state, trenching, lagooning, drying on specially prepared filters, septicization, digestion, yeast fermentation, activation by air contact, filter pressing, dumping at sea, burning, distillation, gas production, and admixture with other ingredients for the manufacture of fertilizers.

**The Sewage Treatment Plant of the City of Höchst am Main.** Paul Wempe. *Technische Gemeindeblatt*, vol. 29, No. 21, 1927, pp. 271-274. Translation of abstract by Kammann in *Zentralblatt für die Gesamte Hygiene*, vol. 15, No. 11-12, August 10, 1927, p. 493. (Translation by J. K. Hoskins.)

In accordance with plans of the State bureau of hygiene and waterworks of Wiesbaden, a sewage treatment plant was built in the year 1919 for the city of Hochst, serving 40,000 persons, and which has been in continuous service since the spring of 1920. The plant is located along the River Main and treats daily 4,400 cubic meters of dry weather sewage and up to five times that volume of wet weather flow. The plant consists of two parallel main double colloidal basins with especially constructed colloiders of the type patented by the bureau. In these basins an average of 90 per cent of the suspended matter is removed. The cleared sewage has a fresh appearance and is practically nonputrescible. Examinations by the bureau of water, soil, and air hygiene confirm these favorable and exceptional conditions. The sludge is conducted from the central sludge chamber to a special sludge digestion plant, by means of an automatic ejector, where it is completely digested in 70-80 days by the so-called "Gegenstrom" principle. The released gases contain over 70 per cent methane and should be a valuable by-product. This readily dewatered sludge is odorless and is used for fertilizer. The total construction cost was 160,000 marks or only 4 marks per capita. The yearly operating cost was 3,000 marks.

**The New Sewage Disposal Plant of the City of Bad Homburg.** *Lipp. Zentralblatt d. Bauverwalt.*, vol. 47, No. 12, 1927, pp. 129-131. Translation of an abstract by Kammann in *Zentralblatt für die Gesamte Hygiene*, vol. 15, No. 11-12, August 10, 1927, p. 493. (Translation by J. K. Hoskins.)

The new sewage disposal plant of Bad Homburg was placed in service in October, 1926. The sewage is conducted to the treatment plant designed by the State bureau of hygiene and waterworks of Weisbaden, by means of an outfall sewer 2.6 kilometers in length. The plant consists of two sedimentation basins each 7.2 meters broad and 14 meters long, with built-in colloiders, and provides for two hours' sedimentation for the sewage of 30,000 persons. The settled water next flows to a second basin, where chlorination is provided in times of epidemics. Sludge digestion is provided in a separate sludge conditioning plant equipped for recovery of methane. The digested sludge is dried on underdrained drying beds and is given to the farmers. The total cost was 500,000 Reichmarks.

**Pressure Filtration Plant.** Anon. *Water Works*, vol. 66, No. 1, January, 1927, pp. 11-12. (Abstract by E. A. Reinke.)

A mechanical filtration plant to remove peat stain from and counteract plumbosolvent action in a portion of the water supply at Bradford Corporation, England, is described. The supply is from peat lands containing humic acid. Water must be treated with an alkali to prevent lead poisoning. Sulphate of alumina and lime or chalk are added for coagulation, removal of color, and neutralizing the acidity. The chemicals are fed as solution through plunger pumps operated by variable-speed direct-current motors. The speed is varied automatically with the flow by means of a Venturi meter which actuates a mercurial differential gear which, in turn, operates a small electrical rheostat.

"The decision to adopt mechanical filters in this instance was reached chiefly on account of the following considerations, viz, (a) There is no suitable site on which to erect slow-sand or open gravity filters between the reservoir and the first point of delivery; (b) peaty discoloration can be effectively removed; (c) acidity can be readily neutralized, thus removing or reducing metallic solvency and corrosion; (d) initial cost of construction is less than that of slow-sand filters; (e) contamination from the air and the encouragement of the growth of algae are avoided, as the filtrate is delivered direct to the district of supply; (f) no interruption from frost; and (g) the bacterial purification is as efficient as in slow-sand filtration. The operating and maintenance charges are higher, owing to the cost of the coagulant—sulphate of alumina—used to effect color removal, and the water used may be greater, owing to the increased burden on

the mechanical filters arising from the decolorisation process. But these factors are largely, if not entirely, offset by the interest received on the greatly reduced capital expenditure for the mechanical filters, which entirely remove the peaty stain and give a clear, colorless water."

**Air Binding of Filters Attributed to Diatoms.** L. C. Billings. *Engineering News Record*, vol. 98, No. 21, May 26, 1927, p. 875. (Abstract by A. S. Bedell.)

"The formation of an impervious mat of microscopic plant organisms over the sand bed surface in the filters at the Grand Rapids filter plant is an explanation given for the air bound condition found when filters are taken out of service for washing."

Conditions were conducive to growth of certain diatoms; *Nitzschia* and *Melosira* were found in large numbers. The mat reduced filter runs to two hours. Scraping did not effectively remedy the trouble. The condition was remedied by treating the water with excess lime to 5 p. m. causticity in filtered water for a 48-hour period.

**Concrete-Glass Filter Bottom.** F. B. Leopold. *Canadian Engineer*, vol. 52, No. 6, February 8, 1927, pp. 207-208. (Abstract by R. E. Thompson.)

This is an illustrated description of a filter bottom, constructed entirely of concrete and glass, installed in a 1,250,000-gallon unit in the plant of the Pennsylvania Water Co., Wilkesburg, Pa. The cost of installation is somewhat greater than that of the usual filter bottom, but it is believed that the benefits justify the increased cost. This type of filter bottom effects a saving of at least 12 inches of gravel, and provides an absolute forced even distribution of wash water, which eliminates disturbances in the filter gravel and greatly reduces the possibility of the formation of hard spots in the filter bed. There is, also no metal to corrode and require renewal.

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## **POLIOMYELITIS CASES REPORTED BY STATES, OCTOBER 30 TO NOVEMBER 26, 1927, AND CORRESPONDING WEEKS OF 1925 AND 1926**

Telegraphic reports from State health officers for the week ended November 26, 1927, showed a decrease of 34 per cent in the number of cases of poliomyelitis as compared with the number for the preceding week.

Forty States reported 193 cases of poliomyelitis for the week ended November 26, 1927; 294 cases for the preceding week, and 307 cases for the week ended November 12, 1927.

Data are available for 39 States for the week ended November 26, 1927, and the corresponding weeks of the years 1925 and 1926. These States reported 164 cases of poliomyelitis for the week in 1927, 32 cases in 1926, and 38 cases for the corresponding week in 1925.

The following table is a continuation of tables appearing in the Public Health Reports October 7, 1927, page 2452, November 4, 1927, page 2726, and December 2, 1927, page 2952. Reports for the week ended December 3, 1927, will be found on page 3035 of this issue.

*Cases of poliomyelitis reported by State health officers October 30–November 26, 1927, compared with reports for the corresponding weeks of 1925 and 1926*

State	Week ended—											
	Nov. 5, 1927	Nov. 6, 1926	Nov. 7, 1925	Nov. 12, 1927	Nov. 13, 1926	Nov. 14, 1925	Nov. 19, 1927	Nov. 20, 1926	Nov. 21, 1925	Nov. 26, 1927	Nov. 27, 1926	Nov. 28, 1925
Alabama	0	1	1	1	0	2	0	2	1	0	0	1
Arizona	0	0	0	0	0	0	0	0	2	0	0	1
Arkansas	1	0	0	1	1	0	4	0	0	2	0	0
California	25	5	11	23	2	15	26	6	13	17	2	9
Colorado	7	1	0	6	0	0	2	0	1	0	0	0
Connecticut	7	0	1	3	0	1	6	1	1	1	0	0
Delaware	1	0	0	0	0	0	0	0	0	1	0	0
District of Columbia	0	1	1	0	0	1	0	0	0	0	0	0
Florida	1	0	1	2	0	0	0	0	1	0	0	0
Georgia	0	0	2	0	4	0	0	0	0	0	0	0
Idaho	8	0		11	0		3	0		2	0	
Illinois	14	2	11	18	4	0	17	3	3	4	3	1
Indiana	11	2	7	7	0	3	7	1	3	2	0	0
Iowa	3	0		7	0	5	4	0	3		0	2
Kansas	4	1	4	3	1	2	2	0	0	3	1	0
Louisiana	0	1	3	0	0	2	1	1	3	0	1	1
Maine	5	0	0	7	3	1	3	0	2	6	0	0
Maryland	1	1	1	2	0	1	2	0	0		0	0
Massachusetts	56	10	5	38	7	3	30	4	2	19	3	1
Michigan	14	0	0	8	0	0	11	0	0	2	0	0
Minnesota	3	0	5	2	0	4	6	0	4	1	0	1
Mississippi	3	0	0	0	0	0	1	1	0	0	0	1
Missouri	7	0	1	6	0	1	5	0	1	2	0	0
Montana	1	0	0	1	0	0	2	0	0	2	1	0
Nebraska	10	3	2	5	1	3	4	1	2	8	1	0
New Jersey	9	2	4	3	2	1	3	4	1	8	1	2
New Mexico	2	0	1	3	0	1	3	0	1	2	0	0
New York	23	9	23	18	12	11	15	9	8	12	9	9
North Carolina	2	3	2	0	2	0	1	0	2	0	0	1
North Dakota	1	0	3	6	0	1	1	0	1		1	0
Ohio	54			26			27			29		
Oklahoma	3	2	1	3	2	1		0	1	3	2	1
Oregon	20	1	2	22	0	0	33	0	0	26	0	0
Pennsylvania	18	6	6	27	2	0	21	2	0	10	2	0
Rhode Island	3	0	1	2	0	0	3	0	0	1	0	0
South Carolina	4	2	2	1	4	0	3	2	2	1	0	1
South Dakota	7	1	0	6	1	6	5	0	1	1	0	0
Tennessee	4	0		5	0		8	0		1	0	
Texas	11	2	2	5	0	1	6	0	1	2	0	0
Utah	2	0	1	0	0	0	1	0	0	2	0	1
Vermont		0	2		0	4	2	1	3	0	0	2
Virginia	0	0	0	1	0	0	0	0	1	0	2	0
Washington	26	1	4	26	0	1	11	0	3	9	1	3
West Virginia	12	0	0	8	0		13	0	0	9	1	0
Wisconsin	8	2	7	9	3	6	5	2	3	7	2	2
Wyoming	0	2	0	1	1	1	0	0	1	0	0	0

### DEATHS DURING WEEK ENDED NOVEMBER 26, 1927

*Summary of information received by telegraph from industrial insurance companies for week ended November 26, 1927, and corresponding week of 1926. (From the Weekly Health Index, November 30, 1927, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Nov. 26, 1927	Corresponding week, 1926
Policies in force	69, 519, 120	66, 126, 032
Number of death claims	11, 263	10, 451
Death claims per 1,000 policies in force, annual rate	8. 4	8. 2



