PUBLIC HEALTH REPORTS

VOL. 45 NOVEMBER 28, 1930 NO. 48

MOTTLED ENAMEL IN A SEGREGATED POPULATION

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Mottled enamel has an interesting history. An article on this condition by Passed Asst. Surg. J. M. Eager, of the United States Public Health Service, then stationed in Naples, Italy, appeared in the PUBLIC HEALTH REPORTS in 1901.[1] Doctor Eager noticed this condition of the enamel among Italian emigrants, particularly those coming from Pozzuoli, a community about 5 miles from Naples. This dental defect was called "Denti di Chiaie," after Professor Stefano Chiaie, who first described the condition. From Doctor Eager's description it is recognized as the same enamel defect found in various places in the United States and in other countries, and now known as "mottled enamel."

Incidentally, and curiously enough in the light of what is to follow later in this report, it was reliably reported to one of us (McKay) during an investigation of this Italian district in 1927, that Pozzuoli had changed its water supply and was no longer afflicted with this condition.

It was not until 1916 that further information appeared in the literature, when Dr. G. V. Black and Dr. Frederick S. McKay published a series of joint articles in *Dental Cosmos* on this condition. These men were the first in the United States to make an actual study of this enamel defect and to publish their results.

The term "mottled enamel" was first used by Black as a descriptive name for the condition. His description is quoted as follows:

> The most essential injury occurring in this mottled enamel is the appearance of the teeth. * * * The teeth are of normal form, but not of normal color. When not stained brown or yellow, they are a ghastly, opaque white that comes prominently into notice whenever the lips are opened. * * * In many cases the teeth appear absolutely black. Mottled enamel is distinguished especially by the absence of cementing substance between the enamel rods in the outer fourth, more or less, of the enamel, and presenting great variety of color, rendering it totally different from anything else I have known.

The outer glazed enamel surface, or Nasmyth's membrane, is present and appears to be normal, except in what have been termed the

[1] Nov. 1, 1901, pp. 2576-2577.

"corroded" cases. The associated pigmented or stained phase of mottled enamel is called "brown stain." This brown stain does not occur in all cases of mottled enamel, and it seems to be limited to the labial surfaces of the upper incisors and cuspids. Chemical analysis of the "brownin," or pigment, has been made, and it is said to be manganese.

It is extremely rare to find mottled enamel on any of the temporary teeth. A very few cases have been observed in the various affected districts in which there was a slight flecking of the typical white spots on the enamel of the temporary molars, but never to our knowledge has the brown stain been observed on any temporary teeth.

This typical brown stain can not occur unless the enamel bears the fundamental mottled defect; but not all teeth with mottled enamel are stained. McKay is of the opinion that the brown stain appears after the mottled teeth have erupted.

Noyes, in Dental Histology and Embryology, expresses the hypothesis that "the enamel rods and the cementing substance have a different origin, or are formed by different cells, and that pathological conditions may prevent the formation of one and not of the other."

In Black's first description of this lesion, it was made to appear that the enamel rods were themselves intact and of normal form and contour, but with the cementing substance absent. It has since been made evident, however, through the work of J. Leon Williams, that in some cases at least the rods themselves have been diminished in contour.

McKay has investigated the condition in several affected districts in Colorado, Texas, Virginia, and Arizona. His results were published in *Dental Cosmos*, May to August, 1916. In 1917, he studied several endemic areas in South Dakota, and later extended his investigations to include areas in Idaho and California. Recently other centers have been reported in Illinois, North Dakota, and Minnesota.

The condition occurs in various parts of the world, notably in Italy, certain of the Bahama Islands, Barbados, Holland, Cape Verde Islands, China, Mexico, Spain, Argentina, and other South American countries and in South Africa. Wherever it occurs the characteristics of the enamel defect are the same. Recently McKay noticed this condition in the photograph of a sheik of the desert, published in the National Geographic Magazine.

The nature of the defect can readily be seen in the photographs of several typical cases presented herewith.

The disfiguring effect of mottled enamel can readily be appreciated. This condition is not subject to improvement or alteration through natural means, but only through a difficult operative procedure.

When we also realize that every child who is born and reared in an endemic area is practically certain to have this disfigurement in some degree, we can readily understand that this is a problem worthy of solution.

The time of development of the enamel of the deciduous and permanent teeth is of great importance in considering the etiology of mottled enamel, and the accompanying figures are taken from Burchard and Inglis, who used Peirle's table of calcification.

The ages are subject to some variation, and the mottling of the enamel in itself serves as an indication of the age when the enamel of the permanent teeth was developed in the child.

As previously stated it has been held that the temporary teeth are free from this defect, but in the survey with which this report deals, some slight indications of mottling of the temporary teeth were noted. In explanation of this it may be stated that the formation of the enamel of these teeth has practically been completed at the time of birth or very soon afterward, but this must undoubtedly be subject to fairly wide variation. Some children might not have all enamel of the temporary teeth developed until several months or even a year after birth. After the protective influence of the placental circulation has been terminated, the enamel remaining to be developed is affected by the etiological factors in the endemic area. This could be particularly true in the premature baby. It follows, therefore, that there may be no absolute reason against mottling of some of the temporary teeth.

The following table from Burchard and Inglis [1] gives the approximate ages for the eruption of the permanent teeth:

First molars	5½ to 7 years.	Cuspids	12 to 14 years.
Central incisors	7 to 8 years.	Second molars	12 to 15 years.
Lateral incisors	8 to 9 years.	Third molars	16 to 20 years or more.
First bicuspids	10 to 11 years.		
Second bicuspids	11 to 12 years.		

For convenience we will divide the premanent teeth into three groups, as did Black and McKay in their reports:

	Calcification	Eruption
First group:		
First molars	1 to 5 years	5½ to 7 years.
Incisors	1 to 7 years	central 7 to 8 years.
		lateral 8 to 9 years.
First bicuspids	7 to 8 years	10 to 11 years.
Second group:		
Second bicuspids	7 to 8 years	11 to 12 years.
Cuspids	7 to 8 years	12 to 14 years.
Second molars	5 to 9 years	12 to 15 years.
Third group:		
Third molars	9 to 12 years	16 to 20 years or more.

[1] Dental Pathology and Therapeutics, 7th edition. Lea & Febiger, Philadelphia and New York, 1926.

The endemic area with which this report deals was reported to the Public Health Service in 1927, and centers in the town of Bauxite, Ark., which was established in 1901 to provide homes and a social environment for the employees of a mining company.

The original supply of water for domestic purposes came from shallow surface wells and a few springs. As the population increased, a larger supply was required, and in 1909 a deep well of 255 feet depth was drilled, later augmented by two other wells close by. Water from these wells was piped into the homes.

Following this, most of the shallow wells were gradually filled, and within the community proper the deep wells were the chief source of the water supply. This deep well water has a disagreeable alkaline taste, and many of the families continued the use of spring water for drinking, especially during the warm months.

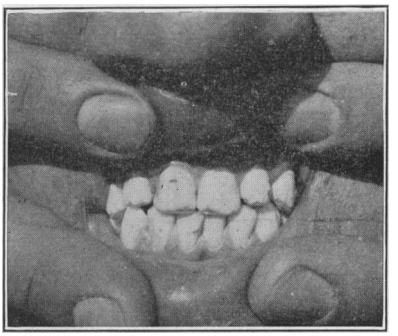
The evidence collected during the examination of the children in the town school, consisting of the elementary grades and the high school, can be summarized as follows:

1. No cases of the enamel defect were found which antedated the introduction of the deep well water.
2. The oldest individual found with this enamel defect was born about the time that the deep well water was introduced.
3. All individuals in the community who had used the deep well water during any considerable period of enamel formation exhibited this defect.
4. No individual in the community whose enamel had developed elsewhere exhibited the defect.
5. Certain individuals who, although residents of the community and attending school there, but who actually lived beyond the distribution of the deep well water and depended upon the original shallow wells, exhibited only normal enamel.

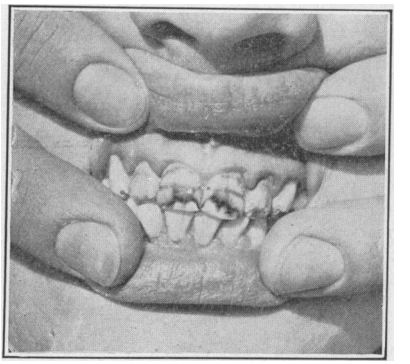
Evidence supporting these postulates is presented in the tables appearing later in this report. In no district so far observed by one of the authors (McKay) has the evidence pointed so directly to a relation between the use of a certain definite water and the production of this enamel defect.

It is necessary to consider the possibility, however, that some factor in the food supply of these individuals, either before or after birth, bears some relation to the defect in question.

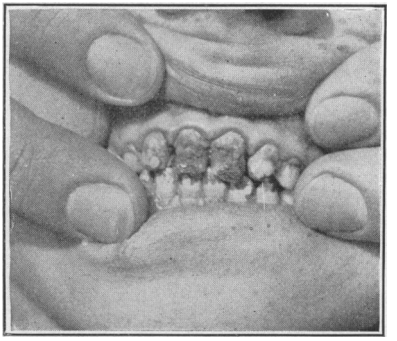
In considering this point it is important to note that the enamel of the temporary teeth is formed almost entirely before birth, and is, therefore, directly dependent upon the prenatal nutrition. These teeth, however, practically never show the defect. The permanent teeth do not commence to form until about one year after birth (according to the average), and, hence, can not be even remotely related to the maternal nutrition.



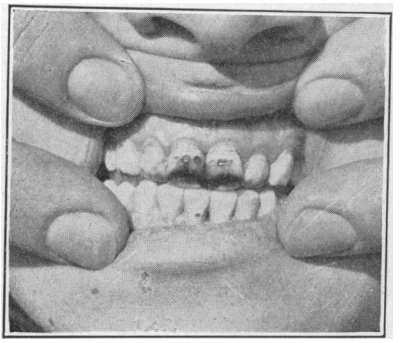
A case of mottled enamel without stain. Note paper-white appearance of the enamel



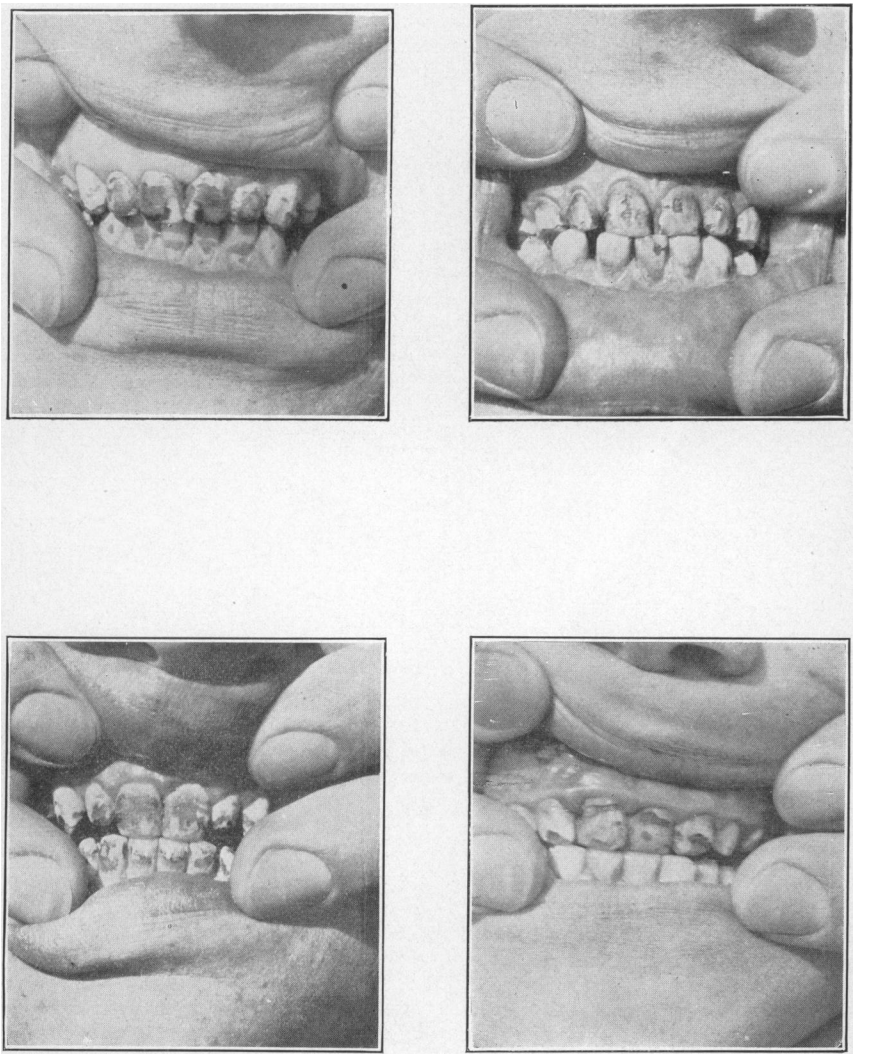
Case of typical mottled enamel with brown stain. The teeth are well formed and the stain is limited to the labial surface of the upper incisors



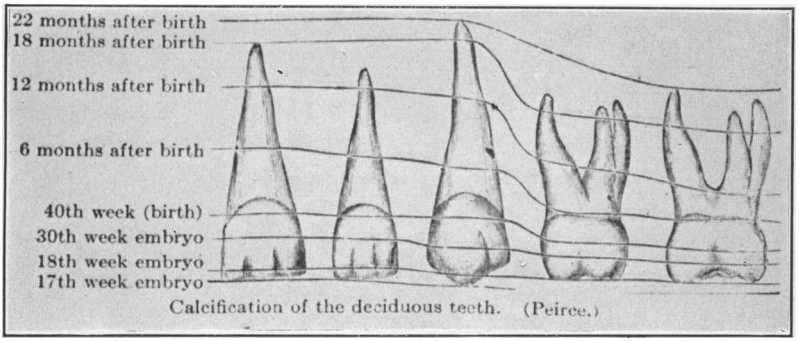
Extreme type with corrodedlike condition of the enamel



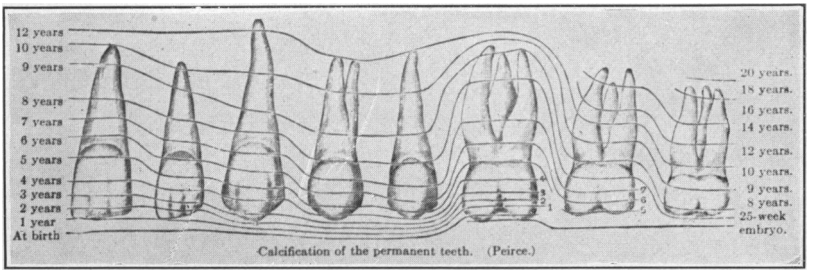
Stained and corroded teeth



Additional cases which show the stained and corroded condition of the teeth



Calcification of the deciduous teeth. (From Dental Pathology and Therapeutics, seventh edition, by Burchard and Inglis)



Calcification of the permanent teeth. (From Dental Pathology and Therapeutics, seventh edition, by Burchard and Inglis)

The source of the food supply of these people is from a central store. The staple articles here, under the complexities of present-day civilization, are produced and manufactured elsewhere. In season certain articles are procured from surrounding truck farmers. It may be said that these locally grown products are reflective of the chemistry of the local soil. But the water from the shallow or surface wells is equally indicative of soil chemistry, and such wells are associated with normal enamel.

The diet of such of these persons exhibiting the enamel defect was in nowise different, except in the source of the water, from that of persons in the same environment who had escaped the defect.

In the children examined in the school there was ample opportunity to observe all gradations of tooth eruption, from those in whom the first permanent teeth were just appearing, to those with all perma nent teeth erupted.

The children were requested to fill a questionnaire giving the place of birth and a history of places of residence since birth, with dates or ages at time of each change of residence. Each child was examined by McKay under natural illumination and without previous knowledge of the child's residence. The facts regarding age, time in Bauxite, etc., were verified by the child after the examination. This was later checked from the rental records of the company.

In no community previously examined by McKay were the facts relating to age and place and duration of residence so accurately recorded as in Bauxite, owing to access to the mining company's records and rent rolls, and the close cooperation given by the company's director of social relations among the employees.

A total of 458 children from 5 to 18 years of age were examined in the schools of Bauxite. Mottled enamel of some teeth were found in 202 cases, or 44 per cent. In evaluating this percentage it is necessary to recall again the immunity of temporary teeth and also to consider the imported individuals, by which we mean those persons who had grown the enamel on such permanent teeth as were erupted at the time of the examination elsewhere, before becoming residents of Bauxite. If some local condition at Bauxite were responsible for the defect, such enamel would of course be normal. The complete picture could be revealed only by being able to see the condition of the unerupted permanent teeth of these native children and similar teeth of the imported individuals upon which the enamel had been grown in Bauxite.

