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TYPHUS FEVER: TYPHUS VIRUS IN FECES OF INFECTED FLEAS (*XENOPSYLLA CHEOPIS*) AND DURATION OF INFECTIVITY OF FLEAS

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As a step in the elucidation of the mechanism by which the rat flea (*Xenopsylla cheopis*) transmits endemic typhus fever of the United States from rat to rat, or from rat to man, experiments have been made to determine the presence of the virus in the feces of infected fleas. As noted in a previous publication (1), the feces of fleas infected by feeding on white rats which had been inoculated with the virus of endemic typhus were found to be infectious. The experiments bearing on this point follow:

Rat fleas (*Xenopsylla cheopis*) were placed in one of the glass boxes previously used in transmission experiments (2) (3). White rats were inoculated with the virus of endemic typhus and introduced into the box which contained the fleas. After a period of two weeks a few fleas were removed, ground up in salt solution, and injected into 2 guinea pigs. The reaction typical of endemic typhus resulted in both injected animals. Approximately 50 fleas were then removed from the glass box and placed in a test tube overnight. The following morning all fleas and eggs were removed carefully from the test tube. The feces which had been deposited on the walls of the test tube were taken up in salt solution and injected into 2 guinea pigs. Both of these guinea pigs developed typical clinical endemic typhus. One of these guinea pigs was later found to be immune to a known strain of endemic typhus. The second animal was sacrificed to obtain material for inoculation of other guinea pigs. This strain was carried in animals for four generations, a total of 22 guinea pigs and 2 rabbits being used. Eighteen of these guinea pigs developed typical clinical endemic typhus, and one of these animals, from the fourth transfer generation, was tested for immunity to endemic typhus and found immune. The sera of the two rabbits developed agglutinins for *B. proteus* X₁₀, type O, the serum of one rabbit giving complete agglutination in a dilution of 1:80, while the second showed

complete agglutination at 1:160; incomplete at 1:320 and 1:640; and partial agglutination at 1:1280.

This experiment was repeated twice, the two strains established in these repetitions being known as flea feces virus X-8 and flea feces virus X-13, respectively. Both of these strains were studied carefully in guinea pigs and rabbits for several generations. A total of 51 guinea pigs and 4 rabbits (10 generations) were inoculated with strain flea feces X-8. Thirty-nine of the guinea pigs inoculated with this strain developed clinical endemic typhus, while of the 4 rabbits inoculated, 1 died, and the sera of the 3 remaining developed agglutinins for *B. proteus* X₁₉, type O, as shown in Table 1.

TABLE 1.—Agglutination of *B. proteus* X₁₉, type O, by the sera of rabbits following inoculation with virus strains recovered from feces of typhus-infected fleas

Rabbit	Flea feces X-8								Rabbit	Flea feces X-13									
	Number of weeks after inoculation	Serum dilutions								Number of weeks after inoculation	Serum dilutions								
		10	20	40	80	160	320	640			1,280	10	20	40	80	160	320	640	1,280
4631A.....	0	2	0	0	0	0	0	0	4532A.....	0	2	0	0	0	0	0	0		
	1	4	4	4	3	0	0	0		1	4	4	4	4	2	0	0		
	2	3	4	3	1	0	0	0		2	4	4	4	3	2	0	0		
	3	4	4	4	4	2	0	0		3	4	4	4	4	2	0	0		
										4	4	4	3	0	0	0			
4702A.....	0	0	0	0	0	0	0	0	4532B.....	0	3	2	0	0	0	0	0		
	1	4	4	4	4	2	0	0		1	4	4	2	0	0	0	0		
	2	4	4	4	4	4	3	1		2	4	4	4	4	4	3	1		
	3	4	4	4	4	3	1	0		3	4	4	4	4	4	4	3		
										4	4	4	4	4	4	2	0		
4702B.....	0	1	0	0	0	0	0	0											
	1	3	3	2	1	0	0	0											
	2	4	4	4	4	2	0	0											
	3	4	4	4	4	2	0	0											