Deaths from all causes in certain large cities of the United States during the week ended November 26, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, November 30, 1927, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Nov. 26, 1927		Annual death rate per 1,000 corresponding week, 1926	Deaths under 1 year		Infant mortality rate, week ended Nov. 26, 1927 <sup>1</sup>
	Total deaths	Death rate <sup>1</sup>		Week ended Nov. 26, 1927	Corresponding week, 1926	
Total (68 cities).....	6,642	11.7	12.1	618	724	62
Akron.....	44			3	7	33
Albany <sup>4</sup> .....	31	13.5	13.6	2	4	42
Atlanta.....	75			14	8	
White.....	37			8	4	
Colored.....	38	( <sup>5</sup> )		6	4	
Baltimore <sup>4</sup> .....	231	14.7	13.8	26	32	82
White.....	168		12.5	19	25	75
Colored.....	63	( <sup>5</sup> )	21.5	7	7	109
Birmingham.....	65	15.8	20.6	8	9	
White.....	31		13.9	3	3	
Colored.....	34	( <sup>5</sup> )	30.9	5	6	
Boston.....	199	13.1	15.1	21	35	59
Bridgeport.....	35			2	1	84
Buffalo.....	120	11.4	14.5	8	16	34
Cambridge.....	23	9.7	9.4	1	2	18
Camden.....	30	11.8	10.8	2	4	34
Canton.....	22	10.2	10.0	3	3	72
Chicago <sup>4</sup> .....	617	10.4	10.8	56	68	49
Cincinnati.....	137	17.3	18.8	13	13	79
Cleveland.....	193	10.2	10.2	19	17	51
Columbus.....	66	11.8	13.3	8	5	74
Dallas.....	40	10.0	12.1	6	6	
White.....	26		10.9	5	6	
Colored.....	14	( <sup>5</sup> )	19.5	1	0	
Dayton.....	44	12.7	12.7	4	2	66
Denver.....	74	13.3	13.9	7	5	
Des Moines.....	38	13.3	12.5	1	3	18
Detroit.....	253	9.9	11.3	34	55	52
Duluth.....	24	10.9	10.2	4	1	86
El Paso.....	37	16.9	15.3	4	6	
Erie.....	30			3	0	64
Fall River <sup>4</sup> .....	22	8.6	11.1	1	1	17
Flint.....	22	8.0	8.4	2	4	31
Fort Worth.....	37	11.8	13.8	6	10	
White.....	27		12.3	6	8	
Colored.....	10	( <sup>5</sup> )	24.3	0	2	
Grand Rapids.....	28	9.2	9.0	5	1	74
Houston.....	45			2	7	
White.....	35			2	3	
Colored.....	10	( <sup>5</sup> )		0	4	
Indianapolis.....	97	13.5	12.5	9	1	68
White.....	75		11.9	8	1	70
Colored.....	22	( <sup>5</sup> )	16.8	1	0	60
Jersey City.....	58	9.4	10.0	7	9	53
Kansas City, Kans.....	41	18.3	16.1	4	2	84
White.....	28		14.1	3	2	74
Colored.....	13	( <sup>5</sup> )	25.4	1	0	145
Kansas City, Mo.....	107	14.6	11.7	4	7	
Knoxville.....	25	12.8		3		
White.....	18			1		
Colored.....	7	( <sup>5</sup> )		2		
Los Angeles.....	239			18	28	51
Louisville.....	81	13.2	13.2	2	6	17
White.....	56		11.9	2	4	19
Colored.....	25	( <sup>5</sup> )	20.9	0	2	0
Lowell.....	31	14.7	9.9	6	3	127
Lynn.....	21	10.4	11.5	2	1	55
Memphis.....	66	19.2	15.3	5	7	
White.....	33		11.9	0	3	
Colored.....	33	( <sup>5</sup> )	21.5	5	4	

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

<sup>2</sup> Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.

<sup>3</sup> Data for 67 cities.

<sup>4</sup> Data for 63 cities.

<sup>5</sup> Deaths for week ended Friday, Nov. 25, 1927.

<sup>6</sup> In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

Deaths from all causes in certain large cities of the United States during the week ended November 26, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926—Continued

City	Week ended Nov. 26, 1927 *		Annual death rate per 1,000 corresponding week, 1926	Deaths under 1 year		Infant mortality rate, week ended Nov. 23, 1927
	Total deaths	Death rate		Week ended Nov. 26, 1927	Corresponding week, 1926	
Milwaukee	105	10.3	9.0	15	6	69
Minneapolis	90	10.6	11.4	7	11	40
Nashville	40	15.1	24.0	2	7	-----
White	34		18.1	1	2	-----
Colored	6	( <sup>o</sup> )	38.8	1	5	-----
New Bedford	30	13.1	9.6	0	4	0
New Haven	50	14.1	12.0	5	4	70
New Orleans	148	18.2	19.9	12	13	-----
White	89		16.6	5	5	-----
Colored	59	( <sup>o</sup> )	29.2	7	8	-----
New York	1,271	11.1	11.0	104	129	43
Bronx Borough	150	8.4	8.5	7	16	22
Brooklyn Borough	437	10.0	10.2	40	55	42
Manhattan Borough	523	15.0	14.4	46	43	55
Queens Borough	140	9.0	7.4	10	11	44
Richmond Borough	21	7.4	13.2	1	4	19
Newark, N. J.	78	8.7	9.3	10	12	50
Oakland	63	12.3	11.8	3	6	35
Oklahoma City	25			5	2	-----
Omaha	39	9.3	13.8	2	6	23
Paterson	27	9.8	8.4	4	3	72
Philadelphia	410	10.5	11.5	59	50	90
Pittsburgh	189	15.3	11.0	22	22	76
Portland, Oreg.	67			3	1	32
Providence	66	12.2	11.8	8	7	69
Richmond	46	12.5	14.9	2	4	26
White	32		10.9	1	3	20
Colored	14	( <sup>o</sup> )	24.5	1	1	37
Rochester	64	10.3	10.7	6	3	51
St. Louis	207	12.9	14.6	9	26	-----
St. Paul	45	9.4	12.4	5	2	46
Salt Lake City †	24	9.2	11.3	7	5	111
San Antonio	52	12.9	16.3	6	8	-----
San Diego	38	17.2	16.5	1	1	22
San Francisco	135	12.2	13.2	7	8	44
Schenectady	12	6.7	14.0	2	3	60
Seattle	45			1	6	11
Somerville	9	4.6	7.8	0	2	0
Spokane	37	17.7	13.4	4	4	96
Springfield, Mass.	30	10.6	13.7	3	4	47
Syracuse	40	10.6	11.2	3	3	39
Tacoma	27	13.2	12.3	1	0	23
Toledo	71	12.2	11.7	6	4	57
Trenton	38	14.5	13.2	1	3	18
Utica	29	14.7	15.8	1	3	23
Washington, D. C.	122	11.8	12.4	6	9	35
White	82		10.6	3	4	26
Colored	40	( <sup>o</sup> )	17.9	3	5	55
Waterbury	23			1	2	23
Wilmington, Del.	31	12.8	11.3	4	2	99
Worcester	50	13.4	12.1	5	6	60
Yonkers	24	10.5	10.8	1	2	23
Youngstown	25	7.7	9.5	2	5	27

\* Deaths for week ended Friday, Nov. 25, 1927.

† In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

# PREVALENCE OF DISEASE

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

## UNITED STATES

### CURRENT WEEKLY STATE REPORTS

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

**Reports for Weeks Ended December 4, 1926, and December 3, 1927**

*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 4, 1926, and December 3, 1927*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Dec. 4, 1926	Week ended Dec. 3, 1927	Week ended Dec. 4, 1926	Week ended Dec. 3, 1927	Week ended Dec. 4, 1926	Week ended Dec. 3, 1927	Week ended Dec. 4, 1926	Week ended Dec. 3, 1927
<b>New England States:</b>								
Maine	3	12	2	6	105	46	0	0
Vermont	2	0			125	2	0	0
Massachusetts	115	169	12	13	49	516	4	3
Rhode Island	7	31	10	10	0	2	0	0
Connecticut	32	43	13	5	69	29	0	0
<b>Middle Atlantic States:</b>								
New York	319	422	157	110	979	299	4	5
New Jersey	119	178	15	7	41	62	0	1
Pennsylvania	211	328			702	433	1	6
<b>East North Central States:</b>								
Ohio		115		8		52		1
Indiana	126	39	60	26	49	20	0	0
Illinois	142	195	17	20	408	15	2	9
Michigan	125	100			68	217	0	1
Wisconsin	68	33	36	30	526	120	1	1
<b>West North Central States:</b>								
Minnesota	81	56		4	86	5	0	1
Iowa <sup>1</sup>	30	19			19	3	0	0
Missouri	62	89	11	5	108	10	5	2
North Dakota	12				182		0	
South Dakota	9	10			72	33	0	0
Nebraska	9	42	11	5	6	7	0	0
Kansas	38	29	5	3	51	45	1	0
<b>South Atlantic States:</b>								
Delaware	3	2			0	0	0	0
Maryland <sup>2</sup>	58	37	23	24	34	64	1	1
District of Columbia	23				0		0	
Virginia								
West Virginia	52	13	50	13	57	7	2	0
North Carolina	120	122			42	806	0	0
South Carolina	71	57	513	559	13	261	0	0
Georgia	62	37	65	52	12	17	1	0
Florida	37	34		14	2	1	0	0
<b>East South Central States:</b>								
Tennessee	62	40	66	52	20	94	2	0
Alabama	88	109	33	70	6	38	0	0
Mississippi	37	39					0	0
<b>West South Central States:</b>								
Arkansas	8	36	83	96	3	63	1	0
Louisiana	29	43	24	12	29	37	1	2
Oklahoma <sup>3</sup>	59	119	152	75	2	86	1	1
Texas	78	111	7	64	2	17	0	0
<b>Mountain States:</b>								
Montana	1	4			105	1	0	1
Idaho	0	4			33	1	0	0
Wyoming	2	2			13	2	5	0
Colorado	24	12	4		40	2	0	1
New Mexico	8	7	2		17	9	1	1
Arizona	1	9			16	2	0	0
Utah <sup>2</sup>	9	10		3	291	0	0	3
<b>Pacific States:</b>								
Washington	39	43			145	214	6	1
Oregon	19	22	18	29	42	18	1	3
California	187	137	22	32	809	36	2	2

<sup>1</sup> New York City only.

<sup>2</sup> Week ended Friday.

<sup>3</sup> Exclusive of Tulsa.

**Reports for Week Ended December 4, 1926, and December 3, 1927—Continued**
*Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 4, 1926, and December 3, 1927—Continued*

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Dec. 4, 1926	Week ended Dec. 3, 1927	Week ended Dec. 4, 1926	Week ended Dec. 3, 1927	Week ended Dec. 4, 1926	Week ended Dec. 3, 1927	Week ended Dec. 4, 1926	Week ended Dec. 3, 1927
<b>New England States:</b>								
Maine.....	0	1	39	42	0	0	2	2
Vermont.....	0	0	4	1	0	0	0	0
Massachusetts.....	3	24	345	279	0	0	14	14
Rhode Island.....	0	2	19	25	0	0	0	0
Connecticut.....	0	1	58	68	0	0	0	2
<b>Middle Atlantic States:</b>								
New York.....	8	19	374	361	21	8	38	33
New Jersey.....	5	2	179	119	0	0	10	18
Pennsylvania.....	2	13	453	575	0	0	60	39
<b>East North Central States:</b>								
Ohio.....		22		264		25		35
Indiana.....	0	2	212	123	151	57	10	9
Illinois.....	4	3	293	226	15	24	54	15
Michigan.....	0	3	204	224	9	41	5	18
Wisconsin.....	0	3	123	165	8	29	6	5
<b>West North Central States:</b>								
Minnesota.....	0	4	217	128	7	0	7	2
Iowa.....	2	0	30	77	15	45	3	4
Missouri.....	0	2	134	101	0	47	6	13
North Dakota.....	0		66		17		0	
South Dakota.....	1	3	100	33	20	11	1	1
Nebraska.....	0	1	33	50	18	10	23	3
Kansas.....	1	1	95	101	26	34	9	0
<b>South Atlantic States:</b>								
Delaware.....	0	0	18	4	0	0	2	2
Maryland.....	0	1	53	59	0	0	9	14
District of Columbia.....	0		10		0		0	
Virginia.....								
West Virginia.....	0	4	65	51	2	6	22	3
North Carolina.....	0	0	93	148	72	39	7	4
South Carolina.....	0	3	25	43	6	7	29	21
Georgia.....	0	0	17	37	20	0	22	10
Florida.....	0	2	17	16	28	2	19	6
<b>East South Central States:</b>								
Tennessee.....	0	3	66	35	0	5	33	25
Alabama.....	2	0	24	33	11	6	19	18
Mississippi.....	0	1	22	28	4	5	19	3
<b>West South Central States:</b>								
Arkansas.....	0	3	12	20	3	4	21	21
Louisiana.....	0	1	26	15	1	11	10	14
Oklahoma.....	1	3	46	53	42	41	42	53
Texas.....	2	10	55	50	2	6	3	13
<b>Mountain States:</b>								
Montana.....	0	1	63	48	16	27	1	1
Idaho.....	0	1	39	21	7	9	0	0
Wyoming.....	0	0	13	28	0	5	0	3
Colorado.....	1	0	138	54	19	11	3	7
New Mexico.....	0	2	33	8	0	0	7	7
Arizona.....	0	0	10	2	0	0	1	2
Utah.....	0	1	15	10	1	19	0	1
<b>Pacific States:</b>								
Washington.....	0	17	109	50	39	31	15	6
Oregon.....	0	26	47	39	18	29	1	8
California.....	2	10	217	162	21	10	10	2

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

<sup>2</sup> Exclusive of Tulsa.