TABLE 1.—*Condition of the enamel in children who were born in Bauxite, Ark., and had lived there all their lives, using municipal deep-well water supply*

Age in years, at time of examination	Total number of children	First group				Second group			Third group		
		Mottled but not stained	Mottled and stained	Normal	Not erupted	Mottled	Normal	Not erupted	Mottled	Normal	Not erupted
5	1	1						1			1
6	10	7	1	[1]1	1			10			10
7	15	11	2		2			15			15
8	10	7	3			2		8			10
9	8	4	4			2		6			8
10	4	2	2			1		3			4
11	2		2			2					2
12	2	1	1			2					2
13	7	2	5			7					7
14	3	1	2			3					3
15	1		1			1					1
16	1		1			1					1
17	1			[2]1		1					1
18	1	1				1			1		
Total	66	37	24	2	3	23		43	1		65

[1] City water available in house but was not used for cooking or drinking.
[2] City water available in house but used spring water for drinking most of the time.

Table 1, presenting data on children who were born in Bauxite, gives the age of the individual at the time of examination, the number of children for each age, and the condition of the enamel of the first, second, and third groups of permanent teeth. There were 66 children in this group who were born in Bauxite. Of these, 63 had permanent teeth erupted and 61 had mottled enamel of the first group of permanent teeth. Three children had no permanent teeth erupted, and only two children had normal enamel of the permanent teeth.

One will note that the ages of the children of this group ranged from 5 to 18 years, and 43 of them had not erupted their second group of permanent teeth. The 23 children who had their second group of permanent teeth had mottled enamel of these teeth. The one child of 18 years, who had erupted the third molars, had mottled enamel of all his teeth.

There were two children with normal enamel of the first permanent group. One of these was 6 years of age, and his second group of permanent teeth had therefore not erupted; the other was 17 years of age and showed only slight mottling of his second group of permanent teeth. The 14-year-old sister of this second case had definite mottling of all her permanent teeth. These two families had access to spring water as well as to the central supply.

TABLE 2.—*Mottled enamel of the first group [1] of permanent teeth, among children in Bauxite, Ark.*

Ages between birth and 6 years during which child lived in Bauxite and used municipal deep well water supply	All ages	Age at time of examination																
		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Birth to 6 or over:																		
Total examined	77	10	12	11	11	5	3	3	8	5	2	3	3	1	---	---	---	---
Numbered mottled	75	9	12	11	11	5	3	3	8	5	2	3	2	1	---	---	---	---
Under 2 to 6 or over:																		
Total examined	16	1	4	2	3	1	4	1	---	---	---	---	---	---	---	---	---	---
Number mottled	16	1	4	2	3	1	4	1	---	---	---	---	---	---	---	---	---	---
2 to 6 or over:																		
Total examined	21	2	4	1	---	3	---	2	3	1	1	1	1	2	---	---	---	---
Number mottled	16	2	2	1	---	3	---	1	3	---	1	1	1	1	---	---	---	---
3 to 6 or over:																		
Total examined	24	3	4	3	2	2	2	---	2	---	4	2	---	---	---	---	---	---
Number mottled	12	1	1	2	---	2	2	---	---	---	2	2	---	---	---	---	---	---
4 to 6 or over:																		
Total examined	26	---	3	2	5	---	4	7	---	2	---	---	1	---	---	1	---	1
Number mottled	10	---	---	2	2	---	---	5	---	---	---	---	---	---	---	1	---	---
5 to 6 or over:																		
Total examined	22	3	2	3	1	1	1	1	3	1	3	3	---	---	---	---	---	---
Number mottled	2	---	---	---	---	1	---	1	---	---	---	---	---	---	---	---	---	---

[1] First group consists of first molars, incisors, and first bicuspids.

This table shows the condition of only the first group of permanent teeth, by age of the child at the time of examination, and the ages between birth and 6 years during which the children lived in Bauxite, and used the municipal deep well water supply.

There were a total of 77 children who lived in Bauxite from birth to 6 years or more of age. Of these, 75, or 97.4 per cent, had mottled enamel of the first group of permanent teeth in some degree. Of 16 children who lived in Bauxite from under 2 years of age to 6 years or over, all had mottled enamel. Of 21 children who lived there from 2 years of age to 6 years or over, 16, or 76 per cent had mottled enamel. Of 24 children who lived there from 3 years of age to 6 years or over, 12, or 50 per cent, had mottled enamel. Of 26 children who lived there from 4 years of age to 6 years or over 10, or 38.5 per cent, had mottled enamel. Of 22 children with residence in Bauxite from 5 years of age to 6 years or over, only 2, or 9 per cent, had mottled enamel in some degree of the first group of permanent teeth. The enamel of these teeth is considered to be developed from sometime in the first year of life to about the sixth or seventh year. There is a definite relation between the time lived in Bauxite between birth and 6 years of age and the condition of the enamel. The fact that two children who arrived in Bauxite at 5 years of age had defective enamel indicates that the time of the development of enamel is subject to some variation. Of course there is the possibility that these children developed defective enamel before their arrival in Bauxite.

The definite decrease in these percentages, however, is striking, ranging from 100 per cent down to 9 per cent, and furnishes what seems to be the most reliable index to what is, after all, the remarkable uniformity in the rate of development of the teeth according to age.

TABLE 3.—*Mottled enamel of the second group*[1] *of permanent teeth among children in Bauxite, Ark.*

Ages between birth and 9 years during which child lived in Bauxite and used municipal deep-well water supply	All ages	Age at time of examination													
		9	10	11	12	13	14	15	16	17	18	19	20	21	22
Birth to 9 or over:															
Total examined	28	2	1	3	3	7	5	2	2	2	1				
Number mottled	28	2	1	3	3	7	5	2	2	2	1				
Under 2 to 9 or over:															
Total examined	4			3	1										
Number mottled	4			3	1										
2 to 9 or over:															
Total examined	10		1		2	3	1		1	1	1				
Number mottled	10		1		2	3	1		1	1	1				
3 to 9 or over:															
Total examined	11		1	2		2		4	2						
Number mottled	9		1	2		1		3	2						
4 to 9 or over:															
Total examined	15	3		2	3		4			1			1		1
Number mottled	14	2		2	3		4			1			1		1
5 to 9 or over:															
Total examined	9			1		3	1	3	1						
Number mottled	5					3		2							
6 to 9 or over:															
Total examined	12			2	1	2	6			1					
Number mottled	7			2	1	2	2								
7 to 9 or over:															
Total examined	14		1	2	2	2	2	2		1		1			1
Number mottled	3		1	1		1									
8 to 9 or over:															
Total examined	8		3		1		1	1		1	1				
Number mottled			1												

[1] Second group consists of second bicuspids, cuspids, and second molars.

Table 3 shows the condition of the enamel of the second group of permanent teeth with the age of the child at the time of examination and the ages between birth and 9 years or over during which he had lived in Bauxite.

A total of 28 children lived in Bauxite from birth to 9 years of age, and all of these children had mottled enamel of the second group of permanent teeth. Four children had lived there from under 2 years of age to 9 years or over, and all had mottled enamel of the second group. There were 10 children with Bauxite residence from 2 years of age to 9 years or over and all had mottled enamel of the second group.

The percentage of defective enamel of the second group with residence from 3 years of age, 4 years, 5 years, 6 years, 7 years, and 8 years of age to 9 years or over, was respectively as follows: 81 per cent, 93 per cent, 55 per cent, 58 per cent, 21 per cent, and 12 per cent.

The condition of the third group of permanent teeth is of great interest. This group consists only of the third molars, or "wisdom teeth." These teeth are supposed to calcify from about 9 years to 14 years of age.

According to the evidence bearing upon the influence of the environmental factors in the etiology of mottled enamel, the third molars of a child coming into an endemic district after the age of 8 or 9 would present the typical lesion and the remainder of the teeth (formed elsewhere) would be normal.

TABLE 4.—*Condition of the enamel of the teeth of 14 persons with third molars erupted, Bauxite, Ark.*

Number of years lived in Bauxite—used municipal deep-well water supply	Age arrived in Bauxite	Present age	Condition of the teeth			
			First permanent group		Second permanent group	Third molars
			Mottled	Stained	Mottled	Mottled
18	4	22	Normal	Normal	Mottled	Mottled.
18	(1)	18	Slightly mottled	do	Slightly mottled	Slightly mottled.
12	7	19	Normal	do	Normal	Mottled.
11	6	17	do	do	do	Slightly mottled.
10	8	18	do	do	do	Mottled.
8	12	20	do	do	do	Do.
8	10	18	do	do	do	Do.
8	7	15	do	do	do	Do.
7	12	19	do	do	do	Do.
7	8	15	do	do	do	Do.
6	12	18	do	do	do	Normal.
2	11	[2] 13	do	do	do	Mottled.
(3)	(3)	17	do	do	do	Normal.
2	13	[4] 15	do	do	do	Do.

[1] Birth.
[2] Now 17 years of age; attended Bauxite school from 13 to 17 years of age; living near Bauxite.
[3] Never lived in Bauxite but attended Bauxite school from 6 to 17 years of age; living near Bauxite.
[4] Now 19 years of age and living in Benton.

We were able to examine 14 people from 15 to 24 years of age who had lived in Bauxite two years or more during the time of calcification of the third molars.

Table 4 presents the age arrived in Bauxite, present age, number of years lived in Bauxite, and the condition of the enamel of the third molars. These 14 cases will be considered individually as the data appear of importance in etiological evidence.

The first of these persons came to Bauxite at 4. He lived there 18 years. The enamel of the first group is normal; that of the second and third groups is mottled. This is a typical case. The next was born in Bauxite and had lived there all his life. The enamel of all his teeth was mottled. The third lived in Bauxite from his seventh to nineteenth year. His first and second groups of teeth are normal, but the third molars are definitely mottled. The fourth arrived in Bauxite in his sixth year and has defective enamel of only the third molars. Why these first groups escaped in these two children is not clear. The next eight of these persons came to Bauxite when they were from 8 to 12 years of age. These children show normal enamel of the first and second groups, but defective enamel of the third molars, except in the case of one who arrived there in his twelfth year. One child who attended school in the village from his sixth to seventeenth year, but did not live in the village, had normal enamel. The other one arrived in Bauxite at 13 years of age, and the enamel was normal.

The data seem to indicate that the enamel of the third molars is usually defective if the individual had entered the endemic center any time up to 11 years of age. This uniform peculiarity in the behavior of the development of the enamel of the third molars in individuals who come into these endemic districts after the age of ten or eleven is considered by us as evidence pointing to the etiology of this condition. As has been shown in previous examinations it can be stated that apparently any enamel in the process of formation during residence in an endemic district will be found to be definitely mottled, due to some influence which operates exclusively in such a district. It seems highly probable that the water and not the food supply of these districts contains the influence responsible for mottled enamel, since we can scarcely assume that an individual coming into such a district suddenly acquires a new (and defective) food habit that deprives the growing enamel of precisely the elements, either in quantity or quality, necessary to its normal development. Such an assumption would imply that each individual had acquired identically the same defective food habit.

It should also be stated that enamel grown elsewhere (in non-endemic districts) and, hence, normal, undergoes no change whatever so far as observation shows, and certainly it never becomes in the slightest degree mottled, upon exposure in an endemic region.

The question of staining of the defective enamel has not been settled satisfactorily. This should not be confused with the mottling of the enamel, which is definitely known to occur during the developmental period. The percentage of mottled enamel that is stained increases from 10 per cent among 6 and 7 year old children to 67 per cent among children 13 years of age or older. Staining apparently develops and increases with age. No one has ever removed the upper central permanent teeth before eruption, and the question of time of staining will never be definitely settled until this is done. A post mortem would provide the opportunity, but it is a difficult problem to obtain consent for necropsy.

TABLE 5.—*Proportion of children with mottled enamel on the first group of teeth whose first group is also stained*

Present age of child	Total number with first permanent group mottled	Number mottled but not stained	Number mottled and stained	Percentage of all mottled cases that are stained also	Percentage by groups
All ages	167	94	73	43.7	
5	1	1			
6	15	14	1	6.7	10.0
7	24	21	3	12.5	
8	22	17	5	22.7	38.9
9	19	8	11	57.9	
10	14	6	8	57.1	
11	13	4	9	69.2	56.1
12	14	8	6	42.9	
13	14	6	8	57.1	
14	10	4	6	60.0	66.7
15 or over	21	5	16	76.2	

There is no evidence to indicate that in any community has there ever been observed any waning of this deleterious influence through any natural chemical or other alterations of its water supply.

There is the possibility of artificial chemical alteration of the water through certain "treatments" employed commercially, but naturally such a procedure would assume knowledge of the exact chemical nature of the damaging ingredient, and this knowledge is as yet undetermined.

To serve as a check on the children of Bauxite, 124 children were examined in the school at Benton, a town about 5 miles from Bauxite.

Of these 124 children, 103 were native to Benton (or other communities exclusive of Bauxite) and none presented anything but normal enamel. The remaining 21, ranging from 11 to 19 years of age, had formerly lived at Bauxite for longer or shorter periods. Sixteen of this group had lived in Bauxite for one year or more, and 11 of these had mottled enamel.

TABLE 6.—*Mottled enamel of teeth of children living in Benton, Ark., who formerly lived in Bauxite*

Case No.	Number of years lived in Bauxite and used municipal deep well water supply	Age at time of examination	Age on arrival in Bauxite	Age on leaving Bauxite (years)	Condition of the teeth			
					First permanent group		Second permanent group	Third molars
					Mottled	Stained		
1	12	16	Birth	12	Sl. mottled	Normal	Mottled	Not erupted.
2	12	14	do	12	Mottled	do	do	Do.
3	9	11	Under 6 months	9	do	do	do	Do.
4	8	18	7 years	15	Normal	do	Normal	Do.
5	8	13	Birth	8	Mottled	do	Mottled	Do.
6	7	14	4 years	11	Normal	do	do	Do.
7	5	18	do	9	do	do	Sl. mottled	Do.
8	5	17	7 years	12	do	do	Normal	Do.
9	4	19	2 years	6	Mottled	Sl. stained	Mottled	Do.
10	3	15	4 years	7	Normal	Normal	do	Do.
11	2	19	13 years	15	do	do	Normal	Normal.
12	2	16	5 years	7	Sl. mottled	Stained	Mottled	Not erupted.
13	2	16	9 years	11	Normal	Normal	Normal	Do.
14	2	15	7 years	9	Doubtful	do	Mottled	Do.
15	2	13	do	9	Normal	do	Normal	Do.
16	1	15	6 years	7	do	do	do	Do.
17	(1)	12	do	6	do	do	do	Do.
18	(1)	14	5 years	5	do	do	do	Do.
19	(1)	15	2 years	2	do	do	do	Do.
20		13	Unknown	(2)	Mottled	do	Mottled	Do.
21		13	do	(2)	Normal	do	Normal	Do.

[1] Less than 1 year.

[2] Unknown.

The first, second, and fifth children included in Table 6 were born in Bauxite, and left there at 12, 12, and 8 years of age, respectively. The enamel of the teeth of both groups was mottled.

The third and ninth children arrived in Bauxite within the first two years of life, and the enamel of the teeth of both groups was mottled.

Three children (Nos. 6, 7, 10, in Table 6) arrived at Bauxite at 4 years of age and remained there until 11, 9, and 7 years of age, respectively. These children had normal enamel on the first group of teeth, but the second group was mottled.

The twelfth child arrived at 5 years of age and left at 7. The enamel of the first group of teeth was slightly mottled, but that of the second group was definitely so.

Four children (Nos. 4, 8, 14, and 15) arrived at 7 years of age and left at 15, 12, 9, and 9 years of age, respectively. Only one of these (No. 14) had mottled enamel. This was a typical case, the enamel of the first group of teeth being doubtful, but that of the second group was definitely mottled.

The other children had been in Bauxite only 1 year or less, or the time was unknown, and had normal enamel.

McKay, without previous information, was able during the examination to pick every Bauxite child, by reason of the defect, from among the Benton children.

The effect of Bauxite environment on the enamel development in families, shown in Table 7, is of interest.