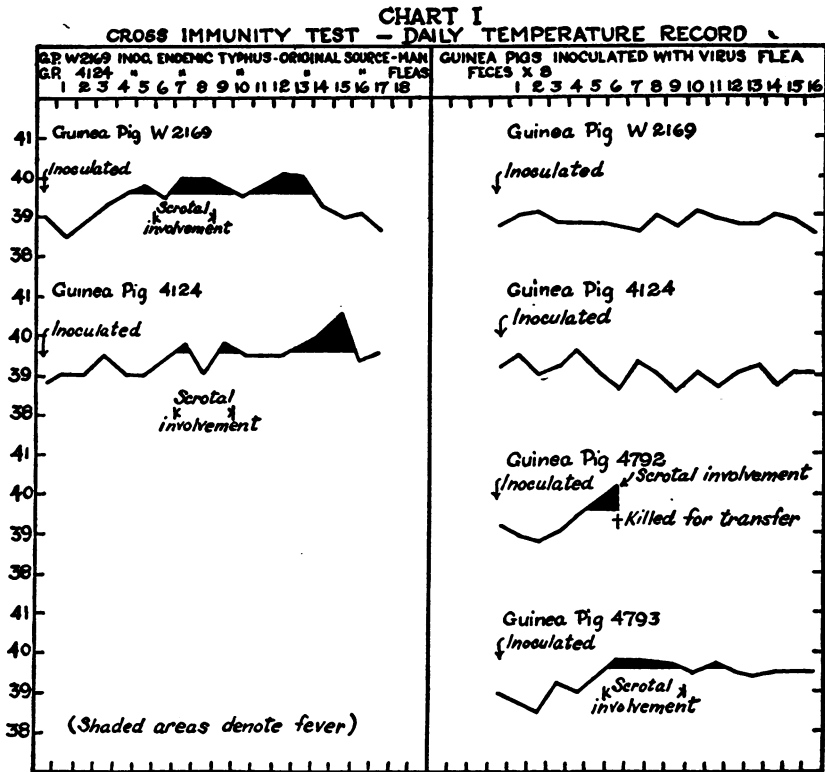
Rickettsiae were found readily in smears made from the tunica vaginalis of guinea pigs injected with the flea feces X-8 strain of virus. Of three brains examined histologically, all showed the lesions characteristic of endemic typhus in the guinea pig. That a definite cross immunity existed between this strain of virus and known endemic typhus strains is shown in Charts I and II.

The strain known as flea feces X-13 was studied in guinea pigs and rabbits for nine generations, 66 guinea pigs and 2 rabbits being used. Approximately three-fourths of the guinea pigs developed clinical endemic typhus. The sera of the rabbits developed agglutinins for *B. proteus* X₁₉, type O, as shown in Table 1.

Rickettsiae were found readily in smears made from the tunica vaginalis of guinea pigs infected with this strain of virus. Brains from five guinea pigs from this strain were examined histologically and characteristic lesions of endemic typhus were found in four of them. Clear-cut cross immunity was found to exist between this strain of virus and known strains of endemic typhus virus.

Experimental work on the viability of typhus virus in infected fleas shows that the virus may remain virulent in the rat flea (*Xenopsylla cheopis*) for as long as 36 days after the last infecting feeding. It seems probable that once this species of flea becomes infected it may remain infective through life.

Attempts have been made to recover typhus virus from fleas hatched from eggs of infected fleas. In none of these attempts has



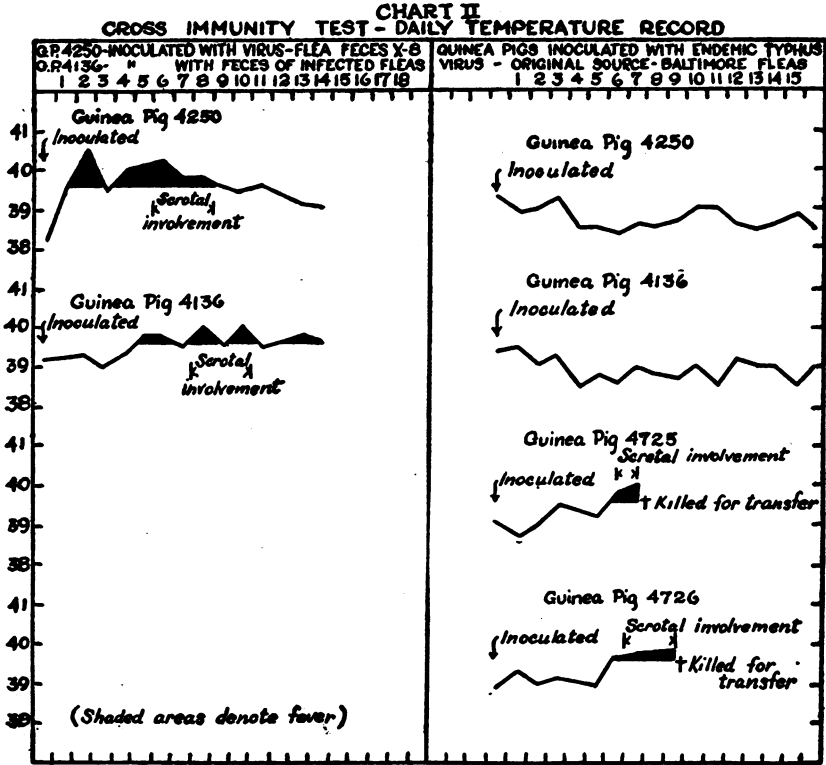
evidence been procured that typhus virus may be transmitted by infected fleas to their offspring through the egg.