**Report for Week Ended November 26, 1927**
**DISTRICT OF COLUMBIA**

	Cases
Diphtheria.....	21
Influenza.....	1
Scarlet fever.....	18

**SUMMARY OF MONTHLY REPORTS FROM STATES**

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

State	Menin- go- coccus menin- gitis	Diph- theria	Influen- za	Ma- laria	Meas- les	Pel- lagra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>October, 1927</i>										
Arkansas.....	3	90	147	1,523	49	444	18	68	8	127
Colorado.....	14	89	4	-----	25	-----	28	175	1	59
Idaho.....	4	11	-----	-----	7	-----	7	69	47	5
Kansas.....	5	216	19	2	146	1	45	392	80	74
Maine.....	0	10	3	-----	218	-----	48	158	0	30
Mississippi.....	2	421	2,032	11,834	632	857	6	174	46	102
Missouri.....	7	334	34	12	29	-----	92	428	70	137
Montana.....	6	15	3	-----	12	-----	5	65	79	7
North Carolina.....	2	717	-----	-----	749	-----	3	535	41	88
Oklahoma <sup>1</sup> .....	6	609	182	1,026	108	43	43	201	57	393
Oregon.....	6	57	95	-----	52	-----	111	91	94	69
South Dakota.....	1	23	6	-----	26	-----	25	126	45	18
Virginia.....	3	507	1,103	132	291	32	14	358	14	126
Washington.....	11	79	19	-----	206	-----	110	203	63	23
Wisconsin.....	22	143	143	-----	252	-----	38	368	62	30

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.

<i>October, 1927</i>		Hookworm disease:	Cases
Angina:	Cases	Arkansas.....	8
Colorado.....	11	Mississippi.....	306
Anthrax:		Oklahoma <sup>1</sup> .....	3
Arkansas.....	3	Virginia.....	6
Colorado.....	1	Impetigo contagiosa:	
Mississippi.....	2	Colorado.....	2
Chicken pox:		Kansas.....	4
Arkansas.....	45	Oregon.....	22
Colorado.....	13	Washington.....	9
Idaho.....	47	Jaundice (catarrhal):	
Kansas.....	263	Idaho.....	1
Maine.....	92	Lethargic encephalitis:	
Mississippi.....	250	Kansas.....	2
Missouri.....	145	Oregon.....	2
Montana.....	92	Washington.....	1
North Carolina.....	96	Wisconsin.....	2
Oklahoma <sup>1</sup> .....	41	Malta fever:	
Oregon.....	95	South Dakota.....	1
South Dakota.....	19	Mumps:	
Virginia.....	281	Arkansas.....	160
Washington.....	248	Colorado.....	15
Wisconsin.....	425	Idaho.....	96
Dengue:		Kansas.....	32
Mississippi.....	11	Maine.....	15
Oklahoma <sup>1</sup> .....	1	Mississippi.....	195
Dysentery:		Missouri.....	77
Colorado.....	1	Montana.....	4
Mississippi (amoebic).....	59	Oklahoma <sup>1</sup> .....	6
Mississippi (bacillary).....	420	Oregon.....	49
Oklahoma <sup>1</sup> .....	26	South Dakota.....	28
Virginia.....	135	Washington.....	135
German measles:		Wisconsin.....	169
Colorado.....	3	Ophthalmia neonatorum:	
Kansas.....	4	Arkansas.....	7
Maine.....	9	Mississippi.....	7
North Carolina.....	11	Missouri.....	1
Washington.....	36	Oklahoma <sup>1</sup> .....	4
Wisconsin.....	9	Wisconsin.....	8

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.

	Cases		Cases
<b>Paratyphoid fever:</b>		<b>Trachoma:</b>	
Arkansas.....	8	Arkansas.....	4
Colorado.....	6	Mississippi.....	9
Idaho.....	4	Missouri.....	40
Washington.....	1	Oklahoma <sup>1</sup> .....	12
		South Dakota.....	1
<b>Puerperal septiceamia:</b>		Wisconsin.....	1
Mississippi.....	36	<b>Trench mouth:</b>	
		Kansas.....	1
<b>Rabies in animals:</b>		<b>Typhus fever:</b>	
Idaho.....	1	Virginia.....	1
Mississippi.....	12	<b>Vincent's angina:</b>	
Missouri.....	3	Kansas.....	4
Oregon.....	2	Maine.....	6
		Oklahoma <sup>1</sup> .....	2
<b>Rocky Mountain spotted or tick fever:</b>		<b>Whooping cough:</b>	
Idaho.....	1	Arkansas.....	47
		Colorado.....	53
<b>Septic sore throat:</b>		Idaho.....	12
Idaho.....	4	Kansas.....	214
Kansas.....	2	Maine.....	80
Maine.....	16	Mississippi.....	997
Missouri.....	7	Missouri.....	251
North Carolina.....	9	Montana.....	30
Oklahoma <sup>1</sup> .....	20	North Carolina.....	566
Oregon.....	8	Oklahoma <sup>1</sup> .....	73
		Oregon.....	23
<b>Scabies:</b>		South Dakota.....	7
Oregon.....	10	Virginia.....	292
Washington.....	11	Washington.....	50
		Wisconsin.....	315
<b>Tetanus:</b>			
Missouri.....	1		
Oklahoma <sup>1</sup> .....	4		

### GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 99 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 30,680,000. The estimated population of the 93 cities reporting deaths is more than 30,000,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

*Weeks ended November 19, 1927, and November 20, 1926*

	1927	1926	Estimated expectancy
<i>Cases reported</i>			
<b>Diphtheria:</b>			
43 States.....	2,933	2,816	
99 cities.....	1,340	1,334	1,293
<b>Measles:</b>			
42 States.....	2,615	4,273	
99 cities.....	735	787	
<b>Poliomyelitis:</b>			
43 States.....	273	40	
<b>Scarlet fever:</b>			
43 States.....	3,409	4,035	
99 cities.....	1,048	1,235	948
<b>Smallpox:</b>			
42 States.....	462	372	
99 cities.....	111	27	39
<b>Typhoid fever:</b>			
43 States.....	479	710	
99 cities.....	90	80	78
<i>Deaths reported</i>			
<b>Influenza and pneumonia:</b>			
93 cities.....	700	750	
<b>Smallpox:</b>			
93 cities.....	1	0	
Chicago.....	1	0	

<sup>1</sup> Exclusive of Oklahoma City and Tulsa.

City reports for week ended November 19, 1927

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

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1918 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population, July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
<b>NEW ENGLAND</b>									
<b>Maine:</b>									
Portland	75,383	4	2	1	0	0	0	1	1
<b>New Hampshire:</b>									
Concord	22,546	0	0	0	0	0	3	0	6
Manchester	83,697	0	4	0	0	0	0	0	0
<b>Vermont:</b>									
Barre	10,008	6	1	0	0	0	0	0	0
Burlington	34,989	1	0	0	0	0	4	0	0
<b>Massachusetts:</b>									
Boston	779,620	52	48	16	2	2	138	6	19
Fall River	123,666	0	5	4	0	0	0	1	5
Springfield	142,065	4	4	5	0	0	0	5	1
Worcester	196,737	27	6	13	0	0	3	48	0
<b>Rhode Island:</b>									
Pawtucket	68,769	4	1	2	0	0	0	7	0
Providence	267,913	0	10	9	0	0	0	4	1
<b>Connecticut:</b>									
Bridgeport	(1)	1	10	5	0	0	2	1	3
Hartford	189,187	8	3	6	4	0	0	2	6
New Haven	178,927	10	3	4	0	0	22	15	3
<b>MIDDLE ATLANTIC</b>									
<b>New York:</b>									
Buffalo	338,016	32	20	16	0	0	16	14	15
New York	5,878,356	124	169	260	15	3	29	26	132
Rochester	316,736	4	10	10	0	0	1	2	2
Syracuse	182,003	18	11	2	0	0	15	2	4
<b>New Jersey:</b>									
Camden	126,642	5	7	8	1	0	0	2	3
Newark	452,513	42	11	34	5	0	13	14	11
Trenton	132,020	1	5	2	0	2	7	8	5
<b>Pennsylvania:</b>									
Philadelphia	1,979,364	172	82	65	6	6	6	64	45
Pittsburgh	634,563	33	31	72	3	102	21	24	24
Reading	112,707	12	3	5	0	0	1	0	0
<b>EAST NORTH CENTRAL</b>									
<b>Ohio:</b>									
Cincinnati	409,333	10	19	10	0	0	1	0	16
Cleveland	936,485	44	54	101	0	0	10	68	12
Columbus	279,836	21	13	20	0	0	1	1	4
Toledo	287,380	72	17	6	0	0	7	3	6
<b>Indiana:</b>									
Fort Wayne	97,846	5	5	0	0	0	0	0	0
Indianapolis	358,819	19	12	16	0	0	2	29	13
South Bend	89,091	1	3	0	0	0	1	0	3
Terre Haute	71,071	0	3	2	0	0	0	0	3
<b>Illinois:</b>									
Chicago	2,995,239	84	124	123	4	2	5	15	54
Springfield	68,923	1	3	2	0	0	0	0	1
<b>Michigan:</b>									
Detroit	1,245,894	68	80	74	2	0	46	54	22
Flint	126,316	12	14	7	0	0	2	50	5
Grand Rapids	183,686	3	6	0	0	0	10	3	0