TABLE 7.—*Mottled enamel of teeth of children of the same family, Bauxite, Ark.*

	Number of families having the specified number of children who were examined					
	One child examined	Two children examined	Three children examined	Four children examined	Five children examined	Six children examined
No children with mottled enamel	82	32	13	5	1	1
One child with mottled enamel	69	4	4	2		
Two children with mottled enamel		30	3	5	1	
Three children with mottled enamel			7	3		
Four children with mottled enamel				3		
Five children with mottled enamel						1

One family with four children, aged 17, 15, 13, and 8, shows the following history:

The 8-year old was born in Bauxite, but had been away 19 months after he was one year old. The incisors showed an interesting distribution of the mottling in that in the central portion of the teeth, from mesial to distal, was a band of normal enamel bounded above and below by a mottled area reflective of the periods spent in and away from Bauxite.

The 13-year old child was born in Bauxite and showed mottled enamel of all her permanent teeth, with slight staining of the upper centrals.

The 15-year old came to Bauxite at 2 years of age, left when he was 8 years old, and returned when he was 10. All his permanent teeth were mottled and the upper centrals were stained.

The oldest child is now 17. He entered Bauxite when 4 years old, left at 10, and returned at 12 years of age. His first group of permanent teeth were normal, having grown the enamel before coming to Bauxite. The second group, the enamel of which was grown in Bauxite, was definitely mottled.

Another interesting case is that of a girl of 12 years of age who came to Bauxite between 3 and 4 years of age. The enamel of the first group showed a slight band of mottling near the gums, the remainder of the tooth being normal, and the enamel of the second group was typically mottled. The band of mottled enamel on the first group was grown in Bauxite.

The extraction of a loose temporary molar from the mouth of a native Bauxite child afforded an opportunity of observing that the underlying bicuspid was typically mottled prior to any exposure to mouth conditions.

The data gathered in this survey indicate that there is a specific agent or condition in the environment of the village of Bauxite which interferes with the development of the enamel of the permanent teeth and is but a repetition of the information collected by McKay in his previous studies. This agent or condition is strictly limited to the village, because children in the immediate vicinity of the village are not affected. It does not seem probable that this agent can be in the food, because the mode of life and the diet of these people are the same in the village as outside the village. It attacks the children of well-to-do families as well as those of lower economic status. Physical condition seems to be of no importance; as far as can be seen the only requirement is the use of water from the central deep well supply.

The evidence brought out by this examination at Bauxite, together with similar evidence as to other districts, was responsible for the taking of immediate steps for the abandonment of the then existing deep well supply and the substitution of another source. The absence of this enamel defect in the children native to the neighboring town of Benton led to the drawing upon its source of water supply, which is the Saline River, and adapting it to the domestic needs of Bauxite. This involved piping the river water about 4 miles and passing it through a filtration plant before turning it into the distributing pipes. This change was effected shortly after the time of this study; and it is pointed out, as a matter of interest, that Bauxite is apparently the second community in the world to abandon an otherwise satisfactory water supply and substitute another solely because it apparently caused this dental defect. The first community to make such a change was Oakley, Idaho, an account of which was given in *Dental Cosmos*, September, 1925.

The fairly stable populations of these localities will, within six or seven years, afford an opportunity for observing the influence of the new water supply upon enamel grown subsequent to the change and determine the validity of the indictment of the former supply. No other material changes in the food habit or mode of living are likely to occur. A second survey will be undertaken at an appropriate time in each of these two communities.

Following is a report of analyses of samples of both the old "deep well" water and the new "filtered" water of Bauxite made by the Division of Chemistry of the National Institute of Health.

Surgeon Kempf requested that these waters be examined particularly for manganese. Traces of manganese were found in both of these samples of the order of magnitude of approximately 0.04 parts per million.

The analyses for the more common constituents resulted as follows:

	Deep well water	Filtered water		Deep well water	Filtered water
	Parts per million	*Parts per million*		*Parts per million*	*Parts per million*
Total residue on evaporation	1,003.0	86.00	Iron and aluminium oxides	1.0	0.3
Loss on ignition	43.0	14.00	Calcium (Ca)	25.3	17.6
Fixed residue	960.0	72.00	Magnesium (Mg)	7.0	2.1
Chloride (Cl)	415.9	3.75	Sodium (Na)	344.6	9.6
Sulfate (SO_4)	39.6	15.70	Potassium (K)	9.2	3.4
Nitrogen as nitrate (NO_3)	.3	.03	Alkalinity (phenolphthalein)	1.0	.0
Silica (SiO_3)	18.6	6.00	Alkalinity (methyl orange)	213.7	52.0

The determination of the manganese content of these waters is held to be of value only with regard to the possibility of its being the factor accounting for the "brown stain" as noted previously in this report. It is not thought to be associated with the general disruption of the orderly or normal arrangement of the integral enamel structure as indicated by the term "mottled."

It will be noted that there is a decided difference in the chemical structure of these two waters, principally in that the "deep well water" is a sodium bicarbonate water while the "filtered water" is a calcium bicarbonate water, as computed by Mr. W. D. Collins, chemist in charge, quality of water division, U. S. Geological Survey.

The table given below is taken from an article published in *Dental Cosmos*, in 1916, by Black and McKay, showing analyses of waters from various endemic districts studied at that time and is inserted here for purpose of comparison.

Table of analyses of water from various endemic districts

[Given in parts per million]

Constituents	Mine water at V	Lawson Ranch well water	Schole's well	Mine water at E	Single Ranch spring	City water at L	City water at B
Sodium	276.77	207.80	242.70	37.12	----------	3.30	6.21
Potassium	----------	3.35	6.44	----------	11.05	----------	----------
Calcium	89.75	31.80	33.31	74.50	21.32	5.70	23.44
Magnesium	27.36	37.75	33.60	16.71	5.41	1.70	Tr.
Iron	Nil	----------	3.35	Tr.	----------	.49	1.95
Aluminum	2.74	----------	----------	----------	----------	----------	----------
Chlorin	47.37	31.00	51.00	14.17	8.31	7.29	4.82
Sulphuric acid	651.49	142.40	250.00	104.66	46.80	7.10	----------
Carbonic acid	216.78	615.00	530.00	239.60	22.80	15.30	----------
Silicic acid	16.68	21.65	18.12	----------	----------	7.50	6.45

These analyses throw no light whatever on the probable causal agent. The enamel defect occurs where waters of extremely low as well as of extremely high mineral content are used.

It would seem logical and would be highly desirable that animal experimentation be undertaken in some pronounced endemic district under strict water and dietary control, which would be expected to indicate definitely whether or not the water carries some deleterious agent, or lacks something necessary for the normal growth of the enamel. In this respect it is again brought out as in previous publications by one of us (McKay), that thus far in this investigation this lesion of the enamel had never been reliably reported as occurring in animals.

Various animal feeding experiments have been conducted by Howe and Pierle and others, in which structural damages have been brought about in the bony and certain dental tissues by severe dietary restrictions in the experimental animals, but the reproduction of this specific lesion of the enamel in any of these experiments has, to our knowledge, never been accomplished.

There is some question, then, as to what animal could be most successfully used for this purpose. Kempf suggests the pig; possibly the dog. Without any definite indication it would seem that the experimental animal would best be one in which the period of enamel growth was projected over a period of time corresponding as nearly as possible to that of the human.

No definite conclusions can be deduced at the present time other than that this enamel dystrophy occurs in certain areas in the United States, and the etiological factors seem to be definitely associated with the water supply of these areas. Exposure of a child, during permanent enamel growth, to the environmental factors in an endemic area appears almost certain to result in the development of mottled enamel.

The findings in this report have been compiled largely by one (Kempf) who has approached this survey from the standpoint of the trained investigator into conditions responsible for general human pathology, with no prejudice or influence from the dental standpoint.

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TRACHOMA

Some Facts About the Disease and Some Suggestions for Trachoma Sufferers

By Paul D. Mossman, *Surgeon, United States Public Health Service*

Trachoma, sometimes called "granulated eyelids" or "red sore eyes," is an inflammation of the lining of the eyelids. The early symptoms are watering, itching, and burning, or a feeling as if there were "something in the eye." Light causes pain in the eyes and the sufferer avoids the sunshine. The feeling of something in the eye is so marked that nearly every trachoma patient tells the doctor that his trouble was caused by getting dust, or sand, or pollen in his eyes. While the disease begins in the eyelids, sooner or later the eyeball usually becomes involved. The cornea, or transparent part of the eyeball, becomes clouded, and vision gradually gets poorer. In the course of the disease, scars form on the inside of the lid, and when these scars contract, or "draw", as all scars do, the edge of the lid is pulled inward causing the lashes to scratch on the eyeball. This not only causes pain but adds to the cloudiness of the eye, and partial or complete blindness often results.

Historical records indicate that even in ancient times trachoma was recognized and treated in many countries. It is not surprising, therefore, to find that with the exploration and settlement of new countries, this disease should have been carried to the far corners of the earth. Few, if any, countries are at present entirely free from it, and several have become particularly cursed by its widespread incidence.

It is estimated that 90 per cent of the native population in Egypt are sufferers from trachoma and that 25 per cent of the Chinese are so afflicted. Brazil, Syria, Ireland, and Russia are also among the countries which show a high degree of prevalence. Reports indicate a tremendous increase in trachoma in various countries of Middle Europe after the World War. This increase is attributed to the crowding and the generally depressed living conditions following the war.

Nobody dies from trachoma, and for that reason not many people become greatly alarmed about it, but it is deserving of serious consideration on account of the great amount of suffering and economic loss which it causes. The cost of medical care, the loss of earning power and the expense of blind pensions are a few of the economic items which are involved in this disease. A person with trachoma is almost certain to lose some vision. Some have to drop out of skilled trades because they do not see well enough to do close work, and they must then take up unskilled labor at a lower wage. Many more are totally incapacitated, either permanently or for varying periods, for performing any useful work at all. It has been stated that in China, where 25 per cent of the population have trachoma, this disease causes greater economic loss than floods or famine, both of which are notoriously destructive in that country. In the State of Missouri, 21.7 per cent of approximately 3,200 persons drawing State pensions because of total blindness were made blind by trachoma. This includes only persons totally blind in both eyes and represents a direct cost of nearly a quarter of a million dollars annually for pensions, to say nothing of the loss of earning power of these individuals.

Much has been said, and many theories have been proposed, to account for the undue prevalence of trachoma among certain peoples. Certain races have been said to be more susceptible than others. Altitude and climate have been accused of being predisposing factors. However, we observe trachoma in mountainous districts in our own country and in the plains of Egypt; in damp countries such as Finland as well as in dry and dusty Arabia. Poverty, overcrowding, insanitary living conditions, and malnutrition constitute perhaps the most potent factors in bringing about the prevalence of this disease.

Trachoma among the white population in the United States is not confined to any sharply defined area, but in general is prevalent in the States of West Virginia, Kentucky, eastern Tennessee and western Virginia, Missouri, Arkansas, and Oklahoma.

The inhabitants of these sections are largely of Anglo-Saxon stock, descendants of the early settlers. There has been little immigration from other sections and the percentage of foreign born is extremely low. There is also a fringe of territory along the Ohio River in Ohio, Indiana, and Illinois, peopled largely by settlers from the Appalachian region, where trachoma is found in some abundance. Of course, trachoma is not entirely absent in other sections of the country and it is not uniformly spread over the area above mentioned, where it is rather prevalent.

The percentage of trachoma among the American Indians varies in different tribes. Some tribes are almost free from it, while among others as many as 20 to 25 per cent have the disease.

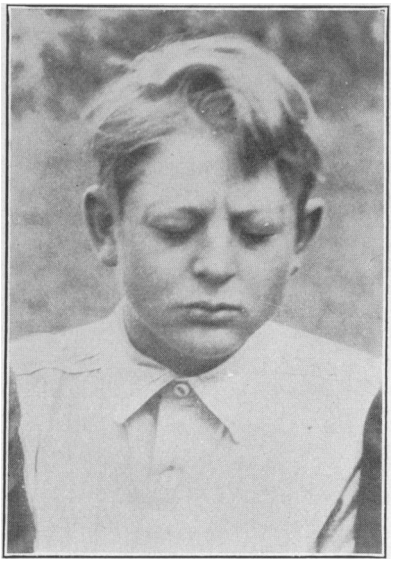
Trachoma is spread from one person to another by getting the infective material from the eye of a person afflicted with trachoma into the eye of another person. This may happen by using the same towel, wash basin, handkerchief, or other articles that have been contaminated by a person with trachoma. It is also dangerous to shake hands with a person who has trachoma, because of the likelihood that he may have infective material on his hands. Nor is it safe to sleep in a bed with a person who has trachoma.

Likewise, the person who has trachoma should recognize his responsibility in the protection of others. He should not use towels, basins, or other articles which might become contaminated and then leave them for others to use.

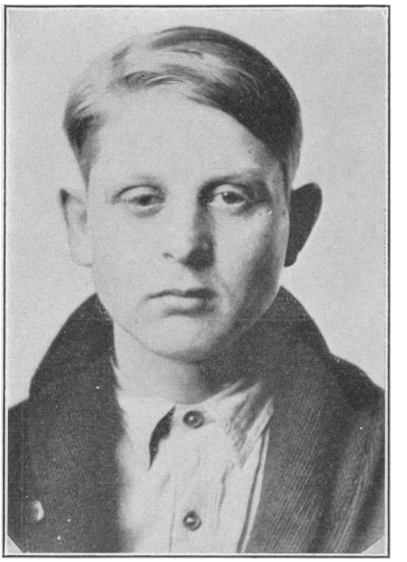
A person who knows or suspects that he has trachoma owes it to himself and to the people around him to have his eyes treated. There are two excellent reasons for this: First, to relieve his distress and prevent loss of vision; and, second, to keep from spreading the disease to others. Trachoma would not spread far if every person who now has it would have his eyes treated persistently by a competent physician. It often takes a long time to arrest the disease completely, but the patient is wise who continues treatment until he is pronounced well.

Surgeon John McMullen, of the United States Public Health Service, after making an extensive survey of the prevalence of trachoma in eastern Kentucky, in 1912, evolved the plan of establishing small hospitals which were designed not only to treat trachoma but to serve as centers for field work in the form of surveys, field clinics, and educational work. This plan for the study, prophylaxis, and treatment of trachoma, with some modifications, is still being followed by the United States Public Health Service in cooperation with the States concerned.

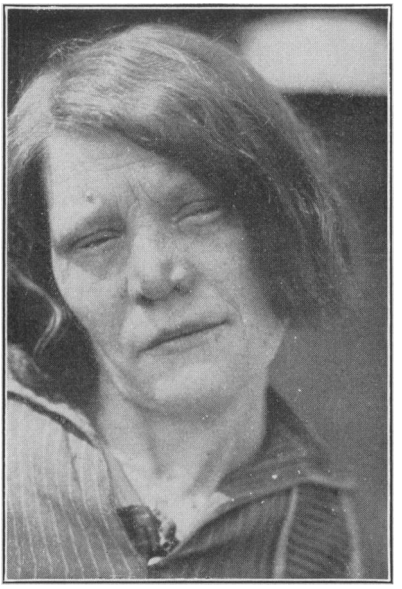
From the standpoint of eradication, it is the aim to treat as many cases as possible, to persuade as many sufferers as possible to seek treatment, not only in these hospitals, but from private specialists,



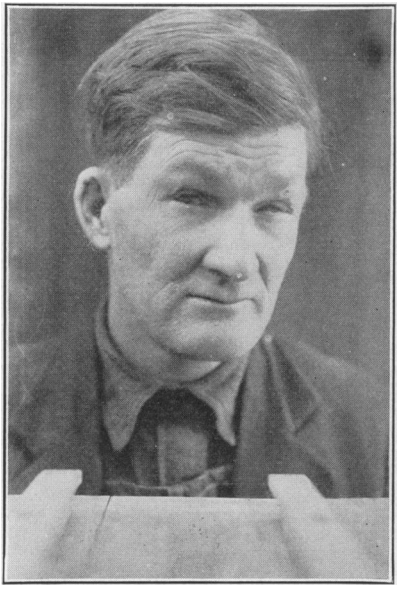
Trachoma patient on admission



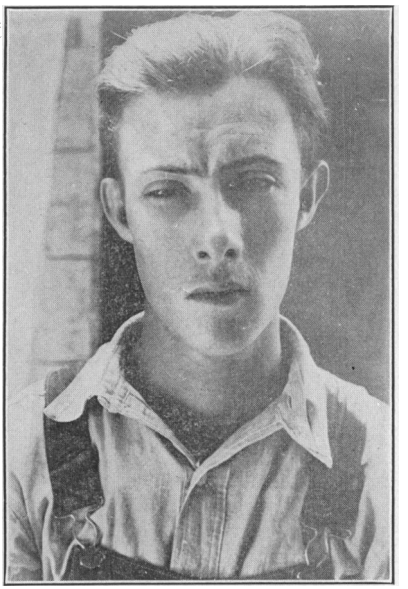
On discharge, 2 months later. Able to return to school, but some permanent damage to right eye



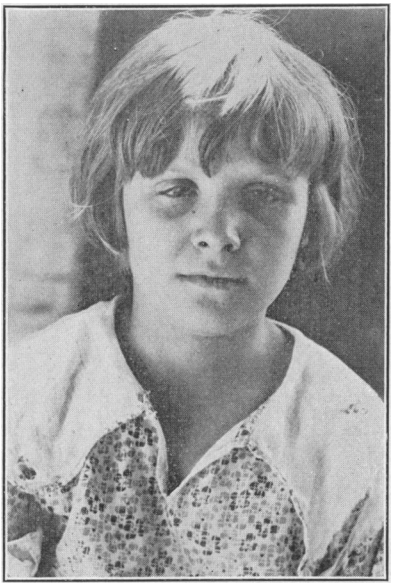
Entropion. Lashes have been pulled out by patient to relieve pain caused by their scratching



Advanced case, showing entropion



Trachoma. Note droop of right upper lid



Girl, aged 9, with perforation of right cornea. No vision in right eye, and vision in left eye badly impaired

Group of patients at a trachoma hospital

and to instruct the patients and their associates in personal hygiene as a means of preventing the spread of the disease. By giving adequate treatment to a considerable number of sufferers, the number of foci for the spread of the disease will be correspondingly reduced.