In the past few months we have attempted repeatedly to transmit typhus by feeding infected fleas on normal guinea pigs. In these experiments the fleas were confined in test tubes which were closed by stretching chiffon over the mouths of the tubes. The fleas fed readily through the chiffon but in no instance did the guinea pigs develop evidence of typhus, nor were they found later to be immune to subsequent injections of typhus virus.

In view of the negative results in our attempts to transmit typhus by direct bite of infected fleas, arranged in such a manner as to practically eliminate any part the feces might play, we tried to transmit the infection by crushing infected fleas and smearing them on the

abraded abdomen of guinea pigs. In this experiment we were successful.

Without placing too much stress on our negative results in direct feeding of infected fleas, the foregoing work suggests that a probable mechanism by which endemic typhus may be transmitted is through



the rubbing of infected feces into wounds made by the biting of the flea or by scratching.

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- (1) Dyer, R. E., Ceder, E. T., Rumreich, A., and Badger, L. F.: Pub. Health Rep., 46 : 2415 (Oct. 9), 1931. Reprint No. 1517.
- (2) Dyer, R. E., Ceder, E. T., Rumreich, A., and Badger, L. F. : Pub. Health Rep., 46 : 1869 (Aug. 7), 1931. Reprint No. 1498.
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ANOPHELES ATROPOS D. & K.—A NEW POTENTIAL CARRIER OF MALARIA ORGANISMS

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The specimens of the *Anopheles atropos* D. & K. used in the infectivity experiments described here were captured as imagoes on the three days, October 29 and 30 and November 2, 1931, in a salt marsh at Pointe aux Chenes, near Ocean Springs, Miss. It was desirable to supplement these collections with bred-out material, but we were not successful in finding a sufficient number of aquatic forms, due probably to the extreme drought prevailing at this time. Therefore, recourse was had to capturing adults which were attracted to the persons of the collectors. The collections were made by visiting small salt pools deep in the marsh and allowing the mosquitoes to attack while remaining quiet. In this manner two collectors captured approximately 50 female specimens of *Anopheles atropos*, some of which were permitted to become blood engorged. The mosquitoes were collected in glass tubes and transferred immediately to cloth cages, made after the pattern of the Barraud shipping cage. These cages are admirably suited for shipment at long distances, for they are so constructed that the live specimens of mosquitoes are kept in a humid atmosphere by means of moist cotton gauze surrounding the netted fabric protected by the galvanized wire frame.

The specimens while awaiting shipment were maintained by placing partially masticated raisins within reach of the insects. These cages were placed with a final moistening of the gauze pads in stout corrugated cardboard boxes and transported by post to Columbia, S. C. A count of the survivors yielded nearly 100 per cent, showing clearly the advantage of the netted cloth cages of the Barraud type over the metal cloth cages used for comparative purposes.

Table 1 details data in which the specimens of *atropos*, when applied to a suitable carrier of *P. vivax* gametocytes, proved infected on dissection.