1 No estimate made.

## City reports for week ended November 19, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chick-en pox, cases re-ported	Diphtheria		Influenza		Meas-les, cases re-ported	Mumps, cases re-ported	Pneu-monia, deaths re-ported
			Cases, esti-mated expect-ancy	Cases re-ported	Cases re-ported	Deaths re-ported			
<b>EAST NORTH CENTRAL—continued</b>									
<b>Wisconsin:</b>									
Kenosha.....	50,891	12	3	1	0	0	2	5	0
Milwaukee.....	509,192	88	34	12	1	1	1	12	10
Racine.....	67,707	11	3	0	0	0	0	1	0
Superior.....	39,671	2	2	0	0	0	0	0	1
<b>WEST NORTH CENTRAL</b>									
<b>Minnesota:</b>									
Duluth.....	110,502	5	2	0	0	0	0	0	1
Minneapolis.....	425,435	77	35	20	0	2	0	4	9
St. Paul.....	246,001	11	20	5	0	0	0	32	9
<b>Iowa:</b>									
Davenport.....	52,469	0	2	0	0	0	0	0	-----
Des Moines.....	141,441	0	7	0	0	0	0	0	-----
Sioux City.....	76,411	11	3	0	0	0	0	12	-----
Waterloo.....	36,771	11	1	0	0	0	0	0	-----
<b>Missouri:</b>									
Kansas City.....	367,481	20	14	7	0	2	1	19	11
St. Joseph.....	78,342	1	3	0	0	0	1	1	3
St. Louis.....	821,543	16	52	41	0	0	6	0	-----
<b>North Dakota:</b>									
Fargo.....	26,403	9	1	0	0	0	0	1	1
Grand Forks.....	14,811	2	1	0	0	0	2	0	-----
<b>South Dakota:</b>									
Aberdeen.....	15,036	2	0	0	0	0	1	0	-----
Sioux Falls.....	30,127	1	1	0	0	0	1	0	-----
<b>Nebraska:</b>									
Lincoln.....	60,941	18	2	1	0	0	1	8	0
Omaha.....	211,768	19	8	1	0	0	1	0	2
<b>Kansas:</b>									
Topeka.....	55,411	26	3	2	0	1	1	0	0
Wichita.....	88,367	4	8	1	0	0	1	1	3
<b>SOUTH ATLANTIC</b>									
<b>Delaware:</b>									
Wilmington.....	122,049	0	3	1	0	0	0	0	4
<b>Maryland:</b>									
Baltimore.....	796,296	81	37	31	8	3	36	3	27
Cumberland.....	33,741	1	0	0	0	0	0	0	0
Frederick.....	12,035	0	0	0	0	0	0	0	0
<b>District of Columbia:</b>									
Washington.....	497,906	20	23	18	3	1	1	0	12
<b>Virginia:</b>									
Lynchburg.....	30,395	4	3	10	0	0	0	0	2
Norfolk.....	(1)	9	5	7	0	0	5	0	3
Richmond.....	186,403	1	20	18	0	2	7	0	4
Roanoke.....	58,208	5	5	2	0	0	5	0	1
<b>West Virginia:</b>									
Charleston.....	49,019	0	4	0	0	1	1	0	2
Wheeling.....	56,208	17	4	1	0	0	0	0	1
<b>North Carolina:</b>									
Raleigh.....	30,371	11	3	1	0	0	1	0	0
Wilmington.....	37,061	5	1	5	0	0	32	0	3
Winston-Salem.....	69,031	0	3	8	0	0	4	12	4
<b>South Carolina:</b>									
Charleston.....	73,125	0	2	2	24	1	1	0	2
Columbia.....	41,225	4	1	1	0	1	18	7	2
Greenville.....	27,311	0	2	1	0	0	21	2	1
<b>Georgia:</b>									
Atlanta.....	(1)	2	9	10	24	2	0	0	15
Brunswick.....	16,809	0	0	0	0	0	0	1	0
Savannah.....	93,134	1	3	2	10	0	24	0	4
<b>Florida:</b>									
St. Petersburg.....	26,847	-----	0	-----	0	-----	-----	-----	1
Tampa.....	94,743	0	3	2	0	1	0	0	2

1 No estimate made.



## City reports for week ended November 19, 1937—Continued

Division, State, and city	Population July 1, 1936, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
<b>EAST SOUTH CENTRAL</b>									
<b>Kentucky:</b>									
Covington.....	58,309	0	3	4	0	0	0	0	2
Louisville.....	305,935	1	9	6	2	0	0	0	6
<b>Tennessee:</b>									
Memphis.....	174,533	2	11	5	0	2	23	0	5
Nashville.....	136,220	3	6	8	0	1	1	0	6
<b>Alabama:</b>									
Birmingham.....	205,670	5	7	15	2	1	0	0	9
Mobile.....	65,955	1	2	2	0	0	0	0	1
Montgomery.....	46,481	0	2	7	1	0	0	1	0
<b>WEST SOUTH CENTRAL</b>									
<b>Arkansas:</b>									
Fort Smith.....	31,643	0	2	3	0	0	0	0	0
Little Rock.....	74,216	0	3	4	0	0	2	4	2
<b>Louisiana:</b>									
New Orleans.....	414,493	1	13	9	9	5	1	0	18
Shreveport.....	57,857	0	2	6	0	0	11	2	0
<b>Oklahoma:</b>									
Oklahoma City.....	(1)	0	4	20	5	1	0	0	1
Tulsa.....	124,478	4	7	7	0	0	0	6	0
<b>Texas:</b>									
Dallas.....	194,450	2	16	36	2	1	1	0	1
Galveston.....	45,375	0	1	0	0	0	0	0	1
Houston.....	164,954	0	6	6	0	0	0	0	2
San Antonio.....	198,060	0	4	19	0	2	2	0	9
<b>MOUNTAIN</b>									
<b>Montana:</b>									
Billings.....	17,971	0	1	0	0	0	0	0	0
Great Falls.....	29,883	3	1	0	0	0	0	0	0
Helena.....	12,037	0	0	0	0	0	0	0	0
Missoula.....	12,668	1	1	0	0	0	1	0	0
<b>Idaho:</b>									
Boise.....	23,042	0	0	0	0	0	4	0	0
<b>Colorado:</b>									
Denver.....	280,911	56	15	13	0	4	3	13	5
Pueblo.....	43,787	11	4	1	0	0	0	0	2
<b>New Mexico:</b>									
Albuquerque.....	21,000	0	1	0	0	0	0	0	0
<b>Utah:</b>									
Salt Lake City.....	130,948	41	5	7	0	0	0	1	3
<b>Nevada:</b>									
Reno.....	12,665	0	0	2	0	0	0	0	1
<b>PACIFIC</b>									
<b>Washington:</b>									
Seattle.....	(1)	34	6	10	0	0	53	4	0
Spokane.....	108,897	40	4	0	0	0	1	0	0
Tacoma.....	104,455	1	4	2	0	0	0	2	1
<b>Oregon:</b>									
Portland.....	282,383	16	10	4	1	1	4	1	6
<b>California:</b>									
Los Angeles.....	(1)	18	47	46	5	1	7	0	17
Sacramento.....	72,260	9	3	4	0	0	2	0	0
San Francisco.....	557,580	65	19	23	1	0	18	6	4

1 No estimate made.





## City reports for week ended November 19, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
<b>WEST SOUTH CENTRAL</b>											
<b>Arkansas:</b>											
Fort Smith.....	2	0	0	0	0	1	0	0	0	0	
Little Rock.....	2	6	0	0	0	3	1	1	0	0	
<b>Louisiana:</b>											
New Orleans.....	6	4	0	0	0	9	2	3	0	2	127
Shreveport.....	1	2	0	0	0	1	1	0	0	0	34
<b>Oklahoma:</b>											
Oklahoma City.....	3	1	0	6	0	0	1	0	0	0	23
Tulsa.....		1		1				0		3	
<b>Texas:</b>											
Dallas.....	5	9	0	0	0	2	1	2	0	5	46
Galveston.....	1	1	0	0	0	0	1	0	0	0	14
Houston.....	0	3	0	0	0	2	0	1	0	0	51
San Antonio.....	1	0	0	1	0	6	0	0	1	0	62
<b>MOUNTAIN</b>											
<b>Montana:</b>											
Billings.....	1	0	0	0	0	0	0	0	0	0	3
Great Falls.....	1	2	1	0	0	0	0	0	0	0	8
Helena.....	0	1	0	0	0	0	0	0	0	0	4
Missoula.....	0	0	0	0	0	0	0	0	0	0	2
<b>Idaho:</b>											
Boise.....	0	0	0	0	0	0	0	0	0	0	8
<b>Colorado:</b>											
Denver.....	10	14	2	0	0	8	1	1	0	10	66
Pueblo.....	0	4	0	0	0	1	0	0	0	6	11
<b>New Mexico:</b>											
Albuquerque.....	0	1	0	0	0	2	1	1	0	0	9
<b>Utah:</b>											
Salt Lake City.....	2	5	1	3	0	1	0	1	0	2	26
<b>Nevada:</b>											
Reno.....	0	0	0	0	0	0	0	0	0	0	5
<b>PACIFIC</b>											
<b>Washington:</b>											
Seattle.....	9	10	3	0			1	1		2	
Spokane.....	7	6	4	6			0	1		0	
Tacoma.....	3	8	2	0	0	1	0	0	0	0	26
<b>Oregon:</b>											
Portland.....	9	5	3	1	0	4	1	0	0	0	76
<b>California:</b>											
Los Angeles.....	22	17	3	0	0	26	2	1	0	7	228
Sacramento.....	2	3	1	4	0	3	1	1	0	0	17
San Francisco.....	10	15	0	1	0	4	1	1	1	5	123

Division, State, and city	Meningo- coccus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	
<b>NEW ENGLAND</b>										
<b>Maine:</b>										
Portland.....	0	0	0	0	0	0	0	2	1	
<b>Massachusetts:</b>										
Boston.....	2	0	0	0	0	0	1	9	1	
Fall River.....	1	0	0	0	0	0	0	2	0	
<b>Rhode Island:</b>										
Providence.....	0	0	0	0	0	0	0	2	0	
<b>MIDDLE ATLANTIC</b>										
<b>New York:</b>										
New York.....	0	2	4	2	0	0	5	6	2	
<b>New Jersey:</b>										
Newark.....	0	0	1	0	0	0	1	0	0	
<b>Pennsylvania:</b>										
Philadelphia.....	0	2	1	0	1	1	1	7	2	
Pittsburgh.....	1	0	0	1	0	0	0	0	1	

## City reports for week ended November 19, 1927—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Toledo.....	0	0	0	0	0	0	0	1	0
Indiana:									
Indianapolis.....	0	1	0	0	0	0	0	0	0
Illinois:									
Chicago.....	1	0	0	0	0	0	1	4	0
Michigan:									
Detroit.....	2	0	0	0	0	1	0	1	0
Grand Rapids.....	0	0	0	0	0	0		1	1
Wisconsin:									
Milwaukee.....	0	2	0	0	0	0	0	0	0
Racine.....	1	0	0	0	0	0	0	0	0
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Minneapolis.....	1	0	0	0	0	0	0	0	0
Iowa:									
Waterloo.....	0	0	0	0	0	0	0	0	1
Missouri:									
Kansas City.....	0	0	0	0	1	1	0	1	0
St. Louis.....	1	0	0	0	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	0	0	0	1	1	1	0	1	0
Virginia:									
Richmond.....	1	0	0	0	0	0	0	0	0
South Carolina:									
Columbia.....	0	0	0	0	0	2	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Tennessee:									
Nashville.....	0	0	0	0	0	1	0	1	0
Alabama:									
Birmingham.....	1	0	0	0	1	1	0	0	0
Mobile.....	0	1	0	0	0	0	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Arkansas:									
Fort Smith.....	1	0	0	0	0	0	0	0	0
Little Rock.....	0	0	0	0	1	0	0	0	0
Louisiana:									
New Orleans.....	0	0	0	0	5	1	0	1	1
Shreveport.....	0	0	0	0	0	2	0	0	0
Texas:									
Galveston.....	0	0	0	0	0	1	0	0	0
<b>MOUNTAIN</b>									
Colorado:									
Denver.....	1	3	0	0	0	0	1	0	0
Utah:									
Salt Lake City.....	3	1	0	0	0	0	0	1	0
<b>PACIFIC</b>									
Washington:									
Seattle.....	0	0	0	0	0	0	0	1	0
Spokane.....	0	0	0	0	0	0	0	1	0
Tacoma.....	0	0	0	0	0	0	0	2	1
Oregon:									
Portland.....	0	0	0	0	0	0	0	1	2
California:									
Los Angeles.....	4	1	1	0	0	1	0	2	2
Sacramento.....	0	0	0	0	0	0	0	2	0
San Francisco.....	0	0	1	0	0	0	0	5	1

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended November 19, 1927, compared with those for a like period ended November 20, 1926. The population figures used in computing the rates are approximate estimates as of July 1, 1926 and 1927, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had

estimated aggregate populations of approximately 30,445,000 in 1926 and 30,966,000 in 1927. The 95 cities reporting deaths had nearly 29,785,000 estimated population in 1926 and nearly 30,296,000 in 1927. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

*Summary of weekly reports from cities, October 16 to November 19, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926*<sup>1</sup>

## DIPHThERIA CASE RATES

	Week ended—									
	Oct. 23, 1926	Oct. 22, 1927	Oct. 30, 1926	Oct. 29, 1927	Nov. 6, 1926	Nov. 5, 1927	Nov. 13, 1926	Nov. 12, 1927	Nov. 20, 1926	Nov. 19, 1927
101 cities.....	203	170	213	195	224	214	228	215	230	228
New England.....	85	123	106	135	118	114	134	160	139	163
Middle Atlantic.....	122	143	138	191	143	226	163	205	159	234
East North Central.....	260	199	241	232	275	261	264	254	292	249
West North Central.....	240	129	204	139	252	195	222	161	214	153
South Atlantic.....	300	194	354	192	317	185	387	190	276	218
East South Central.....	398	168	383	260	424	153	264	209	367	239
West South Central.....	270	268	331	298	253	323	378	284	326	348
Mountain.....	255	153	155	99	219	99	182	279	146	207
Pacific.....	190	220	204	152	287	144	230	224	324	223