One of the difficulties in this campaign is the fact that so many sufferers regard trachoma as absolutely incurable and do not consider it worth while to take treatment. They stoically suffer the itching, burning, lachrymation, and photophobia which accompany all cases and even the intense pain and the disability due to complications, such as corneal ulcers, iritis, and pannus. They grow tired of the prolonged treatment which is necessary in most cases in order to get any permanent benefit and are usually too poor to pay for any adequate private treatment, even if they were willing to persist in it. Then too, it is apparently hard for many of them to understand why these strange "Government" doctors and nurses should be so anxious to treat them free of charge unless there is some "string to it." Patience and tact are necessary, as well as the evidence of honest and careful treatment, before the hospital can become widely popular.

In addition to maintaining the hospitals, field clinics are held at various points in the infected areas, where persons with symptoms resembling those of trachoma are invited to come for examination, advice, and treatment. The cases are found in all stages of the disease, many in the terminal stage without active granulation and requiring no treatment unless the distressing and damaging sequelæ of the disease, entropion and trichiasis, are present. These clinics are conducted with the active cooperation of State or local health authorities. Known cases and suspects found by school medical examinations and by home visits by the field nurses are urged to attend the clinic and various means of advertising are used. Examinations and diagnoses are made at the clinics and appropriate advice is given patients. Selected cases are treated, usually the milder or earlier ones. Others are advised to seek treatment at the hospital or from private specialists if the latter are accessible. An effort is made to do as much instructive work at the clinics as time and opportunity permit. The usefulness of the clinics does not depend alone on the number of operations performed, for only a limited number of selected cases are suitable for treatment with the facilities available where the clinics are held. An important feature of the clinic is that it gives an opportunity for the patient to have a careful examination and diagnosis and for the doctor to give instruction and advice and establish contact with the patient, so that when the patient is advised to go to the hospital he is already acquainted with the doctor and nurse who will care for him there. This establishes confidence and is a necessary factor in dealing with these people who have a dread of going away from home. The clinics also afford an opportunity of getting some idea of the prevalence of

the disease in different localities. Although the disease is reportable in many States, it is not commonly reported even in sections where it is quite prevalent.

A disease that is so resistant to treatment as trachoma is bound to be the subject of innumerable remedies, many of which have little or no merit. The treatment used in Public Health Service hospitals is mainly surgical, though supplemented by appropriate medicinal agents, and has been pretty carefully worked out. We are continually on the lookout, however, for better methods; and new methods, as they appear, are given careful consideration and, if deemed worthy, a fair trail. If and when the ideal treatment is found, it will have two essential elements—certainty and rapidity of cure.

In correlation with the field and hospital campaign against trachoma the Public Health Service is conducting a research laboratory at Rolla, Mo., where a highly trained bacteriologist is carrying on investigations with a view to determining the bacterial cause of the disease.

While the prevalence of trachoma in this country is extremely small as compared with that in Egypt, China, and many other countries, it constitutes in certain parts of America a distinct problem and demands immediate and constant attention lest the number of damaged eyes due to the disease should become even greater than at present.

ADVICE TO PERSONS WITH TRACHOMA

1. Place yourself under treatment by a reputable physician without delay—a specialist if possible. Continue treatment until the physician dismisses you.

2. Do not be discouraged if your doctor fails to cure you in a few weeks. Many cases of trachoma require treatment off and on for two or three years.

3. Keep your face clean, especially about the eyes.

4. Have clean handkerchiefs or clean cloths to wipe your eyes with. See that they are boiled or burned after use.

5. Do not leave your towel, soap, or wash basin where other persons can use them, or they may also get trachoma.

6. Babies may contract trachoma; so be careful in cleaning the baby's eyes to use wash rags that have been boiled.

7. Persons with trachoma should not be exposed to dust. However, if you must work in a dusty place, dust goggles will give you some protection. Wear them only when working in the dust.

8. Remember that the wearing of dark glasses continuously tends to weaken the eyes. Wear them only when you are in bright sunshine.

9. Glasses will not cure trachoma. Do not let anyone sell you glasses in the hope that they will cure your condition.

DEATH RATES IN A GROUP OF INSURED PERSONS

Rates for Principal Causes of Death for September, 1930

The accompanying table, taken from the Statistical Bulletin for October, 1930, issued by the Metropolitan Life Insurance Co., presents the mortality record of the industrial insurance department of the company for September, 1930, as compared with that for the preceding month and for the corresponding month of last year. It also gives the cumulative rates for the period January–September for the years 1930 and 1929. These rates are based on a strength of approximately 19,000,000 insured persons in the United States and Canada.

The Bulletin states:

The September death rate (7.8 per 1,000) was a little higher than the figure recorded for either September, 1929, or August, 1930. For policyholders living west of the Rocky Mountains, however, the September mortality rate was lower than that in evidence last year. In the remainder of the United States the 1930 figure for this month was 7.9 per 1,000 as compared with 7.7 in 1929, and in Canada it was 8.9 as against 8.7 The cumulative death rate for the January–September period was markedly lower in all sections of both countries this year than last.

Death rates (annual basis) per 100,000 for principal causes of death, August, 1930

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Rate per 100,000 lives exposed [1]				
	September, 1930	August, 1930	September, 1929	Cumulative, January–September	
				1930	1929
Total all causes	782.8	751.3	768.0	880.4	963.4
Typhoid fever	4.1	3.2	3.2	2.0	2.2
Measles	.6	.6	.5	3.5	3.6
Scarlet fever	1.1	1.1	1.0	2.7	2.8
Whooping cough	4.6	5.4	5.0	4.7	6.3
Diphtheria	2.7	3.0	5.0	5.8	8.3
Influenza	5.5	3.3	4.4	15.6	50.3
Tuberculosis (all forms)	72.8	71.6	70.6	82.9	89.8
Tuberculosis of respiratory system	63.9	62.3	61.8	71.9	79.4
Cancer	78.9	73.6	74.8	76.6	77.5
Diabetes mellitus	15.8	16.1	13.7	18.5	18.9
Cerebral hemorrhage	54.5	53.7	[2] 45.9	60.1	[2] 58.1
Organic diseases of heart	121.6	112.7	115.3	145.2	150.5
Pneumonia (all forms)	34.5	29.4	33.5	79.0	95.6
Other respiratory diseases	8.8	8.3	8.9	11.3	12.5
Diarrhea and enteritis	40.2	32.2	46.3	19.1	20.7
Bright's disease (chronic nephritis)	59.1	58.6	56.5	68.0	70.4
Puerperal state	10.4	10.8	11.0	12.5	13.9
Suicides	9.5	9.3	8.6	9.6	8.7
Homicides	7.4	6.3	5.7	6.5	6.4
Other external causes (excluding suicides and homicides)	64.5	75.6	67.4	62.9	64.5
Traumatism by automobiles	23.7	22.4	22.5	19.8	19.2
All other causes	186.2	176.7	190.5	193.8	202.5

[1] All figures in this table include insured infants under 1 year of age. The rates for 1930 are subject to slight correction, as they are based on provisional estimates of lives exposed to risk.
[2] Rate not comparable with that for 1930.

COURT DECISION RELATING TO PUBLIC HEALTH

Bovine tuberculosis law held constitutional.—(Iowa Supreme Court; Loftus et al. *v.* Department of Agriculture of Iowa et al., 232 N. W. 412; decided Sept. 22, 1930.) The plaintiffs, owners of dairy and breeding cattle, brought an action to enjoin the State department of agriculture and certain State and county representatives from enforcing the law pertaining to the control and eradication of bovine tuberculosis. It was claimed by plaintiffs that the said law was unconstitutional and void. By the law the State was established as an accredited area for the eradication of tuberculosis from cattle, quarantine was authorized, tuberculous cattle could be destroyed or otherwise disposed of by the agricultural department, inspectors or testers were arranged for, and these agents could apply the tuberculin or other tests to determine the existence or nonexistence of tuberculosis in cattle. The basis for the contention of unconstitutionality was that the legislation did not provide due process of law, permitted an unreasonable exercise of the police power, allowed arbitrary action by the enforcing officers, authorized the administrative department to unlawfully enact and enforce rules, was not uniform in its operation, combined in one testing agent the duties of administrative and judicial officers, and otherwise was repugnant to the State and Federal Constitutions. The supreme court, in reversing the action of the trial court in granting an injunction, held that the legislation under consideration was within the police power of the State and constitutional.

DEATHS DURING WEEK ENDED NOVEMBER 8, 1930

Summary of information received by telegraph from industrial insurance companies for the week ended November 8, 1930, and corresponding week of 1929. (From the Weekly Health Index issued by the Bureau of the Census, Department of Commerce)

	Week ended Nov. 8, 1930	Corresponding week, 1929
Policies in force	75, 344, 536	75, 039, 431
Number of death claims	11, 918	12, 086
Death claims per 1,000 policies in force, annual rate	8. 2	8. 4

Deaths [1] from all causes in certain large cities of the United States during the week ended November 8, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929. (From the Weekly Health Index issued by the Bureau of the Census, Department of Commerce)

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census. The rates are not exactly comparable with similar rates published in the Public Health Reports earlier than the issue of August 22, 1930, which were based upon estimates made before the 1930 census was taken]

City	Week ended Nov. 8, 1930				Corresponding week 1929		Death rate [2] for first 45 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant mortality rate [3]	Death rate [2]	Deaths under 1 year	1930	1929
Total (78 cities)	7,783	11.7	715	[4] 57	11.7	658	11.9	12.7
Akron	38	7.8	1	9	6.4	7	8.0	9.3
Albany [5]	48	19.6	1	21	15.7	3	14.8	16.4
Atlanta	67	13.0	4	41	15.3	6	15.8	16.1
White	40		1	16		6		
Colored	27	(6)	3	86	(6)	0	(6)	(6)
Baltimore [5]	245	15.9	43	150	12.3	19	14.0	14.6
White	180		31	138		11		
Colored	65	(6)	12	192	(6)	8	(6)	(6)
Birmingham	74	14.9	9	87	16.6	6	13.7	16.1
White	37		3	48		0		
Colored	37	(6)	6	147	(6)	6	(6)	(6)
Boston	221	14.7	20	58	13.5	30	14.1	15.0
Bridgeport	31	11.0	5	86	8.2	3	10.9	12.0
Buffalo	117	10.6	9	40	12.5	9	12.9	14.1
Cambridge	16	7.3	1	20	14.7	8	11.8	12.5
Camden	34	15.1	5	88	14.2	2	13.7	14.5
Canton	22	10.8	0	0	9.5	0	10.0	11.3
Chicago [5]	615	9.5	46	41	10.6	51	10.4	11.3
Cincinnati	138	16.0	9	53	15.8	14	15.6	17.1
Cleveland	198	11.4	23	69	12.1	19	11.1	12.5
Columbus	88	15.8	6	59	12.2	6	15.6	14.9
Dallas	69	13.7	12		10.5	10	11.4	11.5
White	42		6			6		
Colored	27	(6)	6		(6)	4	(6)	(6)
Dayton	41	10.6	2	30	9.0	0	10.7	11.5
Denver	87	15.7	14	153	12.8	11	14.8	14.8
Des Moines	32	11.7	0	0	7.4	3	11.7	11.6
Detroit	231	7.6	36	55	9.7	35	9.3	11.2
Duluth	21	10.8	0	0	12.9	0	11.4	11.6
El Paso	29	14.8	9		23.3	7	17.2	19.6
Erie	24	10.8	1	22	6.4	1	11.2	12.1
Fall River [5] [7]	22	10.0	4	92	11.8	2	11.8	13.7
Flint	34	11.2	3	35	8.6	2	9.2	10.8
Fort Worth	33	10.7	3		12.1	4	11.0	12.2
White	30		3			4		
Colored	3	(6)	0		(6)	0	(6)	(6)
Grand Rapids	29	9.0	4	60	10.7	3	10.2	10.2
Houston	70	12.5	7		12.8	10	12.2	12.7
White	52		2			6		
Colored	18	(6)	5		(6)	4	(6)	(6)
Indianapolis	85	12.1	3	23	13.4	5	14.6	14.8
White	72		2	17		4		
Colored	13	(6)	1	58	(6)	1	(6)	(6)
Jersey City	71	11.7	7	61	12.6	7	11.3	12.5
Kansas City, Kans	28	11.9	4	93	10.7	4	11.7	13.0
White	23		3	83		4		
Colored	5	(6)	1	152	(6)	0	(6)	(6)
Kansas City, Mo	101	13.4	12	100	12.6	5	13.5	14.0
Knoxville	22	10.8	1	23	12.6	5	13.5	14.0
White	16		1	26		5		
Colored	6	(6)	0	0	(6)	0	(6)	(6)
Los Angeles	278	11.6	22	67	11.9	23	11.1	11.3
Louisville	77	13.0	4	34	12.7	4	13.6	15.3
White	49		3	30		2		
Colored	28	(6)	1	66	(6)	2	(6)	(6)
Lowell [7]	26	13.5	1	26	10.8	3	13.4	14.0
Lynn	14	7.1	2	56	13.3	1	10.3	11.3
Memphis	77	15.9	13	153	13.8	4	17.0	19.0
White	47		7	126		0		
Colored	30	(6)	6	202	(6)	4	(6)	(6)
Milwaukee	118	10.8	15	66	10.4	16	9.8	11.0
Minneapolis	105	11.8	15	98	10.6	3	10.8	10.8

See footnotes at end of table.