TABLE NO. 1.—*Designating atropos infections*

Serial No. of mosquito	Dates of biting carrier	Number of feedings	Date of dissection	Longest possible incubation	Results
	NOVEMBER				
				<i>Days</i>	
1	1, 5, 9, 11	4	Nov. 14	14	3 oöcysts, pigmented, largest 16 µ.
2	1, 3, 5	3	do	14	19 oöcysts, pigmented, 8-12 µ.
3	1, 3, 5	3	Nov. 10	10	3 oöcysts, pigmented, maximum 12 µ.
4	1	1	Nov. 7	7	1 oöcyst, pigmented, 4 by 8 µ.
5	1, 4, 8, 13	4	Nov. 15	15	38 oöcysts, undifferentiated, majority pigmented, 16-35 µ.
6	1, 6, 8, 11, 15, 18.	6	Nov. 19	19	6 oöcysts, 60-64 µ; 2 of them containing sporozoites; others segmented. In addition, 10 oöcysts pigmented, in size from 20-48 µ. No sporozoites in glands.

TABLE NO. 1.—Designating atropos infections—Continued

Serial No. of mosquito	Dates of biting carrier	Number of feedings	Date of dissection	Longest possible incubation	Results
	NOVEMBER—CON.				
7	2, 5, 8, 10..	4	Nov. 14	<i>Days</i> 12	42 oöcysts, all but 1 pigmented, 24-33 mu; average 27 mu; 1 pre-segmented, size 23 mu.
8	2, 5, 8.....	3	Nov. 9	7	60 oöcysts, pigmented, average 8 mu.
9	2, 4.....	2	Nov. 8	6	68 oöcysts, pigmented, average 14 mu; maximum 16 mu.
10	2, 7, 9, 11, 15, 19.	6	Nov. 23	21	2 granulated oöcysts, 20-24 mu; 1 oöcyst capsule. Scanty number of free swimming sporozoites, size 12-13.2 mu. Glands: All lobes swarming with sporozoites; typically active, average size 12 mu, a few at 18.5 mu. Staining characteristic, single and double nucleus. Fields of sporozoites in massed heavy clusters.
12	3.....	1	Nov. 10	7	6 oöcysts, pigmented, 8-14 mu.
13	3, 7, 9.....	3	Nov. 12	9	26 oöcysts, size up to 22 mu; average 16 mu.
14	3, 7, 9.....	3	Nov. 15	12	53 oöcysts, majority pigmented or granulated; size 16-22 mu.
15	4, 6, 8.....	3	Nov. 13	9	24 oöcysts, pigmented; maximum 16 mu, average, 12 mu.
16	4, 6, 8, 10, 15, 21.	6	Nov. 27	23	Gut: More than 3-400 oöcysts covering the blood engorged organ, majority segmented, 12 at least ripe, with sporozoites; many free-moving sporozoites seen. Glands: Packed with very typical sporozoites.
17	4, 7.....	2	Nov. 11	7	2 oöcysts, size 9 mu.
18	4.....	1	Nov. 10	6	3 oöcysts, size 12-16 mu.
19	4, 6, 8, 10..	4	Nov. 14	10	11 oöcysts, pigmented; maximum 23 mu.
20	5, 7, 9, 12, 15, 18, 21.	7	Nov. 25	20	Gut: A few pigmented oöcysts observed, size 17.76 mu. The gut blood engorged. Glands: Negative.
21	5, 9, 11, 15..	4	Nov. 18	13	Approximately 40 oöcysts, 12-28 mu, majority 20-24 mu. Pigmented and granulated.
23	5.....	1	Nov. 8	3	36 oöcysts, size 4-9 mu.
25	6, 9, 12, 16..	4	Nov. 17	11	15 oöcysts, 12-32 mu; pigmented, larger ones granulated.
26	7, 13, 16, 18, 21.	5	Nov. 25	18	Tremendous infection; both stomach and glands containing approximately several hundred oöcysts in various stages of development, particularly mature forms packed with sporozoites; mounting fluid contained matted clusters of actively wriggling sporozoites; thousands of these were observed; thoracic muscles in the region of the glands with extreme numbers of sporozoites; glands heavily packed; size 11-15.5 mu.
27	7.....	1	Nov. 13	6	4 oöcysts, pigmented, 14-16 mu.
29	9, 13.....	2	Nov. 15	6	14 oöcysts, pigmented; average 8 mu.

Summary of Table 1, designating atropos infections

Total dissected.....	28
Total with oöcysts—5 days or more.....	24
Total negative.....	3
Mosquitoes with sporozoites:	
Up to 15 days.....	0
15-23 days—	
Gut with sporozoites.....	4
Gland with sporozoites.....	3
Percentage of infections.....	85.7

SUPPLEMENTARY NOTES TO TABLE NO. 1 ON MOSQUITOES FOUND WITH MATURE ORGANISMS

Specimen No. 6.—This mosquito was induced to bite a patient suffering from the effects of an infection caused by *P. vivax*, resulting from mosquito biting experimentally. Six feedings were obtained during the 19 days' incubation period. The host's blood exhibited on two

occasions as high as 75 mature gametocytes to 1,000 leucocytes counted in a thick smear.