## MEASLES CASE RATES

101 cities.....	49	55	64	70	81	77	106	97	135	125
New England.....	26	186	24	190	66	241	31	341	47	390
Middle Atlantic.....	12	64	13	72	16	72	44	124	28	93
East North Central.....	50	21	77	18	80	29	101	27	120	55
West North Central.....	42	22	85	34	151	14	147	16	198	22
South Atlantic.....	26	45	9	107	20	132	24	136	54	292
East South Central.....	21	51	21	204	26	234	10	76	31	148
West South Central.....	4	38	0	21	9	21	26	13	26	71
Mountain.....	337	72	392	63	793	9	1,531	18	1,950	72
Pacific.....	278	50	340	92	313	80	279	76	498	212

## SCARLET FEVER CASE RATES

101 cities.....	152	117	169	146	188	149	206	156	212	178
New England.....	193	151	245	211	264	200	351	204	330	248
Middle Atlantic.....	51	74	92	97	94	110	125	110	130	152
East North Central.....	155	128	157	166	186	173	182	177	201	202
West North Central.....	373	137	355	248	415	165	347	185	407	232
South Atlantic.....	162	161	132	168	197	159	177	183	143	164
East South Central.....	222	148	331	138	248	168	295	153	228	112
West South Central.....	95	80	112	126	112	151	142	106	116	105
Mountain.....	447	279	365	144	583	189	702	183	638	234
Pacific.....	233	136	236	97	204	140	279	117	335	154

## SMALLPOX CASE RATES

101 cities.....	3	7	3	7	3	18	5	16	5	19
New England.....	0	0	0	9	0	0	0	0	0	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	0
East North Central.....	3	0	1	0	6	6	10	4	3	6
West North Central.....	0	42	2	52	2	159	10	157	4	161
South Atlantic.....	9	7	6	0	0	14	2	5	4	10
East South Central.....	10	5	5	5	10	0	10	0	0	5
West South Central.....	0	0	4	0	9	4	30	7	4	4
Mountain.....	0	72	9	45	0	36	9	27	0	27
Pacific.....	16	21	21	16	3	19	5	3	48	29

<sup>1</sup> The figures given in this table are rates per 100,000 population annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1926 and 1927, respectively.

<sup>2</sup> Tacoma, Wash., not included.

<sup>3</sup> Fort Smith, Ark., Seattle, Wash., and Spokane, Wash., not included.

<sup>4</sup> Fort Wayne, Ind., and Norfolk, Va., not included.

<sup>5</sup> Fort Wayne, Ind., not included.

<sup>6</sup> Norfolk, Va., not included.

<sup>7</sup> Fort Smith, Ark., not included.

<sup>8</sup> Seattle, Wash., and Spokane, Wash., not included.

Summary of weekly reports from cities, October 16 to November 19, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Oct. 23, 1926	Oct. 23, 1927	Oct. 30, 1926	Oct. 29, 1927	Nov. 6, 1926	Nov. 5, 1927	Nov. 13, 1926	Nov. 12, 1927	Nov. 20, 1926	Nov. 19, 1927
101 cities.....	26	20	27	17	24	19	21	15	16	15
New England.....	19	16	12	19	17	16	9	16	7	23
Middle Atlantic.....	20	15	14	12	12	20	21	15	21	14
East North Central.....	12	16	17	13	13	7	10	9	5	7
West North Central.....	22	22	24	16	26	24	16	28	6	20
South Atlantic.....	76	33	75	22	45	31	35	20	22	27
East South Central.....	98	31	140	46	103	36	52	5	36	15
West South Central.....	21	29	39	38	21	59	34	24	13	29
Mountain.....	27	81	46	27	91	36	27	9	27	18
Pacific.....	13	16	19	16	46	6	29	7	29	13

INFLUENZA DEATH RATES

95 cities.....	7	9	11	8	11	9	14	8	10	9
New England.....	7	5	7	0	12	5	2	2	2	5
Middle Atlantic.....	8	7	8	4	9	8	10	9	10	7
East North Central.....	5	5	14	5	6	9	10	5	10	2
West North Central.....	2	12	2	6	6	10	13	2	6	10
South Atlantic.....	8	11	21	13	15	7	17	17	8	22
East South Central.....	10	25	10	41	21	15	26	15	31	20
West South Central.....	13	13	26	17	40	26	66	17	31	34
Mountain.....	27	18	9	27	18	18	27	18	9	36
Pacific.....	0	14	7	10	7	7	14	0	4	8

PNEUMONIA DEATH RATES

95 cities.....	86	77	96	91	101	90	106	104	123	112
New England.....	83	86	99	65	99	63	90	95	104	102
Middle Atlantic.....	104	75	101	92	114	87	115	113	136	119
East North Central.....	61	66	86	82	85	93	87	89	104	97
West North Central.....	49	64	63	69	84	62	76	75	120	81
South Atlantic.....	113	72	108	88	121	118	140	129	144	165
East South Central.....	96	127	134	112	98	112	165	138	171	148
West South Central.....	53	86	88	190	115	90	110	129	184	142
Mountain.....	128	144	182	144	164	117	155	144	109	99
Pacific.....	99	100	88	97	49	100	99	100	74	76

- <sup>1</sup> Tacoma, Wash., not included.
- <sup>2</sup> Fort Smith, Ark., Seattle, Wash., and Spokane, Wash., not included.
- <sup>3</sup> Fort Wayne, Ind., and Norfolk, Va., not included.
- <sup>4</sup> Fort Wayne, Ind., not included.
- <sup>5</sup> Norfolk, Va., not included.
- <sup>6</sup> Fort Smith, Ark., not included.
- <sup>7</sup> Seattle, Wash., and Spokane, Wash., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1926 and 1927, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1926	1927	1926	1927
Total.....	101	95	30, 443, 800	30, 966, 700	29, 783, 700	30, 296, 900
New England.....	12	12	2, 211, 000	2, 245, 900	2, 211, 000	2, 245, 900
Middle Atlantic.....	10	10	10, 457, 000	10, 567, 000	10, 457, 000	10, 567, 000
East North Central.....	16	16	7, 660, 200	7, 810, 900	7, 650, 208	7, 810, 600
West North Central.....	12	10	2, 585, 500	2, 626, 000	2, 470, 600	2, 510, 000
South Atlantic.....	21	20	2, 799, 500	2, 873, 100	2, 757, 700	2, 825, 700
East South Central.....	7	7	1, 008, 300	1, 022, 500	1, 008, 300	1, 022, 500
West South Central.....	8	7	1, 213, 800	1, 243, 300	1, 181, 500	1, 210, 400
Mountain.....	9	9	572, 100	580, 000	572, 100	580, 000
Pacific.....	6	4	1, 946, 400	1, 991, 700	1, 475, 300	1, 512, 800

# FOREIGN AND INSULAR

## THE FAR EAST

*Report for the week ended November 12, 1927.*—The following report for the week ended November 12, 1927, was transmitted by the eastern bureau of the health section of the secretariat of the League of Nations, located at Singapore, to the headquarters at Geneva:

Plague, cholera, or smallpox was reported present in the following ports:

PLAGUE	SMALLPOX
<p><i>Dutch East Indies.</i>—Makassar.</p> <p style="text-align: center;">CHOLERA</p> <p><i>India.</i>—Bombay, Calcutta, Madras, Tuticorin.  <i>Straits Settlements.</i>—Singapore.  <i>Dutch East Indies.</i>—Batavia.  <i>China.</i>—Canton.</p>	<p><i>India.</i>—Rangoon.  <i>Ceylon.</i>—Colombo.  <i>Dutch East Indies.</i>—Banjermasin, Samarinda.  <i>Sarawak.</i>—Kuching.</p>

Returns for the week ended November 12 were not received from the following ports:

*Iraq.*—Basra.  
*Dutch East Indies.*—Padang.  
*French Indo-China.*—Haiphong.  
*Union of Socialist Soviet Republics.*—Vladivostok.

## ANGOLA

*Communicable diseases—August, 1927.*—During the month of August, 1927, communicable diseases were reported in Angola, as follows:

Disease	Coast districts	Interior	Land frontier	Total
Beriberi	6			6
Bilharzia	23	1		24
Chicken pox	2			2
Dysentery	37	21	8	66
Erysipelas	1		3	4
Hemoglobin fever	6	3	2	11
Influenza	119	137	175	431
Leprosy	2		1	3
Malaria	233	89	118	440
Measles	2			2
Mumps	2			2
Pneumonia	40	15	13	68
Puerperal fever	3		3	3
Relapsing fever		2		2
Scabies	10	2		12
Smallpox	1	1		2
Tetanus	5			5
Tuberculosis	18	11	3	32
Trypanosomiasis	75	17	24	116
Typhoid fever	3			3
Veneral diseases	133	58	30	221
Whooping cough	6			6
Yaws	80	7	26	113



**BRAZIL**

*Mortality, general—Mortality from communicable diseases—Manaos—September, 1927.*—During the month of September, 1927, of 139 deaths from all causes reported at Manaus, Brazil, 39 were caused by malaria, 4 by leprosy, 4 by measles, and 21 by tuberculosis. Population, 89,063.

**CANADA**

*Communicable diseases—Week ended November 19, 1927.*—The Canadian Ministry of Health reports cases of certain communicable diseases from seven Provinces of Canada for the week ended November 19, 1927, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Total
Cerebrospinal fever.....			1			2		3
Poliomyelitis.....	1	1	1	3			2	8
Smallpox.....				85	2	14	1	102
Typhoid fever.....	1	9	10	7	2			29

*Communicable diseases—Ontario—October, 1927—Comparative.*—During the month of October, 1927, communicable diseases were reported in the Province of Ontario, Canada, as follows:

Disease	1927		1926	
	Cases	Deaths	Cases	Deaths
Actinomycosis.....	2	2		
Cerebrospinal meningitis.....	3	2	5	1
Chancroid.....	5		1	
Chicken pox.....	571		544	
Conjunctivitis, acute infectious.....	1			
Diphtheria.....	546	20	429	22
Dysentery.....		9		
German measles.....	13		7	
Goiter.....	1			
Gonorrhoea.....	179		177	
Influenza.....	9	7		10
Lethargic encephalitis.....			7	5
Measles.....	383			383
Mumps.....	448		25	
Pneumonia.....		95		128
Poliomyelitis.....	21	4	27	
Puerperal septicemia.....		2		
Rabies.....	1			
Scarlet fever.....	411	1	351	1
Septic sore throat.....	7		3	
Smallpox.....	160		75	
Syphilis.....	147		173	
Tetanus.....		1		
Tuberculosis.....	125	62	96	54
Typhoid fever.....	128	4	101	10
Whooping cough.....	275	4	304	3

*Smallpox in municipalities.*—The greatest number of cases of smallpox reported in the Province of Ontario, Canada, during October, 1927, was in Ottawa, viz, 114 cases. At Toronto 13 cases were reported; at South River, 5 cases. Seven localities reported the occurrence of 1 case each.

*Smallpox—East York, Ontario Province.*—Smallpox is reported prevalent at East York, Province of Ontario, Canada. Four cases were reported during October, 1927. The disease is said to be mild.