Deaths [1] from all causes in certain large cities of the United States during the week ended November 8, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929—Continued

City	Week ended Nov. 8, 1930				Corresponding week 1929		Death rate[2] for first 45 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant mortality rate [3]	Death rate [2]	Deaths under 1 year	1930	1929
Nashville	54	19.1	12	188	19.6	8	17.4	18.7
White	37		8	168		8		
Colored	17	(6)	4	249	(6)	0	(6)	(6)
New Bedford [7]	23	10.6	1	26	10.6	0	10.9	12.1
New Haven	41	13.1	1	15	15.1	3	12.7	13.5
New Orleans	143	16.3	19	106	17.2	11	17.4	17.7
White	88		10	85		5		
Colored	55	(6)	9	146	(6)	6	(6)	(6)
New York	1,354	10.1	115	48	10.0	109	10.7	11.3
Bronx Borough	194	7.9	12	35	7.3	24	7.9	8.3
Brooklyn Borough	462	9.2	40	42	9.3	34	9.7	10.2
Manhattan Borough	517	14.6	49	63	13.6	34	16.1	16.4
Queens Borough	152	7.2	13	52	7.2	14	7.0	7.6
Richmond Borough	29	9.6	1	19	14.9	3	14.2	16.0
Newark, N. J.	92	10.8	8	42	10.3	11	11.9	12.7
Oakland	55	10.0	4	50	10.6	2	10.9	11.3
Oklahoma City	31	8.7	5	90	9.8	4	10.8	10.8
Omaha	60	14.6	5	61	10.8	1	13.5	13.6
Paterson	22	8.3	0	0	13.6	1	12.2	13.4
Philadelphia	454	12.0	36	53	13.1	37	12.5	13.2
Pittsburgh	199	15.5	19	67	16.0	23	13.8	14.8
Portland, Oreg.	66	11.5	3	37	15.5	4	12.2	12.8
Providence	68	14.1	3	28	12.7	7	13.0	14.6
Richmond	57	16.2	10	145	16.0	6	14.8	16.3
White	32		4	88		3		
Colored	25	(6)	6	256	(6)	3	(6)	(6)
Rochester	91	14.6	6	53	10.0	4	11.7	12.4
St. Louis	223	14.1	16	56	11.5	10	14.1	14.6
St. Paul	62	11.9	5	51	11.1	2	10.1	10.5
Salt Lake City [8]	34	12.6	7	111	13.6	2	12.4	13.0
San Antonio	52	10.6	8		15.6	10	14.6	14.5
San Diego	37	12.9	1	21	16.0	4	14.3	15.1
San Francisco	212	17.6	3	20	10.4	3	13.1	13.0
Schenectady	15	8.2	0	0	6.6	2	11.2	12.2
Seattle	76	10.9	2	20	11.2	1	10.9	11.2
Somerville	18	9.0	1	32	10.1	1	9.7	9.2
Spokane	34	15.3	1	26	11.3	1	12.5	12.7
Springfield, Mass.	32	11.1	4	69	10.5	3	12.1	12.7
Syracuse	60	15.1	2	25	8.1	3	11.8	13.0
Tacoma	22	10.7	1	27	11.8	0	12.5	11.8
Toledo	71	12.7	5	46	10.7	7	12.7	13.7
Trenton	40	17.0	7	134	17.0	2	16.7	17.1
Utica	33	16.7	3	83	15.3	0	14.8	15.6
Washington, D. C.	152	16.3	15	88	14.6	11	15.1	15.4
White	98		10	87		7		
Colored	54	(6)	5	89	(6)	4	(6)	(6)
Waterbury	16	8.2	0	0	8.3	2	9.3	9.5
Wilmington, Del. [7]	22	10.9	3	72	13.4	1	14.5	13.9
Worcester	38	10.1	4	55	15.2	5	12.6	12.7
Yonkers	20	7.7	2	48	7.1	3	8.1	9.3
Youngstown	28	8.6	2	29	9.9	3	10.2	12.3

[1] Deaths of nonresidents are included. Stillbirths are excluded.

[2] These rates represent annual rates per 1,000 population, as estimated for 1930 and 1929 by the arithmetical method.

[3] Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

[4] Data for 73 cities.

[5] Deaths for week ended Friday.

[6] For 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.

[7] Population Apr. 1, 1930; decreased 1920 to 1930; no estimate made.

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 November 15, 1930, and November 16, 1929

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended November 15, 1930, and November 16, 1929

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929
New England States:								
Maine	7	4			15	13	1	0
New Hampshire		7		11		15	0	1
Vermont	3	5			11	4	0	0
Massachusetts	59	168	2	7	150	81	3	2
Rhode Island	6	15		1		3	0	0
Connecticut	9	28	1	6	67	2	1	0
Middle Atlantic States:								
New York	105	184	[1] 25	[1] 9	146	183	8	14
New Jersey	52	149	5	3	81	39	4	5
Pennsylvania	127	163			257	340	6	5
East North Central States:								
Ohio	86	94	22	14	17	116	6	5
Indiana	52	50	7		93	7	3	3
Illinois	162	253	3	14	91	180	9	4
Michigan	86	146		4	45	138	3	18
Wisconsin	19	29	21	5	112	308	6	3
West North Central States:								
Minnesota	16	33	2	2	17	38	2	1
Iowa	10	4			1	43	0	0
Missouri	76	85	7	2	247	16	2	7
North Dakota	5	3				26	5	2
South Dakota	6	5			2	6	0	0
Nebraska	16	30		2	5	47	0	0
Kansas	27	44	1		4	39	2	3
South Atlantic States:								
Delaware	4	2					0	0
Maryland [2]	33	22	17	16	2	29	0	2
District of Columbia	6	11	1		4	1	2	0
Virginia								2
West Virginia	21	42	34	11	10	17	0	0
North Carolina	134	204	5	6	5	2	4	2
South Carolina	57	48	547	782			1	0
Georgia	30	31	107	93	18	14	1	7
Florida	18	21	7	1	10	2	0	1
East South Central States:								
Kentucky		21			36		0	0
Tennessee	61	59	37	63	13	2	3	3
Alabama	118	63	36	47	43	20	2	4
Mississippi	53	64					4	0

[1] New York City only.

[2] Week ended Friday.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended November 15, 1930, and November 16, 1929—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929
West South Central States:								
Arkansas	19	18	21	21	2	----	0	2
Louisiana	30	65	11	14	1	3	2	0
Oklahoma [2]	58	69	44	56	14	9	1	0
Texas	61	164	10	43	26	2	0	1
Mountain States:								
Montana	1	1	----	----	1	55	3	3
Idaho	1	----	----	----	7	51	1	1
Wyoming	----	----	----	----	1	----	0	0
Colorado	10	8	----	----	46	4	0	3
New Mexico	3	27	----	----	8	----	1	0
Arizona	5	41	3	8	29	2	0	9
Utah [3]	1	1	6	3	----	25	1	5
Pacific States:								
Washington	10	13	----	----	10	22	4	1
Oregon	3	6	7	16	32	19	0	1
California	61	67	27	36	94	72	5	6

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929
New England States:								
Maine	3	0	20	26	0	0	13	1
New Hampshire	1	0	1	39	0	0	0	1
Vermont	0	0	1	5	0	3	0	1
Massachusetts	14	8	164	213	0	0	10	5
Rhode Island	0	0	18	16	0	0	0	2
Connecticut	2	1	38	52	0	0	3	2
Middle Atlantic States:								
New York	16	9	329	296	1	44	24	22
New Jersey	3	0	120	126	0	0	9	7
Pennsylvania	7	1	393	273	0	1	31	33
East North Central States:								
Ohio	52	6	435	252	58	162	27	19
Indiana	8	0	161	104	43	162	15	5
Illinois	15	3	376	456	14	128	16	14
Michigan	10	4	239	237	54	64	10	8
Wisconsin	13	2	93	92	3	25	7	11
West North Central States:								
Minnesota	11	0	56	86	9	4	5	3
Iowa	10	1	70	43	13	33	4	29
Missouri	4	1	95	95	3	25	10	9
North Dakota	2	0	9	15	11	11	3	0
South Dakota	8	0	7	10	13	11	2	0
Nebraska	15	1	29	38	24	16	2	0
Kansas	10	0	57	71	13	52	4	6
South Atlantic States:								
Delaware	0	0	17	2	0	0	2	1
Maryland [3]	1	1	57	64	0	0	40	6
District of Columbia	0	0	18	19	0	0	1	3
Virginia	----	2	----	----	----	----	----	----
West Virginia	1	1	33	74	4	8	28	18
North Carolina	0	3	143	145	0	4	8	8
South Carolina	2	2	19	28	4	0	26	20
Georgia	0	1	63	79	0	0	15	5
Florida	0	2	12	11	0	0	0	0
East South Central States:								
Kentucky	0	1	66	74	1	10	15	0
Tennessee	1	3	71	58	4	4	32	13
Alabama	3	2	77	68	0	203	42	6
Mississippi	0	0	26	30	0	0	20	3
West South Central States:								
Arkansas	0	0	8	25	19	2	33	7
Louisiana	0	0	30	23	1	0	31	11
Oklahoma [3]	0	0	46	58	0	9	32	25
Texas	3	0	41	32	15	6	17	7

[2] Week ended Friday. [3] Figures for 1930 are exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended November 15, 1930, and November 16, 1929—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929	Week ended Nov. 15, 1930	Week ended Nov. 16, 1929
Mountain States:								
Montana	0	0	32	27	1	16	2	8
Idaho	1	0	11	9	1	4	0	1
Wyoming	2	0	5	3	0	16	1	0
Colorado	4	0	34	18	2	14	7	5
New Mexico	1	1	5	12	0	2	5	8
Arizona	1	1	0	13	2	0	0	8
Utah [1]	0	0	10	5	0	0	0	2
Pacific States:								
Washington	0	2	38	38	14	42	9	10
Oregon	0	1	6	27	17	4	2	1
California	44	3	91	215	11	26	12	10

[1] Week ended Friday.

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
September, 1930										
Colorado	7	35	----	----	80	----	25	33	5	54
October, 1930										
Arkansas	----	46	73	147	3	108	12	48	11	131
District of Columbia	3	47	4	----	9	----	4	48	0	12
Michigan	32	275	10	3	181	1	75	554	53	101
New Jersey	6	278	27	3	160	----	12	336	0	44
New York	49	302	----	19	301	----	168	704	1	174
North Dakota	----	14	2	----	27	----	10	45	26	20
Ohio	16	321	56	3	73	----	317	1,266	68	241
Porto Rico	----	45	31	2,067	5	1	3	----	0	19

September, 1930	Cases
Colorado:	
Chicken pox	15
German measles	2
Impetigo contagiosa	1
Mumps	62
Paratyphoid fever	4
Rocky Mountain spotted or tick fever	[1] 5
Vincent's angina	1
Whooping cough	132
October, 1930	
Chicken pox:	
Arkansas	26
District of Columbia	5
Michigan	521
New Jersey	263
New York	781
North Dakota	58
Ohio	859
Diarrhea and enteritis (under 2 years):	
Ohio	107
Dysentery:	
New Jersey	2
New York	69
Ohio	5
Porto Rico	15
Filariasis:	
Porto Rico	1
Food poisoning:	
Ohio	5
German measles:	
New Jersey	15
New York	69
Ohio	13
Hookworm disease:	
Arkansas	7
Lead poisoning:	
New Jersey	9
Ohio	19
Leprosy:	
New York	1
Lethargic encephalitis:	
District of Columbia	1
Michigan	12
New Jersey	5
North Dakota	15
Ohio	7
Mumps:	
Arkansas	6
Michigan	163
New Jersey	43
New York	307
North Dakota	25
Ohio	133
Porto Rico	6

[1] Delayed reports.

Ophthalmia neonatorum:	Cases
Arkansas	4
New Jersey	3
New York	6
Ohio	89
Porto Rico	5
Paratyphoid fever:	
New York	6
Ohio	7
Porto Rico	7
Puerperal fever:	
New York	5
Ohio	5
Porto Rico	10
Rabies in animals:	
New York	4
Rabies in man:	
Michigan	1
New Jersey	1
Septic sore throat:	
Michigan	21
New York	16
Ohio	62
Tetanus:	
New Jersey	1
New York	8
North Dakota	1
Ohio	3
Porto Rico	4

Tetanus (infantile):	Cases
Porto Rico	27
Trachoma:	
Arkansas	4
New York	6
North Dakota	2
Ohio	4
Porto Rico	1
Tularaemia:	
Ohio	2
Typhus fever:	
District of Columbia	1
New York	2
Undulant fever:	
New Jersey	5
New York	31
Ohio	7
Vincent's angina:	
New York	[1] 100
North Dakota	21
Whooping cough:	
Arkansas	14
District of Columbia	22
Michigan	405
New Jersey	289
New York	1,248
North Dakota	27
Ohio	201
Porto Rico	103

[1] Exclusive of New York City.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 96 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 31,945,000. The estimated population of the 90 cities reporting deaths is more than 30,390,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended November 8, 1930, and November 9, 1929

	1930	1929	Estimated expectancy
Cases reported			
Diphtheria:			
45 States	1,776	2,245	----
96 cities	517	949	1,123
Measles:			
45 States	1,321	1,947	----
96 cities	358	261	----
Meningococcus meningitis:			
46 States	83	92	----
96 cities	26	56	----
Poliomyelitis:			
46 States	291	46	----
Scarlet fever:			
46 States	3,307	3,458	----
96 cities	1,055	1,152	930
Smallpox:			
46 States	237	675	----
96 cities	15	45	22
Typhoid fever:			
46 States	699	456	----
96 cities	67	54	64
Deaths reported			
Influenza and pneumonia:			
90 cities	661	650	----
Smallpox:			
90 cities	0	0	----

City reports for week ended November 8, 1930

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 weeks of the preceding years. When the reports include serveral 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 nonepedmic years.

If the reports have not been received for the full nine years, data are used for as many years as possible but no year earlier than 1921 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	3	1	0		0	0	0	3
New Hampshire:								
Concord	0	0	0		0	0	0	0
Nashua	0	1	1		0	0	0	0
Vermont:								
Barre	0	0	0		0	0	0	0
Burlington	3	0	1		0	0	0	1
Massachusetts:								
Boston	33	30	19	1	0	23	6	18
Fall River	1	4	0		0	0	0	0
Springfield	29	4	8		0	1	2	0
Worcester	24	5	0		0	0	0	0
Rhode Island:								
Pawtucket	0	1	1		0	0	0	3
Providence	5	10	4	1	0	0	0	6
Connecticut:								
Bridgeport	0	6	1	2	1	0	1	3
Hartford		5						
New Haven	4	2	0		0	15	2	1
MIDDLE ATLANTIC								
New York:								
Buffalo	34	16	7		0	6	5	18
New York	91	152	39	11	11	29	16	154
Rochester	20	5	1		0	1	0	1
Syracuse	12	4	0		0	0	0	5
New Jersey:								
Camden	3	8	2	1	0	11	1	3
Newark	33	16	6	5	1	4	4	5
Trenton	1	2	0		1	1	0	2
Pennsylvania:								
Philadelphia	71	65	11	8	7	14	7	39
Pittsburgh	21	29	7		7	7	3	24
Reading	5	3	0		0	1	11	2
Scranton	3	6	1			3	2	
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	9	13	3		1	1	2	9
Cleveland	102	56	14	6	1	2	27	16
Columbus	23	8	4	1	0	1	0	4
Toledo	53	11	11		0	1	3	9
Indiana:								
Fort Wayne	4	5	2		0	0	0	4
Indianapolis	26	13	1		0	1	5	11
South Bend	9	2	4		0	3	0	1
Terre Haute	2	2	0		0	0	0	2
Illinois:								
Chicago	84	141	96	5	2	4	30	38
Springfield	0	1	1		0	0	0	1
Michigan:								
Detroit	93	69	44	2	3	2	11	17
Flint	17	6	3		0	7	3	4
Grand Rapids	8	3	0		1	0	1	4

City reports for week ended November 8, 1930—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Wisconsin:								
Kenosha	60	2	0		0	3	2	0
Madison	25	2	0			0	12	
Milwaukee	66	20	3	1	1	2	22	8
Racine	33	3	1		0	0	1	0
Superior	1	1	0		0	0	0	1
WEST NORTH CENTRAL								
Minnesota:								
Duluth	18	0	0		0	0	0	1
Minneapolis	56	34	8		0	3	14	7
St. Paul	51	13	2		0	0	1	9
Iowa:								
Davenport	9	1	1			0	0	
Des Moines	0	3	2			0	0	
Sioux City	9	3	2			0	1	
Waterloo		0						
Missouri:								
Kansas City	27	11	8		1	2	5	7
St. Joseph	1	2	0		0	0	0	0
St. Louis	12	45	9	1		138	2	
North Dakota:								
Fargo	19	0	0		0	0	9	0
Grand Forks	1	0	0			0	0	
South Dakota:								
Aberdeen	0	0	0			0	0	
Sioux Falls	0	0	0			0	0	
Nebraska:								
Omaha	5	13	9		0	0	0	3
Kansas:								
Topeka	2	2	0		0	0	0	0
Wichita	0	4	1		0	0	0	2
SOUTH ATLANTIC								
Delaware:								
Wilmington	0	3	0		0	0	2	1
Maryland:								
Baltimore	20	28	9	6	1	3	0	25
Cumberland	0	1	0		0	0	0	1
Frederick	0	1	1		0	0	0	0
District of Columbia:								
Washington	3	20	6	1	1	3	0	22
Virginia:								
Lynchburg	1	5	2		0	0	0	3
Norfolk	2	5	6		0	0	1	2
Richmond	3	19	6		2	13	0	6
Roanoke	2	6	4		0	0	0	2
West Virginia:								
Charleston	2	3	4		0	0	5	2
Wheeling	7	2	0		0	0	0	0
North Carolina:								
Raleigh	2	3	2		0	0	0	1
Wilmington	0	1	0		0	0	0	3
Winston-Salem	9	5	1		0	0	1	1
South Carolina:								
Charleston	0	2	1	23	0	0	0	1
Columbia	6	1	2		0	0	2	1
Greenville	0	2	2		0	0	0	0
Georgia:								
Atlanta	1	9	0	12	1	5	0	3
Brunswick	0	0	0		0	0	0	0
Savannah	0	2	0	5	0	0	0	2
Florida:								
Miami	0	2	0		0	0	0	3
St. Petersburg		0			0			1
Tampa	0	2	5		0	0	0	2

City reports for week ended November 8, 1930—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington	1	3	0	----------	0	0	0	1
Tennessee:								
Memphis	39	9	16	----------	2	0	4	8
Nashville	0	4	5	----------	0	6	0	6
Alabama:								
Birmingham	1	8	6	10	2	8	0	6
Mobile	0	2	5	----------	0	0	0	0
Montgomery	0	3	4	----------	----------	0	0	----------
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith	0	3	1	----------	----------	0	0	----------
Little Rock	0	3	0	----------	0	0	1	1
Louisiana:								
New Orleans	0	14	17	6	3	0	0	16
Shreveport	0	2	3	----------	0	0	0	2
Oklahoma:								
Muskogee	0	4	2	----------	0	0	0	0
Oklahoma City	0	6	7	4	0	0	0	7
Tulsa	0	6	7	----------	----------	0	0	----------
Texas:								
Dallas	0	19	22	----------	0	0	1	7
Fort Worth	11	8	5	----------	0	0	1	6
Galveston	0	1	0	----------	0	0	0	1
Houston	0	8	11	----------	1	0	0	3
San Antonio	0	5	3	----------	0	0	3	1
MOUNTAIN								
Montana:								
Billings	2	0	0	----------	0	0	0	0
Great Falls	10	0	0	----------	0	0	0	2
Helena	1	0	0	----------	0	0	0	0
Missoula	15	0	0	1	1	0	0	0
Idaho:								
Boise	5	0	2	----------	0	0	0	1
Colorado:								
Denver	39	14	11	----------	0	3	5	11
Pueblo	3	1	0	----------	0	22	0	0
New Mexico:								
Albuquerque	0	0	0	----------	0	0	0	0
Arizona:								
Phoenix	1	0	0	----------	0	0	0	3
Utah:								
Salt Lake City	11	4	1	----------	0	1	1	7
Nevada:								
Reno	0	0	0	----------	0	0	0	1
PACIFIC								
Washington:								
Seattle	14	5	7	----------	----------	0	13	----------
Spokane	26	3	1	----------	----------	0	0	----------
Tacoma	4	4	9	----------	0	0	0	0
Oregon:								
Portland	35	12	2	----------	0	2	9	3
Salem	0	0	0	1	0	0	0	0
California:								
Los Angeles	21	43	23	23	3	9	14	3
Sacramento	3	3	1	----------	0	0	10	6
San Francisco	8	15	5	2	0	3	1	3

City reports for week ended November 8, 1930—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	2	7	0	0	0	0	1	1	0	3	24
New Hampshire:											
Concord	0	0	0	0	0	0	0	0	0	0	9
Nashua	0	0	0	0	0	0	0	0	0	0	
Vermont:											
Barre	0	0	0	0	0	0	0	0	0	1	2
Burlington	1	0	0	0	0	0	0	0	0	0	8
Massachusetts:											
Boston	49	29	0	0	0	10	2	0	0	12	221
Fall River	2	5	0	0	0	1	0	0	0	3	22
Springfield	5	3	0	0	0	0	0	0	0	8	37
Worcester	9	20	0	0	0	4	0	0	0	0	38
Rhode Island:											
Pawtucket	1	3	0	0	0	0	0	0	0	0	17
Providence	8	9	0	0	0	1	0	0	0	9	68
Connecticut:											
Bridgeport	7	6	0	0	0	0	0	0	0	0	31
Hartford	4		0				0				
New Haven	4	3	0	0	0	0	0	1	0	6	41
MIDDLE ATLANTIC											
New York:											
Buffalo	20	20	0	0	0	10	0	0	0	7	114
New York	88	69	0	0	0	72	17	5	2	80	1,374
Rochester	6	21	0	0	0	2	1	0	0	7	88
Syracuse	6	6	0	0	0	2	0	0	0	2	60
New Jersey:											
Camden	5	2	0	0	0	2	0	0	0	0	34
Newark	11	5	0	0	0	7	0	0	0	13	94
Trenton	1	5	0	0	0	3	1	1	0	1	40
Pennsylvania:											
Philadelphia	60	110	0	0	0	36	5	2	1	11	454
Pittsburgh	34	54	0	0	0	11	1	2	1	1	199
Reading	2	1	0	0	0	1	0	0	0	0	25
Scranton	2	0	0	0			0	0		0	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	13	22	1	0	0	7	1	5	1	0	138
Cleveland	26	46	0	0	0	13	1	0	0	17	196
Columbus	9	15	0	0	0	8	0	1	0	0	88
Toledo	10	12	0	1	0	6	1	0	0	0	71
Indiana:											
Fort Wayne	2	0	0	0	0	1	1	0	0	0	36
Indianapolis	12	21	1	6	0	6	1	0	0	7	
South Bend	5	3	0	0	0	3	0	3	0	1	24
Terre Haute	4	3	1	0	0	0	0	0	0	0	20
Illinois:											
Chicago	87	169	0	0	0	28	4	1	0	41	615
Springfield	3	3	0	0	0	0	0	0	0	4	20
Michigan:											
Detroit	72	43	1	0	0	9	2	2	0	42	231
Flint	12	19	1	0	0	2	0	1	0	0	34
Grand Rapids	9	6	1	0	0	0	0	1	0	0	29
Wisconsin:											
Kenosha	1	2	0	0	0	0	0	1	0	3	5
Madison	1	4	0	0			0	0		4	
Milwaukee	18	7	0	0	0	2	0	0	0	30	118
Racine	4	6	0	0	0	0	1	0	0	0	8
Superior	3	8	0	0	0	2	0	0	0	6	8
WEST NORTH CENTRAL											
Minnesota:											
Duluth	9	1	0	0	0	0	0	0	0	11	21
Minneapolis	43	11	1	0	0	3	0	0	0	2	105
St. Paul	19	5	1	0	0	1	0	1	0	14	62

City reports for week ended November 8, 1930—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—contd.											
Iowa:											
Davenport	0	3	0	3			0	0		0	
Des Moines	10	6	1	5			0	0		0	32
Sioux City	2	5	0	0			0	0		2	
Waterloo	2		0				0				
Missouri:											
Kansas City	13	9	0	0	0	7	0	0	1	7	101
St. Joseph	3	7	0	0	0	1	0	0	0	0	14
St. Louis	33	22	0	0	0	12	3	1	1	4	223
North Dakota:											
Fargo	3	0	0	0	0	0	0	0	0	3	5
Grand Forks	1	0	0	0			0	0		0	
South Dakota:											
Aberdeen	0	2	0	0			0	0		0	
Sioux Falls	3	0	0	0			0	0		0	5
Nebraska:											
Omaha	5	2	1	3	0	2	0	0	0	3	60
Kansas:											
Topeka	4	0	1	0	0	0	0	0	0	3	5
Wichita	5	9	0	0	0	1	0	0	0	0	35
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	2	0	0	0	1	0	0	0	0	22
Maryland:											
Baltimore	16	16	0	0	0	17	3	1	2	11	245
Cumberland	0	0	0	0	0	0	0	4	0	0	10
Frederick	0	0	0	0	0	0	0	0	0	0	3
District of Col.:											
Washington	17	20	0	0	0	14	0	3	0	1	152
Virginia:											
Lynchburg	1	0	0	0	0	2	1	0	0	3	17
Norfolk	3	4	0	0	0	2	0	0	0	0	
Richmond	9	11	0	0	0	1	0	0	0	0	56
Roanoke	4	2	0	0	0	0	0	0	0	0	16
West Virginia:											
Charleston	2	3	0	0	0	1	0	3	0	2	17
Wheeling	2	1	0	0	0	0	0	0	0	0	15
North Carolina:											
Raleigh	1	0	0	0	0	0	0	0	0	0	13
Wilmington	2	0	1	0	0	1	0	0	0	0	11
Winston-Salem	5	2	0	0	0	1	0	0	0	1	19
South Carolina:											
Charleston	1	3	0	0	0	0	0	0	0	3	17
Columbia	1	1	0	0	0	0	0	1	0	0	14
Greenville	1	1	0	0	0	0	0	0	0	0	
Georgia:											
Atlanta	7	16	0	0	0	2	0	3	2	1	67
Brunswick	0	0	0	0	0	0	0	0	0	0	7
Savannah	1	2	0	0	0	2	0	1	0	0	37
Florida:											
Miami	0	1	0	0	0	1	0	0	0	0	19
St. Petersburg	0		0		0	0	0		0		16
Tampa	1	0	0	0	0	1	0	0	0	0	21
EAST SOUTH CENTRAL											
Kentucky:											
Covington	3	11	0	0	0	1	0	0	0	0	21
Tennessee:											
Memphis	6	9	0	0	0	5	2	0	0	0	77
Nashville	3	5	0	0	0	0	2	2	0	0	37
Alabama:											
Birmingham	5	17	0	0	0	4	1	0	0	0	74
Mobile	1	2	0	0	0	0	0	0	0	0	19
Montgomery	0	5	0	0			0	2		3	

City reports for week ended November 8, 1930—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	0	0	0	----	----	1	0	----	2	----
Little Rock	2	3	0	0	0	1	0	0	0	0	----
Louisiana:											
New Orleans	7	12	0	0	0	12	2	0	0	8	143
Shreveport	2	0	0	0	0	1	1	1	2	0	30
Oklahoma:											
Muskogee	2	0	0	0	0	0	0	2	0	0	----
Oklahoma City	3	6	1	1	0	0	0	0	0	0	31
Tulsa	2	4	0	0	----	----	0	0	----	0	----
Texas:											
Dallas	7	7	0	0	0	4	2	2	3	2	69
Fort Worth	2	7	0	1	0	3	0	0	0	0	33
Galveston	0	0	0	0	0	0	0	5	0	0	15
Houston	3	4	0	0	0	1	0	0	0	0	70
San Antonio	2	0	0	2	0	3	0	0	0	0	52
MOUNTAIN											
Montana:											
Billings	0	0	0	1	0	0	0	0	0	8	8
Great Falls	2	3	1	0	0	0	0	0	0	0	8
Helena	0	0	0	0	0	0	0	0	0	3	7
Missoula	1	0	0	0	0	0	0	0	0	10	4
Idaho:											
Boise	0	1	0	0	0	0	0	0	0	0	5
Colorado:											
Denver	10	16	1	0	0	5	1	1	0	10	86
Pueblo	1	0	0	0	0	0	1	1	0	3	8
New Mexico:											
Albuquerque	1	0	0	0	0	4	0	0	0	0	9
Arizona:											
Phoenix	2	0	0	0	0	4	0	0	0	0	11
Utah:											
Salt Lake City	8	12	0	0	0	1	2	0	0	10	34
Nevada:											
Reno	1	0	0	0	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle	8	20	1	0	----	----	1	6	----	5	----
Spokane	9	3	2	1	----	----	0	0	----	1	----
Tacoma	2	2	2	2	0	0	0	0	0	0	22
Oregon:											
Portland	8	5	3	0	0	1	1	0	0	0	66
Salem	1	0	0	0	0	0	0	0	0	2	----
California:											
Los Angeles	25	17	3	0	0	23	1	0	0	17	278
Sacramento	3	0	1	0	0	3	0	0	0	3	33
San Francisco	13	5	0	0	0	7	1	2	0	17	163

City reports for week ended November 8, 1930—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Maine:									
Portland	0	0	0	0	0	0	0	2	0
New Hampshire:									
Nashua	0	0	0	0	0	0	0	1	0
Massachusetts:									
Boston	1	0	0	0	0	0	2	7	0
Worcester	0	0	0	0	0	0	0	1	0
MIDDLE ATLANTIC									
New York:									
New York	9	2	4	1	0	0	7	7	2
Rochester	0	0	0	0	0	0	0	1	0
Syracuse	0	0	0	0	0	0	0	1	0
Pennsylvania:									
Philadelphia	1	0	3	0	0	0	1	0	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	0	2	0	0	0	0	0	4	1
Cleveland	1	0	0	0	0	1	1	11	0
Columbus	0	0	0	0	0	0	0	3	0
Indiana:									
Fort Wayne	0	0	0	0	0	0	0	2	0
Illinois:									
Chicago	2	1	0	0	0	0	2	12	0
Michigan:									
Detroit	0	0	1	1	0	0	0	1	0
Flint	1	0	0	0	0	0	0	0	0
Grand Rapids	0	0	0	0	0	0	1	2	0
Wisconsin:									
Milwaukee	0	0	0	0	0	0	0	2	1
Racine	1	1	1	1	0	0	0	3	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	0	1	0	0	0	0	0	0	0
Minneapolis	0	1	0	0	0	0	0	4	0
St. Paul	1	0	0	0	0	0	0	4	0
Iowa:									
Des Moines	0	0	0	0	0	0	0	1	0
Missouri:									
Kansas City	0	1	0	0	0	0	0	2	1
St. Joseph	1	0	0	0	0	0	0	0	0
St. Louis	2	1	0	0	0	0	1	0	0
Kansas:									
Topeka	0	0	0	0	0	0	0	1	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	1	0	0	0	0	0	1	2	0
District of Columbia:									
Washington	1	1	0	0	0	0	0	0	0
West Virginia:									
Charleston	1	1	0	0	0	0	0	0	0
Wheeling	0	0	0	0	0	0	0	1	0
North Carolina:									
Winston-Salem	0	0	0	0	0	1	0	0	0
South Carolina:									
Charleston	0	0	0	0	3	0	0	0	0
Georgia:									
Savannah	1	1	0	0	0	0	0	0	0
Florida:									
Tampa	0	0	1	0	0	0	1	0	0

City reports for week ended November 8, 1930—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	1	0	0	0	0	1	0	0	0
Alabama:									
Birmingham	1	0	0	0	0	0	0	0	0
Mobile	0	0	0	0	0	0	0	1	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	0	0	0	0	1	1	0	0	0
Shreveport	0	0	0	0	0	1	0	0	0
Oklahoma:									
Muskogee	1	1	0	0	0	0	0	0	0
Oklahoma City	1	0	0	0	0	0	0	0	0
Texas:									
Dallas	0	0	0	0	2	0	0	0	0
Fort Worth	0	0	0	0	0	2	0	1	0
Galveston	0	0	0	0	0	0	0	3	0
Houston	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Colorado:									
Denver	0	3	0	0	0	0	0	0	0
New Mexico:									
Albuquerque	1	0	0	0	0	1	0	0	0
Phoenix	0	0	0	0	0	0	0	1	1
PACIFIC									
California:									
Los Angeles	0	0	0	0	0	0	0	4	1
Sacramento	0	0	0	0	0	0	0	1	0
San Francisco	0	0	0	0	1	0	0	8	1

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended November 8, 1930, compared with those for a like period ended November 9, 1929. The population figures used in computing the rates are approximate estimates, authoritative figures for many of the cities not being available. The 98 cities reporting cases have an estimated aggregate population of more than 32,000,000. The 91 cities reporting deaths have more than 30,500,000 estimated population.

Summary of weekly reports from cities October 5 to November 8, 1930—Annual rates per 100,000 population, compared with rates for the corresponding period of 1929 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Oct. 11, 1930	Oct. 12, 1929	Oct. 18, 1930	Oct. 19, 1929	Oct. 25, 1930	Oct. 26, 1929	Nov. 1, 1930	Nov. 2, 1929	Nov. 8, 1930	Nov. 9, 1929
98 cities	72	112	71	135	[2] 79	134	[3] 93	143	[4] 84	156
New England	53	94	64	128	97	110	[5] 85	114	[6] 79	119
Middle Atlantic	42	75	35	88	36	86	[7] 48	99	35	104
East North Central	100	139	92	155	106	163	131	168	110	195
West North Central	66	123	74	167	65	137	91	160	[8] 75	200
South Atlantic	106	139	92	180	97	139	106	144	79	125
East South Central	108	232	162	171	202	185	331	205	243	219
West South Central	64	255	127	339	[2] 88	396	108	434	213	480
Mountain	43	0	17	70	60	26	34	17	120	61
Pacific	94	60	102	87	118	121	78	111	109	97

MEASLES CASE RATES

98 cities	22	22	36	30	[2] 37	30	[3] 61	38	[4] 58	44
New England	31	16	44	58	69	29	[5] 125	27	[6] 94	20
Middle Atlantic	16	12	23	17	30	21	[7] 29	33	35	20
East North Central	11	29	14	40	16	47	18	40	16	68
West North Central	76	23	140	31	140	21	288	52	[8] 275	94
South Atlantic	11	9	7	9	13	9	18	15	44	9
East South Central	20	14	7	0	27	21	47	0	94	7
West South Central	0	4	4	4	[2] 4	15	0	0	0	4
Mountain	112	61	189	52	137	26	403	244	223	61
Pacific	24	65	66	72	21	63	28	58	28	113

SCARLET FEVER CASE RATES

98 cities	97	114	123	138	[2] 123	138	[3] 165	155	[4] 172	191
New England	106	162	148	173	144	162	[5] 195	177	[6] 204	276
Middle Atlantic	54	48	90	69	82	75	[7] 139	89	140	102
East North Central	137	173	179	214	172	192	220	226	234	295
West North Central	91	140	114	173	114	173	159	160	[8] 137	187
South Atlantic	115	139	115	127	148	174	152	139	145	167
East South Central	182	123	148	232	169	109	277	205	331	178
West South Central	37	130	78	103	[2] 73	149	71	149	97	152
Mountain	283	148	232	157	163	235	335	226	275	357
Pacific	87	87	59	113	104	104	54	181	111	176

SMALLPOX CASE RATES

98 cities	2	7	2	12	[2] 2	10	[3] 3	13	[4] 2	9
New England	0	0	0	0	0	0	[5] 0	0	[6] 0	2
Middle Atlantic	0	1	0	0	0	0	[7] 0	0	0	0
East North Central	2	3	4	7	2	12	1	20	4	15
West North Central	6	13	0	21	0	31	19	42	[8] 6	29
South Atlantic	0	0	0	0	0	0	0	0	0	0
East South Central	0	0	0	0	0	0	0	14	0	0
West South Central	4	4	4	0	[2] 8	0	4	27	7	8
Mountain	0	96	26	122	0	52	9	61	9	17
Pacific	7	34	0	84	21	51	17	29	7	19

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimates as of July 1, 1930, and 1929, respectively.
[2] Fort Smith, Ark., not included.
[3] Concord, N. H., and Buffalo, N. Y., not included.
[4] Hartford, Conn., and Waterloo, Iowa., not included.
[5] Concord, N. H., not included.
[6] Hartford, Conn., not included.
[7] Buffalo, N. Y., not included.
[8] Waterloo, Iowa, not included.