*Communicable diseases—Quebec—Week ended November 19, 1927.*—The Bureau of Health of the Province of Quebec reports cases of communicable disease for the week ended November 19, 1927, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	1	Poliomyelitis (infantile paralysis).....	1
Chicken pox.....	46	Scarlet fever.....	113
Diphtheria.....	84	Smallpox.....	3
German measles.....	3	Tuberculosis.....	15
Influenza.....	1	Typhoid fever.....	10
Measles.....	73	Whooping cough.....	9

*Typhoid fever—Montreal—January 2—November 26, 1927.*—The following table gives the cases of typhoid fever and deaths from this disease reported at Montreal, Quebec, Canada, since January 1, 1927:

Week ended—	Cases	Deaths	Week ended—	Cases	Deaths
Jan. 8, 1927.....	3	1	June 25, 1927.....	75	23
Jan. 15, 1927.....	4	3	July 2, 1927.....	66	21
Jan. 22, 1927.....	1	2	July 9, 1927.....	52	10
Jan. 29, 1927.....	3	1	July 16, 1927.....	39	4
Feb. 5, 1927.....	1	0	July 23, 1927.....	22	9
Feb. 12, 1927.....	0	0	July 30, 1927.....	23	10
Feb. 19, 1927.....	1	2	Aug. 6, 1927.....	16	5
Feb. 26, 1927.....	1	1	Aug. 13, 1927.....	20	5
Mar. 5, 1927.....	9	1	Aug. 20, 1927.....	14	4
Mar. 12, 1927.....	203	4	Aug. 27, 1927.....	8	3
Mar. 19, 1927.....	383	14	Sept. 3, 1927.....	27	0
Mar. 26, 1927.....	568	22	Sept. 10, 1927.....	17	0
Apr. 2, 1927.....	649	46	Sept. 17, 1927.....	13	2
Apr. 9, 1927.....	386	40	Sept. 24, 1927.....	6	3
Apr. 16, 1927.....	175	38	Oct. 1, 1927.....	18	1
Apr. 23, 1927.....	126	43	Oct. 8, 1927.....	14	1
Apr. 30, 1927.....	105	23	Oct. 15, 1927.....	5	1
May 7, 1927.....	106	19	Oct. 22, 1927.....	3	1
May 14, 1927.....	367	16	Oct. 29, 1927.....	9	1
May 21, 1927.....	770	26	Nov. 5, 1927.....	1	1
May 28, 1927.....	353	38	Nov. 12, 1927.....	3	0
June 4, 1927.....	239	37	Nov. 19, 1927.....	2	2
June 11, 1927.....	128	36	Nov. 26, 1927.....	0	0
June 18, 1927.....	86	18			

## CHINA

*Area of pneumonic plague infection—Mongolian frontier.*—Further information received under date of<sup>1</sup> October 11, 1927, indicates prevalence of pneumonic plague south of Tungliaochen, on the frontier of Mongolia, where an outbreak with 200 deaths was previously reported.

<sup>1</sup> Public Health Reports Dec. 2, 1927, p. 2992.

## ECUADOR

*Plague—Smallpox—Guayaquil—October, 1927.*—During the month of October, 1927, four cases of plague and one case of smallpox were reported at Guayaquil, Ecuador.

*Plague-infected rats.*—During the same period, 22,997 rats were reported taken at Guayaquil, of which number 8 rats were found plague-infected.

## FINLAND

*Influenza—Helsingfors—October 1-15, 1927.*—During the half month ended October 15, 1927, 235 cases of influenza were reported at Helsingfors.

## GREECE

*Mortality from bronchopneumonic influenza—Saloniki—October 4-31, 1927.*—The occurrence of 66 deaths from bronchopneumonic influenza has been reported at Saloniki, Greece, for the period October 4 to 31, 1927.

## IRAQ

*Cholera—Week ended October 22, 1927—Summary to October 22, 1927.*—During the week ended October 22, 1927, 95 cases of cholera, with 60 deaths, were reported in Iraq, occurring in seven localities. The greatest number of cases, viz, 35, with 23 deaths, was reported at Amarah. The total occurrence from date of outbreak to October 22 was 926 cases, with 677 deaths.

## MADAGASCAR

*Plague—September 1-15, 1927.*—During the period September 1 to 15, 1927, 85 cases of plague with 76 deaths were reported in the Island of Madagascar. The occurrence was distributed according to locality as follows: Provinces—Antsirabe, cases, 2; deaths, 2; Itasy, cases, 14; deaths, 13; Tananarive, including Tananarive Town, cases, 69; deaths, 61. The distribution according to type of disease was: Bubonic cases, 37; pneumonic, 31; septicemic, 17.

## PERU

*Mortality from communicable diseases—Arequipa—September, 1927.*—During the month of September, 1927, mortality from communicable diseases was reported at Arequipa, Peru, as follows:

Disease	Deaths	Disease	Deaths
Gastroenteritis.....	3	Tuberculosis.....	22
Influenza.....	13	Typhoid fever.....	1
Measles.....	2	Typhus fever.....	1
Scarlet fever.....	1	Whooping cough.....	7

## VIRGIN ISLANDS

*Communicable diseases—October, 1927.*—During the month of October, 1927, communicable diseases were reported in the Virgin Islands of the United States as follows:

Island and disease	Cases	Remarks
<b>St. Thomas and St. John:</b>		
Diphtheria.....	1	Imported.
Fish poisoning.....	2	
Gonorrhoea.....	7	
Syphilis.....	9	Secondary, 6; tertiary, 2; congenital, 1.
Tetanus.....	1	
Tuberculosis.....	1	Chronic pulmonary.
<b>St. Croix:</b>		
Chancroid.....	1	
Gonorrhoea.....	3	
Syphilis.....	7	Secondary. One imported.
Uncinariasis.....	9	Necator Americanus.

## 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 December 9, 1927<sup>1</sup>

## CHOLERA

Place	Date	Cases	Deaths	Remarks
<b>China:</b>				
Canton.....	Oct. 9-29	13	13	Present with several cases.
Foochow.....	Oct. 16-22			
Shanghai.....	Oct. 16-22		1	
Swatow.....	Oct. 22-29			
<b>India:</b>				
Calcutta.....	Oct. 16-22	53	19	Prevalent.
Rangoon.....	do.	2	1	
<b>Iraq:</b>				
Amarah.....	Oct. 16-22	85	23	July-Oct. 22, 1927: Cases, 926; deaths, 676.
Baghdad.....	do.	1	1	
Basra.....	do.	1		
Diwanlyah.....	do.	28	17	
Hillah.....	do.	12	7	
Kerbala.....	do.	3	3	
Kut.....	do.	11	8	
Muntafique.....	do.	4	1	
<b>Siam:</b>				
				Oct. 9-15, 1927: Cases, 8; deaths, 5. Apr. 1-Oct. 15, 1927: Cases, 761; deaths, 518.

## PLAGUE

<b>British East Africa:</b>				
Tanganyika Territory.....	Sept. 4-Oct. 1		30	202
Uganda.....	June 1-30	313		
<b>Ceylon:</b>				
Colombo.....	Oct. 16-22	1		1 plague rodent.
<b>China:</b>				
Tungshachen.....	Oct. 11			Reported present south of Tung-liao.
<b>Ecuador:</b>				
Guayaquil.....	October, 1927	4		Rats taken: 22,997; found infected, 8.
<b>India:</b>				
Madras Presidency.....	Oct. 2-8	156	72	
Rangoon.....	Oct. 16-22	3	3	
<b>Java:</b>				
Batavia.....	Oct. 9-22	73	72	Province.

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

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

### Reports Received During Week Ended December 9, 1927—Continued

#### PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Madagascar.....				Sept. 1-15, 1927: Cases, 85; deaths, 76. Bubonic cases, 37; deaths, 28; pneumonic cases, 31; deaths, 31; septicemic cases, 17; deaths, 17.
Province:				
Antsirabe.....	Sept. 1-15.....	2	2	Bubonic.
Itasy.....	do.....	14	13	Bubonic, pneumonic, septicemic.
Tananarive.....	do.....	44	36	Do.
Tananarive Town.....	do.....	25	25	Do.
Siam.....				Oct. 9-15, 1927: Cases, 11; deaths, 8.

#### SMALLPOX

Angola.....	August, 1927.....	2		Coast district, 1 case; interior, 1.
British East Africa:				
Tanganyika Territory.....	Sept. 11-17.....	8		
British South Africa:				
Northern Rhodesia.....	Oct. 9-15.....	44	1	European, 1; native, 43.
Canada:				Cases, 102.
Alberta.....	do.....	1		
Manitoba.....	do.....	2		
Winnipeg.....	Nov. 20-26.....	2		
Ontario:				Oct., 1927: Cases, 160; corresponding period, 1926—cases, 75.
Kingston.....	Nov. 13-19.....	1		
Ottawa.....	October, 1927.....	114		
Toronto.....	do.....	13		
Saskatchewan.....	Nov. 13-19.....			Cases, 14.
China:				Present.
Foochow.....	Oct. 16-22.....			
Manchuria—				
Mukden.....	Oct. 23-29.....	1		
Ecuador:				
Guayaquil.....	Oct. 1-31, 1927.....	1		
Great Britain:				
England and Wales.....	Oct. 30-Nov. 12.....	477		
Leeds.....	Nov. 6-12.....	1		
Manchester.....	do.....	1		
India:				
Calcutta.....	Oct. 16-22.....		1	
Madras.....	Oct. 23-29.....	3	1	
Rangoon.....	Oct. 16-22.....	7	1	
Iraq:				
Baghdad.....	do.....	2	1	
Basra.....	Oct. 9-15.....	2	2	
Java:				Province.
Batavia.....	Oct. 16-22.....	1		
Mexico:				
Guadalajara.....	Nov. 15-21.....		1	
Portugal:				
Lisbon.....	Oct. 9-Nov. 5.....	6		
Siam.....				Oct. 9-15, 1927: Cases, 3.

#### TYPHUS FEVER

Peru:				
Arequipa.....	Sept. 1-30.....		1	
Poland.....				Oct. 2-8, 1927: Cases, 9; deaths, 1.
Union of South Africa:				
Cape Province.....	Oct. 9-15.....			Outbreaks.

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

Reports Received from June 25 to December 2, 1927<sup>1</sup>

### CHOLERA

Place	Date	Cases	Deaths	Remarks
<b>China:</b>				
Amoy.....	May 22-Oct. 15...	119	11	
Canton.....	May 1-Oct. 1.....	89	54	
Foochow.....	July 24-Sept. 10...			Present.
Hong Kong.....	July 17-Sept. 3.....	3	3	
Kulangsu.....	June 21.....	1		
Shanghai.....	June 19-25.....	2		
Do.....	July 31-Oct. 15.....		118	In international settlement and French concession.
Swatow.....	May 15-Sept. 10...	138	13	
Tientsin.....	Aug. 27-Oct. 1.....	14		
<b>India:</b>				
Bombay.....	Apr. 17-Sept. 24...			Cases, 179,064; deaths, 97,933.
Calcutta.....	May 8-Sept. 17.....	127	57	
Karachi.....	May 8-Oct. 15.....	795	471	
Madras.....	May 29-June 4.....	1	1	
Rangoon.....	June 19-Oct. 22.....	833	442	
India, French Settlements in.....	May 8-Oct. 8.....	24	20	
Indo-China (French).....	Mar. 30-Aug. 27.....	253	168	
Annam.....	Apr. 1-Sept. 20.....			Cases, 15,564.
Cambodia.....	do.....	4,509		
Cochin-China.....	do.....	408		
Saigon.....	do.....	1,006		
Laos.....	June 4-Oct. 7.....	12	4	
Tonkin.....	July 11-Sept. 20...	223		
<b>Iraq:</b>				
Amarah.....	Oct. 2-8.....	10	3	
Baghdad.....	July 24-30.....	29	18	
Basra.....	July 17-Oct. 8.....	384	289	
Diwanlyah.....	Oct. 2-8.....	44	26	
Hillah.....	do.....	1		
Kerbala.....	do.....	11	7	
Kut.....	do.....	1		
Muntafiq.....	do.....	5	3	
<b>Japan:</b>				
Yokohama.....	July 31-Aug. 6.....	1	1	
<b>Java:</b>				
Batavia.....	Reported Nov. 19..	25	15	
<b>Persia:</b>				
Abadan.....	July 24-Aug. 13.....	215	183	
Ahwaz.....	July 31-Aug. 13.....	20	13	
Minab.....	Aug. 7-13.....		23	
Mohammerah.....	July 17-Aug. 27.....	194	155	
Nasseri.....	July 19-31.....		10	
<b>Philippine Islands:</b>				
Bulacan Province.....	June 7-July 8.....	3	2	
Leyte Province—				
Barugo.....	June 29.....	1	1	
Carigara.....	June 23.....	1	1	Final diagnosis not received.
Palo.....	May 18.....	1		
Manila.....	July 17-Aug. 27.....	2		
<b>Siam:</b>				
Bangkok.....	May 1-Oct. 8.....			Cases, 366; deaths, 215.
do.....	do.....	53	18	
<b>On vessel:</b>				
S. S. Adrastus.....	Reported Aug. 6.....	1	1	At Yokohama, Japan.
S. S. Montreal Maru.....	Sept. 20.....			At Muke, Japan.
S. S. Tabaristan.....	Oct. 6.....	1		Case in coolie removed at Basra.
S. S. Morea.....	Sept. 2.....			At Hong Kong; cholera-infected.
S. S. War Mehtar (oil tanker).....	Aug. 4.....	1	1	At Saffagha, Egypt.