Summary of weekly reports from cities, October 5 to November 8, 1930—Annual rates per 100,000 population, compared with rates for the corresponding period of 1929—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Oct. 11, 1930	Oct. 12, 1929	Oct. 18, 1930	Oct. 19, 1929	Oct. 25, 1930	Oct. 26, 1929	Nov. 1, 1930	Nov. 2, 1929	Nov. 8, 1930	Nov. 9, 1929
98 cities	21	26	17	17	[2] 18	15	[3] 14	11	[4] 11	9
New England	20	16	9	9	27	16	[5] 4	7	[6] 5	11
Middle Atlantic	14	10	11	8	13	8	[7] 10	8	5	8
East North Central	9	8	7	10	5	7	8	6	9	6
West North Central	9	8	15	25	8	6	13	17	[8] 4	12
South Atlantic	64	26	57	24	37	21	29	13	29	13
East South Central	47	27	47	68	94	48	115	34	27	21
West South Central	52	27	22	15	[2] 27	42	15	19	30	11
Mountain	43	749	34	192	77	200	0	78	17	17
Pacific	19	7	26	19	19	5	21	2	19	7

INFLUENZA DEATH RATES

91 cities	5	8	5	8	5	9	[3] 9	11	[6] 9	8
New England	4	0	7	2	2	0	[5] 2	2	[6] 2	4
Middle Atlantic	7	8	4	6	7	12	[7] 10	9	13	8
East North Central	3	8	4	9	3	10	6	9	6	8
West North Central	6	3	3	9	9	3	9	6	3	3
South Atlantic	2	11	5	9	4	4	16	19	9	4
East South Central	0	22	0	7	7	22	15	30	29	37
West South Central	11	16	8	16	8	20	23	27	15	12
Mountain	9	26	9	17	9	17	17	26	9	0
Pacific	0	6	9	6	9	3	3	3	9	16

PNEUMONIA DEATH RATES

91 cities	73	80	74	97	89	108	[3] 100	105	[6] 104	105
New England	64	74	80	97	91	63	[5] 96	74	[6] 82	119
Middle Atlantic	78	87	74	118	108	144	[7] 112	113	122	115
East North Central	55	65	51	81	53	91	88	101	75	78
West North Central	86	54	53	69	59	72	95	135	86	108
South Atlantic	79	103	88	81	125	112	123	116	139	137
East South Central	140	104	184	112	96	134	74	157	155	90
West South Central	119	113	96	90	134	86	111	105	119	125
Mountain	94	122	189	122	77	122	163	131	189	131
Pacific	49	57	80	82	74	44	40	31	52	72

[2] Fort Smith, Ark., not included.
[3] Concord, N. H., and Buffalo, N. Y., not included.
[4] Hartford, Conn., and Waterloo, Iowa, not included.
[5] Concord, N. H., not included.
[6] Hartford, Conn., not included.
[7] Buffalo, N. Y., not included.
[8] Waterloo, Iowa not included.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Week ended November 8, 1930.—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended November 8, 1930, as follows:

Province	Cerebro-spinal fever	Influenza	Poliomyelitis	Smallpox	Typhoid fever
Prince Edward Island [1]					
Nova Scotia			1		
New Brunswick					9
Quebec		4			32
Ontario		1	17	9	9
Manitoba			3		7
Saskatchewan					1
Alberta			2		2
British Columbia	1				5
Total	1	5	23	9	65

[1] No case of any disease included in the table was reported during the week.

Quebec Province—Communicable diseases—Week ended November 8, 1930.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended November 8, 1930, as follows:

Disease	Cases	Disease	Cases
Chicken pox	105	Mumps	42
Diphtheria	46	Scarlet fever	109
Erysipelas	5	Tuberculosis	83
German measles	1	Typhoid fever	33
Influenza	4	Whooping cough	80
Measles	80		

CHINA

Manchuria—Plague.—According to information dated October 9, 1930, the epidemic of bubonic plague in northern Manchuria and Mongolia was still in progress. Between July 29 and September 21, 1930, about 67 deaths from the disease were reported in 13 villages near the Kaitung station, on the Ssupingkai-Taonan Railroad. In a Mongolian village, Hain An Li, 10 miles from the Taipingchuan station, plague appeared on August 15, and caused 26 deaths in about three weeks. No further cases had been reported.

In Payintala, near Tungliao City, several deaths from plague were reported to have occurred toward the end of August. On September 1, plague appeared in Suchuantun, a village situated about 20 miles west of the Taonan station, in the Tuchuan district. Eight deaths occurred within 10 days. No further cases had been reported. A case was reported in a village just outside Tungliao City on September 12.

The first locality affected in the vicinity of the Nungan district was Halahaichentzu, in the Kuerlossu principality in Inner Mongolia, on August 24. Several deaths resulted. The infection was spread to Kungchiatun village, in the Nungan district, where some 30 deaths occurred about August 24. From here the epidemic spread toward the northeast, involving several villages. Deaths from plague occurring in this neighborhood were estimated at about 150.

Efforts were being made to prevent the spread of the infection to railway towns, and stringent measures were being taken in the villages to combat the epidemic.

CUBA

Provinces—Communicable diseases—Four weeks ended October 25, 1930.—During the four weeks ended October 25, 1930, cases of certain communicable diseases were reported in the Provinces of Cuba as follows:

Disease	Pinar del Rio	Habana	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cancer		2		3			5
Chicken pox		5		1			6
Diphtheria	2	11	1	2	3	1	20
Malaria	5	16		1	8	24	54
Measles		7			3		10
Paratyphoid fever	2			1		1	4
Scarlet fever		4					4
Tetanus (infantile)	1				1		2
Typhoid fever	5	18	3	30	3	13	72

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

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. 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.

CHOLERA

[C indicates cases; D, deaths; P, present]

Place		May 4-31, 1930	June 1-28, 1930	June 29-July 26, 1930	July 27-Aug. 23, 1930	Week ended— Aug. 30, 1930	September, 1930 6	13	20	27	October, 1930 4	11	18	25	November, 1930 1	8	15
Afghanistan	C			[1] P	P												
China:																	
Amoy	C							1	1								
	D							1	1								
Canton	C	3	2	2							1			1			
	D			1													
Shanghai	C					8	4		22	23	5	6	4	1			
	D						1	1	1	2			2				
Shensi Province	C								P								
Swatow	C	3	7		3	1	1										
Tientsin	C				2	1											
India	C	56,311	37,102	26,121	42,893	14,249	11,823	13,072	12,407								
	D	44,878	25,711	13,822	22,358	5,879	5,732	6,409	5,939								
Bassein	C	7					1										
	D	5															
Bombay	C				14			1		1	3	1	11	17			
	D				8			2		1	2		8	10			
Calcutta	C	609	327	220	63	8	10		9	4	4	7	9	7			
	D	372	179	128	30	3	3		6	3	4	4	4				
Madras	C				1							2					
	D				1							2					
Negapatam	C		1														
	D		1														
Rangoon	C	9	6	1	1	1	1					1					
	D	3	4	1	1	1						1					
India (French):																	
Chandernagor	C	6	3	1			1				1	2					
	D	6	2								1						
Karikal	C		3														
	D		3														
Pondicherry	C											1					
	D											1					

[1] An outbreak of cholera was reported in June, 1930, in Afghanistan.

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

CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place		May 4–31, 1930	June 1–28, 1930	June 29–July 26, 1930	July 27–Aug. 23, 1930	Week ended— Aug. 30, 1930	September, 1930 6	13	20	27	October, 1930 4	11	18	25	November, 1930 1	8	15
India (Portuguese)	C				1		1										
Indo-China (see also table below):																	
Pnompenh	C	1	40	32	11					1		1		1			
	D	5	18	22	6												
Saigon and Cholon	C	160	48	10	5					1	1			1			
	D	101	23	3	1												
Philippine Islands:[1]																	
Ports—																	
Cebu	C		1	65	9	1	1										
	D			36	8	1	1										
Iloilo	C			29	64	3	4	1	2	1							
	D			22	56	4	5	2	3	2			2				
Manila	C	1			1	16	13	10	4	2	1	2					
	D					5	6	1			1						
Provinces—																	
Antique	C				20	2	25	12	8	12		28					
	D				12	1	14	12	7	8		10					
Bohol	C				138	30	14	4	1								
	D				79	12	6	2									
Bulacan	C		3	4	1	1	2	1			2						
	D		1			1	1				1						
Capiz	C			3	2	1											
	D			2	2												
Cebu	C	1	355	713	85	1	16	8									
	D	1	170	303	50	1	6	4									
Iloilo	C		2	309	571	71	60	61	46	18	7	13	12	10	10	4	6
	D		1	193	376	45	45	35	26	15	6	7	12	7	7	3	6
La Union	C			1													
Leyte	C		47	11													
	D		19	11													
Masbate	C		10	92	34												
	D		3	35	14												
Misamis, Occidental	C			3													
	D			3													

Negros, Occidental	C	10	140	568	343	40	43	24	15	8	10	5	5	12	3	19	22
	D	7	88	368	237	32	30	20	9	6	5	6	3	12	3	12	14
Negros, Oriental	C			23	8												
	D			13	4												
Nueva Acija	C			1													
	D			1													
Pampanga	C		2	2		1											
Pangasinan	C			3	1												
	D			2	1												
Rizal	C		1	1													
	D		1	1													
Samar	C				18			3	1	4			3	6	3	4	3
	D				16			2		4			3	5	1	4	2
Sorsogon	C															5	
	D															4	
Surigao	C				28	1				(1)							
	D				17	2											
Tarlac	C				1												
Siam	C	33	27	20	3							1	3	3			
	D	21	19	9	2								1	3			
Bangkok	C	9	12	8	1							1	2	1	2		
	D	3	5	3	1							1	1	1	1		
Songkla	C			10													
	D			6													
On vessel:																	
S. S. Malwa from Shanghai	D								1								
S. S. Sassari at Massoua, from Jeddah	C	1															
	D	1															
On small boat at Port Cebu, from Bantayan Island	C		1														
	D		1														

Place		April, 1930	May, 1930	June, 1930	July, 1930			August, 1930			September, 1930			October, 1930	
					1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20
Indo-China (French) (see also table above):															
Annam [3]	C	60	23	16			1		3						
Cambodia [3]	C	24	88	144			43	37	22		23	13	2	16	
Cochin-China [3]	C	48	671	273			46	22	5		9	6	18	14	6

[1] Figures for cholera in the Philippine Islands are subject to correction.
[2] During the period from Aug. 24 to Sept. 26, 1930, 26 cases of cholera with 17 deaths were reported in Manitum, Surigao Province, Philippine Islands.
[3] Reports incomplete.

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

PLAGUE

[C indicates cases; D, deaths; P, present]

Place		May 4–31, 1930	June 1–28, 1930	June 29–July 26, 1930	July 27–Aug. 23, 1930	Week ended— Aug. 30, 1930	Sept. 6	Sept. 13	Sept. 20	Sept. 27	Oct. 4	Oct. 11	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15
Algeria:																	
Algiers	C			3	7	1	2	6	2	1	1	2	2	5		1	
	D													3			
Constantine	C		1	1													
Oran	C			3	4	1	2	3	4		4	4	2	1			
	D							1				2	1				
Plague-infected rats				2			10			2			4	1			
Philippeville	C						1			1		1	1	1		1	
Belgian Congo	C			2	2	2	3										
	D			2	2		3										
British East Africa (see also table below): Uganda	C	227	406	228	236	44	40	57	61								
	D	195	328	213	229	37	39	55	60								
Canary Islands: Las Palmas	D				1												
Ceylon:																	
Colombo	C	6	1	3	2	2				1	1		1				
	D	5	1	3	2	3				1	1		1				
Plague-infected rats			1	1													
China:																	
Manchuria—Tungliau and Nungan	C				30			29	P	2							
Shensi	C								P					P			
Dutch East Indies:																	
Batavia and West Java	C	82	98	84	83	13	14	26	26	22	14						
	D	82	98	84	83	12	14	26	24	22	14						
Plague-infected rats		5	4		1		1	1	1								
Java and Madura	D	185	202	217	188	55	54	67	84	75	68						
Ecuador (see table below).																	
Egypt:																	
Alexandria	C	13	19	23	11	3	3	2	2	2	1	3	3	2	1	1	3
	D	3	9	10	6	5	1	2		3	1	1	1	3		2	2
Assiout	C	20	9	2												3	
	D	5	3	2												1	
Beni-Suef	C				1												
Dakahlieh	C	11	1														
	D	2															

Gharbieh	C				3													
	D				1													
Girga	C			1		1												
Minieh	C	7	10	3														
	D	1	1															
Port Said	C	2	2	1	1										1			
France:																		
Marseille	C					2	2	1					4	2	1			
St. Ouen	C			1														
	D			1														
Gambia	C				4													
	D				4													
Greece (see also table below):																		
Patras	C		1	1														
Pyrgos	C										2							
Hawaii Territory, Hamakua, Hawaii: Plague-infected rats			1															
India	C	648	240	377	877	593	600	704	600									
	D	635	187	256	477	262	201	328	251									
Bassein	C					1		1								1		
	D					1		2										
Bombay	C	6	3	1			1			1			1	1				
	D	5	2	1			1				1		1					
Plague-infected rats		81	26	52	35	12	9	11	15	21	13	16	14	2				
Madras Presidency	C	38	39	47	81		47	41	39			7						
	D	11	22	31	34		23	13	21			9						
Rangoon	C	4	1	2	3	2	1	5	2	2						1		
	D	3	1	2	2	2	1	4	2	2						1		
Plague-infected rats		5	1	6	7	2		2	4		1			1				
India (Portuguese)	D	7			P													
Indo-China (see also table below):																		
Pnompenh	C	8	6	2	4	2	1			1	1							
	D	1	7	2						1	1	1		1				
Saigon and Cholon	C	1	2		1		1			1								
	D		1															
Iraq: Baghdad	C	37	28	18	9					1								
	D	18	15	7	3					1								
Kwang-Chow-Wan	C	34	31	4	1													
Madagascar (see also table below): Tamatave	C		1	1	2		1	P			1			3				
	D										1			3				
Morocco	C	71	3	1	15									4		P		
	D	34	4		2													
Nigeria: Lagos	C	2	5	1	7	1	1	3	1		3		2					
	D	2	5	1	7	1	1	3	1		3		2					
Plague-infected rats		17	11	18	8		4	2	4									
Senegal (see table below).																		
Siam	C	5			7	3								3	1			
	D	4			6	2								3	1			
Bangkok	C	5			3													
	D	4			2													
Nagara Rajsima	C				2		1											
	D				2		1											
Syria: Beirut	C		12	9	2	3	2							1		3	1	
Tripolitania	C				2													

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

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		May 4–31, 1930	June 1–28, 1930	June 29–July 26, 1930	July 27–Aug. 23, 1930	Week ended— Aug. 30, 1930	September, 1930 6	13	20	27	October, 1930 4	11	18	25	November, 1930 1	8	15
Tunisia:																	
Sfax district	C	21	9	6	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Tunis	C	1	1	5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	D	-----	1	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Union of Socialist Soviet Republics:																	
Salsk Region	C	-----	2	5	7	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	D	-----	1	4	5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Stavropol Region	C	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	D	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Union of South Africa:																	
Cape Province	C	P	1	1	1	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
	D	-----	-----	1	1	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
Orange Free State	C	-----	-----	-----	-----	1	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----
	D	-----	-----	-----	-----	1	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----

Place		May, 1930	June, 1930	July, 1930	Aug., 1930	Sept., 1930	Oct., 1930
British East Africa (see also table above):							
Kenya	C	171	107	97	87	53	7
Ecuador: Guayaquil	C	0	0	-----	-----	-----	-----
	D	0	0	-----	-----	-----	-----
Plague-infected rats		0	0	-----	-----	-----	-----
Greece (see also table above)	C	-----	1	-----	-----	-----	-----
Indo-China (see also table above)	C	-----	11	1	2	4	-----
Madagascar (see also table above):							
Ambositra Province	C	1	-----	-----	-----	-----	-----
	D	1	-----	-----	-----	-----	-----
Antisirabe Province	C	19	3	24	-----	-----	-----
	D	19	3	24	-----	-----	-----
Miarinarivo Province	C	5	1	1	-----	-----	-----
	D	5	1	1	-----	-----	-----
Moramanga Province	C	1	3	-----	2	-----	-----
	D	-----	3	-----	2	-----	-----

Place		May, 1930	June, 1930	July, 1930	Aug., 1930	Sept., 1930	Oct., 1930
Madagascar (see also table above)—Con.							
Tananarive Province	C	15	16	28	-----	-----	-----
	D	14	16	28	-----	-----	-----
Senegal:							
Baol [1]	C	13	2	62	79	48	53
	D	11	2	48	20	23	35
Dakar [1]	C	52	53	140	108	3	-----
	D	42	117	122	90	8	-----
Louga [1]	C	54	60	138	75	61	37
	D	27	21	103	33	30	21
Thies [1]	C	21	52	54	34	12	16
	D	8	35	30	20	4	10
Tivaouane [1]	C	135	43	119	110	20	43
	D	69	28	70	54	14	25

[1] Incomplete reports.