### PLAGUE

<b>Algeria:</b>				
Algiers.....	Aug. 21-Oct. 20.....	3		
Oran.....	Aug. 21-Sept. 10...	5	4	
<b>Argentina:</b>				
Bahia.....	Jan. 1-Aug. 2.....			Cases, 80; deaths, 44.
do.....	Nov. 21.....	1		In vicinity.

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

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

## Reports Received from June 25 to December 2, 1927—Continued

### PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Argentina—Continued.				
Province—				
Buenos Aires.....	Apr. 10—May 7.....	4	3	
Cordoba.....	Jan. 11—Aug. 6.....	52	29	
Do.....	Nov. 21.....	10		Reported as having occurred three weeks previously.
Corrientes.....	June 1.....	1	1	
Entre Rios.....	Mar. 29—Aug. 13.....	8	1	
Santa Fe.....	Apr. 28—May 16.....	4	3	
Territory—				
Chaco—				
Barranqueras.....	May 29.....	2	2	
Formosa.....	June 25.....	3	2	
Pampa.....	July 27—Aug. 2.....	4		
Rio Negro.....	Aug. 6.....	1		
City—				
Merou.....	Reported July 14.....			Present.
Rosario.....	May 7.....	1	1	
Santa Fe.....	May 16.....	4	2	
Azores:				
St. Michaels Island.....	May 15—Oct. 29.....	12	1	
Ribeira Grande.....	June 12—18.....	1		
Brazil:				
Sao Paulo.....	June 3—9.....	1	1	
British East Africa:				
Kenya.....	Apr. 24—July 31.....	73	14	
Mombassa.....	July 24—30.....	1	1	
Nairobi.....	May 22—28.....	6		
Tanganyika.....	Mar. 29—May 28.....		37	
Do.....	July 24—Aug. 28.....		40	
Uganda.....	Jan. 1—Feb. 28.....	138	121	
Do.....	Mar. 27—June 18.....	469	300	
Canary Islands:				
Laguna district—				
Tejina.....	June 17.....	1		
Las Palmas.....	Oct. 8—11.....	8		
Ceylon:				
Colombo.....	May 1—Oct. 1.....	23	14	Plague rats, 4.
China:				
Amoy.....	July 3—23.....			Present in surrounding country.
Mongolia.....	Reported Oct. 11.....		300	Approximate.
Tientsin.....	Aug. 14—20.....	2		
Tungliao.....	Reported Oct. 11—15.....	200		
Ecuador:				
Guayaquil.....	June 1—Aug. 31.....	7		Rats taken, 72,416; found infected, 45.
Egypt:				
Alexandria.....	June 4—Sept. 2.....	4		
Beni-Souef.....	June 4—July 13.....	5	2	
Biba.....	June 4—10.....	1		At Nama.
Dakhalia.....	June 24—July 9.....	6	1	
Minia.....	Aug. 8—9.....	4		
Port Said.....	June 24—July 21.....	4	1	
Suez.....	Sept. 4.....	1		
Tanta district.....	June 4—10.....	1		
Greece:				
Athens.....	May 1—June 30.....	4	3	
Mytilene.....	June 1—Aug. 29.....	3		Including Piraeus.
Patras.....	Aug. 9—Sept. 26.....	6		
Patras.....	May 30—Nov. 5.....	10	3	
Hawaii Territory:				
Hamakua.....	July 15—Aug. 30.....			2 plague rodents.
Hawaii:				
Kapulena.....	Oct. 22.....			1 plague rodent.
Honokaa.....	May 17—23.....	2	2	
Kukuihaele.....	Aug. 12—17.....	1	1	Do.
Panilo.....	July 28—Aug. 1.....		4	
India:				
Bombay.....	Apr. 17—Oct. 24.....			Cases, 25,403; deaths, 11,164.
Calcutta.....	May 8—Oct. 8.....	194	83	
Madras.....	Aug. 21—Sept. 3.....	18	10	
Madras.....	May 1—Oct. 1.....	1,535	729	
Rangoon.....	May 8—Oct. 15.....	78	72	
Indo-China (French):				
Saigon.....	Apr. 1—Aug. 19.....	89		
Do.....	Sept. 2—16.....	2		
Kwang-Chow-Wan.....	May 21—July 31.....	73		
Iraq:				
Baghdad.....	Apr. 8—May 28.....	12	1	

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

### Reports Received from June 25 to December 2, 1927—Continued

#### PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Java:				Province.
Batavia.....	May 1-Oct. 8.....	346	327	
East Java and Madura.....	May 22-July 16.....	28	27	
Paserocean Residency.....	May 9.....			
Surabaya.....	Apr. 17-Sept. 24.....	94	92	
Madagascar.....				Mar. 16-Apr. 30, 1927: Cases, 256; deaths, 135.
Provinces—				
Ambostra.....	Mar. 16-Aug. 15.....	100	98	
Antsirabe.....	Mar. 16-Aug. 31.....	42	42	
Miarinarivo (Itasy).....	do.....	80	70	
Moramanga.....	May 16-Aug. 31.....	32	31	
Tananarive.....	Mar. 16-Aug. 31.....	281	247	
Tananarive Town.....	Mar. 16-June 30.....	22	20	
Mauritius:				
Port Louis.....	May 1-June 30.....	1	1	
Nigeria.....	Mar. 1-May 31.....	228	117	
Peru.....	Apr.-May 31.....			Cases, 22; deaths, 8.
Departments—				
Ica.....	Apr. 1-30.....	1		
Lambayeque.....	do.....	1		
Libertad.....	Apr. 1-May 31.....	7	4	
Lima.....	Apr. 1-July 31.....	13	8	
Lima City.....	Apr. 1-30.....	5	1	
Senegal.....	May 22-Oct. 16.....			Cases, 1,159; deaths, 646.
Baol.....	June 2-Oct. 16.....	235	109	
Cayor Frontier.....	July 4-Oct. 23.....	992	561	
Dakar.....	June 20-Oct. 2.....	147	94	
Facel.....	July 6.....	17	8	
Guindel.....	June 20-26.....	11	2	
Louga district.....	Sept. 18-Oct. 16.....	13	4	
M'Bour.....	July 6-10.....	28	28	
Medina.....	June 13-19.....	2	2	
Pout.....	July 4-10.....	1		
Rufisque.....	May 23-Sept. 25.....	223	167	
Thies district.....	do.....	34	15	
Tivaouane.....	June 2-July 17.....	50	32	
Siam.....	Apr. 1-June 25.....			Cases, 10; deaths, 7.
Do.....	Oct. 2-8.....	1	1	
Bangkok.....	May 8-June 11.....	2	1	
Do.....	Oct. 2-8.....	1		
Syria:				
Beirut.....	June 11-Sept. 10.....	4		
Tunisia.....	Apr. 21-July 10.....	144		
Tunis.....	July 26-Aug. 1.....	1		
Turkey:				
Constantinople.....	May 13-19.....	1		
Do.....	Sept. 18-Oct. 1.....	2	1	
Union of South Africa:				
Cape Province—				
Maraisburg district.....	May 1-14.....	2	2	Native.
Orange Free State—				
Edenburg district.....	July 17-26.....	3	3	Natives; on farm.
Rouxville district.....	July 24-Aug. 6.....	2	2	
On vessel:				
S. S. Avoroff.....	June 24-30.....	1		Greek warship at port of Athens.
S. S. Capatric.....	Aug. 23.....	3	1	At Duala, French Cameroons, from Nigeria.
S. S. Elcano.....	Aug. 19.....	1		At Piraeus, Greece.
S. S. Madonna.....	Aug. 24.....	1		At Dakar, Senegal, from ports south.
S. S. Ransholm.....	Aug. 5.....	3		At Gofse, Sweden, from Rufisque, Senegal.

#### SMALLPOX

Algeria.....	Apr. 21-Sept. 20.....			Cases, 955.
Algiers.....	May 11-June 30.....	8		
Oran.....	May 21-Oct. 29.....	74		
Angola.....	June 1-July 31.....	45		
Loanda.....	Sept. 1-15.....	1		
Portuguese Congo.....	do.....	4		
Arabia:				
Aden.....	July 17-Aug. 1.....	2	1	
Brazil:				
Bahia.....	Aug. 7-13.....	1		
Porto Alegre.....	July 1-Sept. 30.....	11		
Rio de Janeiro.....	May 22-Sept. 24.....	25	21	



**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**
**Reports Received from June 25 to December 2, 1927—Continued**
**SMALLPOX—Continued**

Place	Date	Cases	Deaths	Remarks
British East Africa:				
Kenya.....	Apr. 24-May 14.....	7	14	
Tanganyika.....	Mar. 29-June 18.....		22	
Do.....	Aug. 7-28.....		21	
Zanzibar.....	Apr. 1-Aug. 31.....	121	41	
British South Africa:				
Northern Rhodesia.....	Apr. 30-Oct. 7.....	267	15	
Canada.....	June 5-Nov. 12.....			Cases, 931.
Alberta.....	June 12-Nov. 12.....			Cases, 242.
Edmonton.....	Oct. 23-29.....	1		
Calgary.....	June 12-Aug. 27.....	9		
British Columbia—				
Vancouver.....	May 23-Sept. 4.....	4		
Manitoba.....	June 5-Nov. 5.....			Cases, 62.
Winnipeg.....	June 12-Nov. 19.....	24		
Nova Scotia.....	Sept. 11-Oct. 15.....	2		
Halifax.....	Oct. 8-15.....	1		
Ontario.....	June 5-Nov. 12.....			Cases, 490.
Ottawa.....	June 12-Nov. 19.....	230		
Sarnia.....	Aug. 7-13.....	1		
Toronto.....	June 19-Nov. 12.....	42		
Windsor.....	Oct. 2-15.....	9		
Quebec.....	June 19-Nov. 5.....	32		
Riviere du Loup.....	Oct. 29-Nov. 19.....	6		
Saskatchewan.....	June 12-Nov. 12.....			Cases, 170.
Moose Jaw.....	Aug. 14-Oct. 22.....	24		
Regina.....	July 17-Nov. 12.....	16		
Ceylon.....	May 1-7.....			Cases, 3; deaths, 2.
Colombo.....	July 31-Aug. 6.....	1	1	
China:				
Amoy.....	May 8-28.....	1		
Do.....	July 3-16.....			Present in surrounding country.
Antung.....	July 4-31.....	3		
Canton.....	Sept. 18-24.....	1	1	
Chefoo.....	May 8-14.....			Present.
Do.....	Oct. 9-15.....			Do.
Foochow.....	May 8-Sept. 10.....			Do.
Hong Kong.....	May 8-Sept. 17.....	23	21	
Manchuria—				
Anshan.....	May 22-28.....	1		
Changchun.....	May 15-July 30.....	8		
Dairen.....	May 2-June 3.....	10	5	
Fushun.....	May 15-Sept. 17.....	11		
Harbin.....	June 13-July 10.....	4		
Kalyuan.....	July 3-9.....	2		
Mukden.....	May 22-Oct. 22.....	8		
Pensihu.....	July 3-Oct. 1.....	2		
Ssuningkal.....	May 8-July 9.....	2		
Tientsin.....	May 8-Oct. 1.....	30	4	
Chosen.....	Feb. 1-July 30.....			Cases, 526; deaths, 211.
Chinnampo.....	Apr. 1-May 31.....	2		
Fusan.....	Apr. 1-30.....	1		
Gensan.....	May 1-31.....	1		
Seishin.....	Apr. 1-30.....	1		
Curacao.....	May 29-June 4.....	1		Alastrim.
Ecuador:				
Guayaquil.....	June 1-Aug. 31.....	4		
Egypt.....	May 7-Sept. 30.....			Cases, 21; deaths, 4.
Alexandria.....	May 21-June 17.....	4	1	
Cairo.....	Jan. 22-Apr. 15.....	14	3	
France.....	Apr. 1-Aug. 31.....			Cases, 207.
Lille.....	July 24-30.....	1		
Paris.....	May 21-July 31.....	14	2	
Gold Coast.....	Mar. 1-July 31.....	42	7	
Great Britain:				
England and Wales.....	May 22-Oct. 29.....			Cases, 3,999.
Birmingham.....	Aug. 14-Sept. 30.....	2		
Bradford.....	May 20-June 11.....	2		
Do.....	Oct. 22-Nov. 5.....	6		
Bristol.....	Oct. 16-29.....	7		
Cardiff.....	June 19-July 2.....	4		
Do.....	Oct. 22-29.....	1		
Leeds.....	July 17-Nov. 5.....	26		
Liverpool.....	July 17-30.....	1		
London.....	May 15-June 18.....	2		
Manchester.....	Oct. 2-Nov. 5.....	4		
Newcastle-upon-Tyne.....	June 12-Oct. 20.....	13		
Sheffield.....	June 12-Oct. 29.....	37		
Stoke-on-Trent.....	Aug. 21-27.....	1		
Scotland—				
Dundee.....	May 29-Sept. 2.....	6		