SMALLPOX

Place		May 4–31, 1930	June 1–28, 1930	June 29–July 26, 1930	July 27–Aug. 23, 1930	Week ended— Aug. 30, 1930	September, 1930 6	13	20	27	October, 1930 4	11	18	25	November, 1930 1	8	15
Algeria:																	
Algiers	C	3		1	3												
Constantine	C		1	1												1	
Arabia: Aden	C			1													
Bolivia: La Paz.[1]																	
British East Africa (see also table below):																	
Tanganyika	C	409	1,610	168	242	196	288		36	27		4					
	D	70	301	42	37	4	55		1	1		1					
British South Africa:																	
Northern Rhodesia	C	59															
	D	9															
Southern Rhodesia	C	155	79	31	1	1				14	39						
	D	13															
Canada:																	
Alberta	C			5	1				1		13	8	1				
British Columbia—Vancouver	C	4	2	6	6			1	1	1			1		3		
Manitoba	C	10	4			1											
Ontario	C	82	47	24	20	2	2	6		1		3	15		20	9	
North Bay	C	1															
Ottawa	C	25	15	13	7	2	1	2						14		9	14
Toronto	C	4	4	1				1									
Quebec	C		4	3	5												
Montreal	C				7												
Saskatchewan	C	39	22	5	8			1			3				2		
Regina	C	4															
China:																	
Changking	C	P	1	P	P	P	P	P	P	P	P	P					
Foochow	C	P	P	P	P		P		P		P						
Hong Kong	C	12	4	2													
	D	9	3	1													
Manchuria—																	
Harbin	C	20	4	3	2												
Kwantung—Dairen	C	8	16	8													
	D	4	1														
Nanking	C	P	P	P	P	P	P	P	P	P	P	P					
Shanghai—																	
Foreigners only	C	2	5	4	3			18					1	1			
Including natives	D	5	3					2									
Swatow	D	6	4	1	4	1	1			1			3	1			
Tientsin	C	1								1							

[1] From Jan. 1 to May 31, 1930, 44 deaths from smallpox were reported in La Paz, Bolivia.

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

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		May 4–31, 1930	June 1–28, 1930	June 29–July 26, 1930	July 27–Aug. 23, 1930	Week ended— Aug. 30, 1930	September, 1930 6	13	20	27	October, 1930 4	11	18	25	November, 1930 1	8	15
Chosen (see table below).																	
Colombia:																	
Barranquilla	C				2												
Buenaventura	C	4	6	10	2												
Cali	D										1		1				
Costa Rica:																	
Port Limon	C	2	2														
San Jose [2]	C	2															
Curacao (alastrim)	C	2	1	2	1												
Dutch East Indies:																	
Borneo	C	16	12	2													
	D	1	1														
Java—																	
Batavia and West Java	C	12	13	8	12	2	5	2	2	10	2	1					
	D	7	3	5	5	2		1	1	1	1	1					
East Java and Madura	C			1													
Sanggi Islands	C	26		11	36	14											
	D	5		3	2	3											
Egypt: Port Said	C	1		3													
France (see table below).																	
Great Britain:																	
England and Wales	C	1,417	926	529	344	99	106	75	61	82	74	44	125	86	87		
Ashton under Lyne	C	17	7	8													
Bradford	C	2		1							1	1	1				
Cardiff	C			2										1			
Leeds	C			1										1			
London	C	637	498	250	178	43	44	36	41	30	34	23	33	29	32		
London and Great Towns	C	1,078	753	408	285	79	84	51	54	55	56	32	80	52	58		
Stoke-on-Trent	C	62	32	9	2			1	1			1			1		
Scotland	C		4	1			5										
	D			1													
Honduras: Naco	C							5									
India	C	22,835	12,962	7,630	4,877	830	940	610	751								
	D	5,451	3,531	2,348	1,246	202	209	119	150								
Bombay	C	218	113	50	12	2	1	1	2								
	D	161	79	33	10	2	1	2									

Calcutta	C	302	161	73	25	4	5	3	2	3	4	3	2	2			
	D	258	146	56	21	3	4	1	1	3	4	3	1	2			
Cochin	C	37	16	6	14	1	1		1			8	4	3			
	D	8	4			1						1		1			
Karachi	C	14	7	1	4			1	3								
	D	4	3		3				2								
Madras	C	72	35	49	38	9	11	6	8	4	4	8	3	2			
	D	15	10	12	11	1	1	1	3	1	2	3	2				
Moulmein	C	89	21	18	2	1											
	D	21	7	1	1			1									
Negapatam	C	1	2	4	4	1	2		6	4	2	5	3	2			
Rangoon	C	6	9		3								2				
	D	1	2														
Tuticorin	C	5	1										1				
Vizagapatam	C	5	1									1					
India (French):																	
Chandernagor	C	24	19	4				1	2			3					
	D	7	3	3			1	1				1					
Karikal	C	12	11	2	9		5			1							
	D	3	8	2	9		2			1							
Pondicherry Province	C	40	23	26	22	11	7	7	10	11	10	6		1			
	D	36	23	25	22	11	7	7	8	11	8	6		1			
India (Portuguese)	C	47	28	1	9	1	2		1								
	D	8	10	1	2												
Indo-China (see also table below):																	
Pnompenh	C	3		1								2					
	D		1	1	1												
Saigon and Cholon	C	3	1		1	1									2		
	D	2			3	1									2		
Iraq:																	
Baghdad	C	1	1	3	1				1		2						
	D	1		1	1												
Mossoul Liwa	C	21	4	67						63		4	2			6	
	D	3	1	20						27							
Jamaica (alastrim)	C	2															
Macao	D	1															
Mexico (see also table below):																	
Jalisco (State) Guadalajara	D	7	15	4	1						2		1	1		1	
Juarez	C		6		2			1		1				1			
	D		1		1												
Mexico City and surrounding territory	C	80	77	37	10	7	2	1	2	1	3	5	4				
	D	32	17	8	6	1	1	1	2			1	2				
Progreso	C	1															
	D	1	1														
Morocco (see table below).																	
Nigeria: Lagos	C		1														
Poland	C	3	2														
Portugal:																	
Lisbon	C	8	10	13	50	7	8		12	4	5		7	12			
Oporto	C				1												

[1] 5 cases of smallpox were reported Apr. 14, 1930, in Costa Rica, outside of city of San Jose.

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

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		May 4–31, 1930	June 1–28, 1930	June 29–July 26, 1930	July 27–Aug. 23, 1930	Week ended— Aug. 30, 1930	Sept. 6	Sept. 13	Sept. 20	Sept. 27	Oct. 4	Oct. 11	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15
							September, 1930				October, 1930				November, 1930		
Siam	C	2		6							1						
	D			3													
Somaliland, British: Boales	C										1						
	D										1						
Spain	C		12	5	2		4	1									
Straits Settlements	C	11	9	11	8	1	2	2	1	1	1	1	2	3	3		
	D	3	2	3	3		1					1			1		
Sudan (Anglo-Egyptian)	C	19	67	12	42	102	5	20	1	25	1	56		3			2
	D	2	3	1	3	50	2			2		5					1
Sudan (French) (see table below).																	
Switzerland: Berne Canton	C			1	2					1							
Syria (see table below).																	
Taiwan: Taihoku (see table below).																	
Tunisia: Tunis	C	2	2	1					2								
Turkey (see table below).																	
Union of South Africa:																	
Cape Province	C	P		P			P	P	P								
Orange Free State	C			P	P												
Transvaal	C				P	P	P	P	P	P							
Upper Volta	C	1	13														
On vessel:																	
S. S. Naldera, at Port Said	C	1															
S. S. Manoa, from Honolulu to San Francisco	C			1													

Place		April, 1930	May, 1930	June, 1930	July, 1930			August, 1930			September, 1930			October, 1930	
					1–10	11–20	21–31	1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20
Indo-China (see also table above)	C	261	305	213			238	59	34		54	52	86	32	62
Sudan (French)	C	521	274	76		34				39		P			17
	D	36	32	18						3					2
Syria: Beirut	C	19	7	7			2	1							
Taiwan: Taihoku	C	12													

Place		April, 1930	May, 1930	June, 1930	July, 1930	Aug., 1930	Sept., 1930
British East Africa (see also table above):							
Kenya	C	174	171	142	186	------	------
Uganda	C	------	78	------	------	------	------
	D	------	69	------	------	------	------
Chosen	C	253	107	------	3	2	------
	D	53	35	------	------	------	------
Seishin	C	5	2	1	2	------	------
	D	1	1	------	------	------	------
France	C	58	51	------	------	------	------
Mexico: Durango (see also table above)	D	4	4	3	3	3	2
Morocco	C	10	18	5	3	8	1
Turkey	C	3	16	------	------	------	------

TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

Place		Apr. 6-May 3, 1930	May 4-31, 1930	June 1-28, 1930	June 29-July 26, 1930	Week ended— August, 1930 2	9	16	23	30	September, 1930 6	13	20	27	October, 1930 4	11	18	25	Nov. 1, 1930
Algeria:																			
Algiers	C	8	15	3	6	------	------	------	2	------	3	------	------	------	------	------	------	------	------
Constantine Department	C	15	6	12	2	------	------	------	3	------	------	------	------	------	2	------	------	1	------
Oran	C	------	3	4	3	------	1	------	------	1	------	------	------	------	------	1	2	------	------
Bolivia: La Paz.[1]																			
Brazil: Porto Alegre	C	------	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Bulgaria	C	15	6	16	10	------	1	------	------	------	2	2	------	2	------	1	------	------	------
	D	1	2	1	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------
China:																			
Manchuria—Harbin (see also table below)	C	52	13	8	2	2	------	------	------	2	------	------	------	------	------	------	------	------	------
Shanghai	C	------	------	------	------	------	1	------	------	------	------	------	------	------	------	------	------	------	------
Chosen (see table below).																			
Czechoslovakia (see table below).																			
Egypt:																			
Alexandria	C	1	------	1	1	------	------	1	------	------	1	1	1	1	------	------	------	------	------
Beheira Province	C	2	49	45	15	------	------	------	------	------	------	------	1	------	------	------	------	------	------
	D	------	13	4	2	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Cairo	C	------	------	------	------	2	------	------	5	------	------	1	------	------	------	------	------	------	------
Port Said	C	------	------	------	------	------	------	------	4	------	1	------	------	------	1	------	------	1	------

[1] 12 deaths from typhus fever were reported in La Paz, Bolivia, from Jan. 1 to May 31, 1930.

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

TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place		Apr. 6–May 3, 1930	May 4–31, 1930	June 1–28, 1930	June 29–July 26, 1930	Week ended— August, 1930 2	9	16	23	30	September, 1930 6	13	20	27	October, 1930 4	11	18	25	Nov. 1, 1930
Great Britain: Scotland—																			
Dunfermline	C				1														
Glasgow	C		1																
	D		1																
Greece (see table below).																			
Ireland:																			
Irish Free State—																			
Galway County—Oughterard	C				2														
Kerry County—Dingle	C	5																	
Leitrim County—Mohill	C			9	1														
Mayo County—																			
Ballina	C		2	1	1														
Castlebar	C								1										
Swinford	C		14																
Westport	C				2	1													
Roscommon County—																			
Roscommon	C				1														
Strokestown	C				1														
Wicklow County—Shillelagh	C			4	2														
Latvia (see table below).																			
Lithuania (see table below).																			
Mexico:																			
Durango	D												1	1		1			
Mexico City, including municipalities in Federal District	C	4	6	9	5	2	2	2	3	2	2	3				3	5		
	D	4	3	1		1	1				1	1				2			
Morocco	C	15	11	15	11				8		2							1	
	D	3															1		
Palestine	C	1	2	2	6		1	1	1		1	1	1		1	1	1		
Poland	C	243	171	117	36	10	15	2	7	2	3	6	12	3	6	6	7	7	
	D	15	5	11	4	1		1	1		1			1			1		
Portugal:																			
Lisbon	C	4																	
Oporto	C	1						1							1	1	1		2

Rumania	C	186	227	58	28	5	------	2	2	1	------	1	2	3	------	------	------	------	------
	D	11	35	5	8	2	------	------	------	------	------	------	------	------	------	------	------	------	------
Spain: Valencia	C	------	------	3	3	------	------	------	------	------	------	1	------	------	------	------	1	------	------
	D	------	------	------	1	------	------	------	------	------	------	1	------	------	------	------	1	------	------
Tunisia	C	------	6	18	24	2	5	------	3	1	1	------	4	1	1	1	9	------	------
Turkey (see table below).																			
Union of South Africa:																			
Cape Province	C	P	P	P	P	P	P	P	P	P	P	P	P	P	P	------	------	------	------
Municipality of East London	C	------	------	------	1	------	------	------	------	------	------	------	2	------	------	1	------	------	------
Natal	C	P	P	P	1	P	P	P	------	------	------	P	------	------	P	------	------	------	------
Orange Free State	C	------	P	P	P	P	P	P	P	P	P	P	P	------	------	------	------	------	------
Transvaal	C	P	------	------	P	P	P	P	------	P	P	P	P	P	------	------	------	------	------
Yugoslavia (see table below).																			

Place		Apr., 1930	May, 1930	June, 1930	July, 1930	Aug., 1930	Sept., 1930
China: Harbin (see also table above)	C	204	240	------	14	5	------
Chosen: Seoul	C	3	43	2	3	2	1
Czechoslovakia	C	29	12	1	------	1	------
Greece: Athens	C	1	3	3	6	6	------
Latvia	C	------	3	3	3	1	------

Place		Apr., 1930	May, 1930	June, 1930	July, 1930	Aug., 1930	Sept., 1930
Lithuania	C	73	27	16	18	7	24
	D	4	------	------	------	1	2
Turkey	C	3	16	2	------	2	------
Yugoslavia	C	22	16	6	------	------	------
	D	4	1	------	------	------	------

YELLOW FEVER

Brazil:	Cases
Mage, on the Leopoldina Ry., between Rio de Janeiro and Nictheroy, Apr. 22, 1930	2
Campos, Rio de Janeiro Province, May 23, 1930	1
Para, June 23, 1930	2

Gold Coast:	Cases
July 10, 1930	1
Albosso, Aug. 5, 1930 (deaths)	1
Liberia, Monrovia, June 3, 1930	1
Nigeria, Lagos, July 12, 1930 (probably laboratory infection)	1