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

Reports Received from June 25 to December 2, 1927—Continued

## SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Greece	June 1-30	14		
Saloniki	July 12-Aug. 15		2	
Guatemala:				
Guatemala City	June 1-30		9	
Guinea (French)	June 4-10	9		
India	Apr. 17-Sept. 24			Cases, 77,885; deaths, 20,509.
Bombay	May 28-Oct. 8	250	158	
Calcutta	May 8-Oct. 15	417	319	
Karachi	May 15-Aug. 6	10	5	
Madras	May 22-Oct. 22	39	8	
Bangoon	May 8-Oct. 8	202	150	
India, French Settlements in	Mar. 20-Aug. 27	174	155	
Indo-China (French)	Mar. 21-Sept. 20			Cases, 332.
Saigon	May 14-Sept. 9	4	1	
Iraq:				
Baghdad	Apr. 10-Oct. 1	8	4	
Basra	Apr. 10-Sept. 17	9	8	
Italy	Apr. 10-May 21	13		
Rome	June 13-July 17	3		Including consular district.
Jamaica	May 29-Oct. 29	47		Reported as alastrim.
Japan	Apr. 3-May 7			Cases, 19.
Nagasaki City	June 20-Aug. 14	26	7	
Taiwan Island	May 21-31	1		
Java:				
Batavia	May 22-Nov. 12	35	15	
East Java and Madura	Apr. 24-Sept. 30	45	1	
Latvia	Apr. 1-30	1		
Mexico	Mar. 1-June 30			Deaths, 621.
Acapulco	Aug. 28-Sept. 17	2	2	
Durango	June 1-30		1	
Monterey	July 1-31	6	4	
San Luis Potosi	May 29-Aug. 13		11	
Tampico	June 1-July 31	1	2	
Torreón	Aug. 7-Oct. 1		2	
Morocco	Apr. 1-Aug. 31	283		
Netherlands India:				
Borneo—				
Holoe Soengei	Apr. 21			Epidemic in 2 localities.
Pasir Residency	Apr. 30-May 6			Epidemic outbreak.
Samarinda Residency	May 21-27			Do.
Nigeria	Mar. 1-July 31	2,944	653	
Paraguay:				
Asuncion	July 10-23		2	
Persia:				
Teheran	Feb. 21-July 23		16	
Poland	Apr. 10-Aug. 6	20	2	
Portugal:				
Lisbon	May 29-Oct. 8	26	1	
Oporto	Sept. 2-9	1		
Senegal:				
Medina	July 4-10	7		
Slam	Apr. 1-Oct. 8			Cases, 253; deaths, 67.
Bangkok	May 1-Sept. 10	16	8	
Spain:				
Madrid	Aug. 1-31		1	
Valencia	May 29-June 4	3		
Do.	Sept. 25-Oct. 1	1		
Straits Settlements	June 12-18			Cases, 3.
Singapore	Apr. 1-June 18	7	2	
Sumatra:				
Medan	June 5-Aug. 20	3		
Switzerland:				
Berne	June 26-July 2	1		
Syria:				
Damascus	Aug. 11-Oct. 20	30		
Tunisia	Apr. 1-June 10			Cases, 10.
Tunis	June 1-10	1		
Union of South Africa:				
Cape Province	July 7-Aug. 20			Outbreaks.
Do.	Oct. 2-8			Do.
Elliott district	May 11-June 10			Do.
Idutywa district	July 2-9			Do.
Kalanga district	May 11-June 10			Do.
Mount Ayliffe district	July 21-Aug. 6			Do.
Orange Free State	Aug. 7-13			Do.
Transvaal—				
Barberton district	May 1-7			Do.
Venezuela:				
Maracaibo	July 12-Oct. 3		4	

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

Reports Received from June 25 to December 2, 1927—Continued

## TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria.....	Apr. 21-July 20.....			Cases, 399; deaths, 39.
Algiers.....	May 11-Oct. 20.....	34		
Oran.....	May 21-Aug. 31.....	34		
Argentina:				
Rosario.....	Aug. 1-31.....		1	
Bulgaria.....	Mar. 1-Aug. 10.....			Cases, 245; deaths, 21.
Sofia.....	June 4-Nov. 4.....	20	1	
Chile:				
Antofagasta.....	Apr. 16-May 31.....	1		
Do.....	Sept. 25-Oct. 1.....		1	
Concepcion.....	May 29-June 4.....		1	
La Calera.....	Apr. 16-May 31.....	1		
Ligua.....	Mar. 16-31.....	2		
Puerto Montt.....	Apr. 16-May 31.....	1		
Santiago.....	do.....	5	1	
Talcahuano.....	July 10-16.....		1	
Valparaiso.....	Apr. 16-Sept. 3.....	5	3	
China:				
Manchuria—				
Harbin.....	July 25-Aug. 21.....	5		
Mukden.....	May 29-June 4.....	1		
Tientsin.....	July 10-24.....	3		
Chosen.....	Feb. 1-July 31.....			Cases, 793; deaths, 63.
Chemulpo.....	May 1-Aug. 31.....	3		
Gensan.....	do.....	4		
Seoul.....	Apr. 1-Aug. 31.....	35	3	
Czechoslovakia.....	do.....			Cases, 55.
Egypt.....	May 2-Sept. 30.....			Cases, 133; deaths, 22.
Alexandria.....	May 21-Aug. 5.....	13	5	
Cairo.....	Jan. 15-July 1.....	43	16	
Port Said.....	Sept. 24-30.....	1		
Estonia.....	Apr. 1-June 30.....			Cases, 5.
Greece.....	June 1-30.....	2		
Athens.....	June 1-July 31.....		9	
Guatemala:				
Guatemala.....	Aug. 25-31.....		1	
Iraq:				
Baghdad.....	Apr. 24-30.....	1		
Irish Free State:				
Cork County.....	July 3-9.....	1		In urban district.
Donegal County—				
Letterkenney.....	Oct. 16-22.....	4		
Latvia.....	Apr. 1-July 31.....	32		
Lithuania.....	Feb. 1-Aug. 31.....	365	50	
Mexico.....	Feb. 2-June 30.....			Deaths, 166.
Mexico City.....	May 29-Nov. 5.....	95		Including municipalities in Fed-
San Luis Potosi.....	July 31-Aug. 6.....		1	eral District.
Morocco.....	Apr. 1-Sept. 20.....	981		
Palestine.....	May 24-Oct. 10.....			Cases, 32.
Haifa.....	do.....	10		
Jaffa.....	Aug. 2-Oct. 3.....	3		
Jerusalem.....	June 28-Aug. 15.....	3		
Mehnaim.....	May 17-23.....	1		
Nazareth.....	July 19-25.....	1		In Safad district.
Safad.....	May 17-Aug. 8.....	10		
Tel Aviv.....	Oct. 1-10.....	1		
Peru:				
Arequipa.....	Apr. 1-30.....		1	
Do.....	Aug. 1-31.....		2	
Poland.....	Apr. 10-Oct. 1.....	1, 133	105	
Portugal:				
Lisbon.....	May 29-June 4.....	1		
Oporto.....	Aug. 20-27.....	1		
Do.....	Oct. 23-29.....	1		
Rumania.....	Apr. 3-Aug. 27.....	1, 000	69	
Spain:				
Seville.....	Aug. 19-25.....		2	
Syria:				
Aleppo.....	Sept. 11-17.....	2		
Tunisia.....	Apr. 23-July 20.....			Cases, 158.
Tunis.....	July 5-Aug. 21.....	2		
Turkey:				
Constantinople.....	May 12-19.....		2	

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

## Reports Received from June 25 to December 2, 1927—Continued

### TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa	Apr. 1-30			Cases, 55; deaths, 8, native. In
Cape Province	Apr. 1-Oct. 8	42	5	Europeans, cases, 2.
Albany district	June 5-11			Outbreaks.
East London	May 22-28	1		Do.
Glen Gray district	May 1-7			Do.
Kentani district	June 26-July 2			Do.
Port Elizabeth	Aug. 7-13	1		Do.
Qumbu district	May 1-7			Do.
Umzimkulu district	June 26-July 2			Do.
Natal	Apr. 1-Aug. 6	7	3	
Impendhle district	June 5-11			Do.
Orange Free State	Apr. 1-Oct. 1	5		
Transvaal	Apr. 1-30	1		
Johannesburg	July 3-Aug. 20	19	5	
Do.	Oct. 9-15	5		
Yugoslavia	May 1-Oct. 31			Cases, 25; deaths, 5.

### YELLOW FEVER

Ashanti:				
Obuasi	Aug. 6	1	1	
Dahomey (West Africa):				
Porto Novo	July 1	1	1	In Syrian woman.
Gold Coast	Apr. 1-June 30	60	22	
Do.	Aug. 4	2		
Ivory Coast	July 29	1	1	
Liberia:				
Monrovia	May 29-Sept. 10	5	5	
Senegal	Oct. 3-23			Cases, 29; deaths, 22.
Dakar	July 9	1		
Do.	Aug. 8		2	
Do.	Sept. 17			Present.
Do.	Oct. 3-16	12	7	
Geoul	Sept. 26-Oct. 2	1	1	
Island of Goree	Aug. 22-Sept. 4	2	2	
Kebemer	Oct. 9-23	2	2	
Kelle	do.	2	1	
Khombole	Aug. 1-Oct. 9	6	3	
Louga	Sept. 26-Oct. 2	1	1	
Mehke	Oct. 17-23	1		
M'Bour	May 27-June 19	5	5	
N'Dande	Oct. 17-23	1	1	
Onakam	June 2-Aug. 14	4	2	
Pout	Sept. 19-25	1	1	
Rufisque	Oct. 9-16	1	1	
Sebikotane	Oct. 17-23	1	1	
St. Louis	Aug. 1-Oct. 2	3	3	
Thies	July 10	1	1	In European.
Do.	Sept. 12-Oct. 23	11	11	
Tiaroye	Aug. 22-Sept. 4	1	1	
Tivaouane	May 27-Sept. 11	6	5	
Togoland:				
Melatza	Aug. 15-21	1	1	
On vessel:				
S. S. Desirade	Sept. 16	1	1	At Leixoes, Portugal, in Passenger from Dakar, Senegal.