When dissected on November 19 the gut of this mosquito was found heavily engorged with blood undigested from its last meals. There were a total of 16 oöcysts observed, 10 of them 20–48 μ in size, all containing characteristic pigment. Four oöcysts were segmented; pigment here was absent, and the two remaining forms contained sporozoites, probably only recently ripened. The latter oöcysts and the other four just mentioned measured 60–64 μ . A prolonged search failed to produce free sporozoites in the mounting fluid surrounding the gut or in the material from the macerated thorax. The salivary glands appeared quite free of sporozoites.

Specimen No. 10.—Six infective feedings, synchronous with the preceding specimen, were allowed to this mosquito. It survived an incubation period of 21 days. The gut offered as evidence of infection two granulated oöcysts of 20 and 24 microns in size, and one discharged capsule of an oöcyst. Further evidence was observed in the presence of a scanty number of undetached sporozoites. These were 12–13.2 μ and actively motile along the gut wall.

The glands of the dissected mosquito were kept under observation during a period of six hours. All of the six lobes appeared crowded to the maximum capacity with sporozoites, while the forms already liberated in the saline suspension appeared in a swarming mat of typically active organisms. Their movement was undulating, while the tapering ends were observed to curve in the form of a shepherd's crook. The majority were seen with a single nucleus, many with two nuclei. The size varied in length from 12–15.5 μ , the majority measuring 12 μ , and their width being fairly uniform at 1–1.5 μ .

The dissected material was kept at a temperature of 60° F., and there appeared no diminution of activity after six hours.

After staining with Giemsa it was observed that the sporozoites were present in great profusion. They reacted quite specifically to the Giemsa stain. The sporozoites were again measured, the majority appearing contracted in length by 1 micron. They measured 11–14 μ . A single form, apparently unchanged, measured nearly 15.5 μ . It seemed considerably distended and disintegrated.

Specimen No. 16.—This specimen of *atropos* was given an opportunity to become infected during a development of 23 days while it was induced to bite a gametocyte carrier of *P. vivax* on six occasions. This mosquito had been applied to two patients,¹ who were selected for malaria therapy, before it was killed for the purpose of examination.

On the surface of the blood-distended gut wall, on a portion suitable for inspection, there were observed 12 oöcysts of size 55.5 μ ,

¹ Both of these patients showed very marked clinical symptoms of malarial fever with typical specimens of *Plasmodium vivax* in their blood following an incubation period of 13 days and 16 days, respectively.

engorged with sporozoites. Several more oöcysts, 38.4 mu in maximum size, appeared on the edge of the gut tissue in a stage of pre-segmentation. In addition, several oöcyst capsules with collapsed walls were noticed on the gut wall, and after clearing some of the blood from the stomach, it was apparent that the gut surface was fairly covered with oöcysts in a stage of segmentation. There were evidently more than 300 to 400 of these.

Many sporozoites were observed freely moving in the fluid along the gut wall.

The salivary glands appeared packed to the utmost with living sporozoites, showing typical form and behavior when expressed on pressure of the cover glass. They measured in length 11-15.5 mu.

Specimen No. 26.—Five infective feedings were allowed this mosquito. It died after 18 days of parasite development. Upon dissection there was obviously a tremendous invasion of organisms in all stages. The gut contained several hundred oöcysts, particularly of the mature stages. Not only were the oöcysts fairly engorged with live-looking sporozoites, but there were matted clusters of tens of thousands of actively wriggling, sickle-shaped organisms surrounding the alimentary tract in the saline dissecting fluid.

Measurements of some of these oöcysts under usual pressure of cover glass resulted as follows:

Fourteen of the undifferentiated forms appeared to attain a maximum diameter of 66 mu.

Twenty of the segmented forms measured 39.6-50.6 mu.

Twenty of the forms containing sporozoites measured 48.4-61.6 mu.

The undetached sporozoites from the gut wall measured the same size as those examined from the lobes of the salivary glands, namely, 11.10 to 15.54 mu, with an average length of 13.32 mu and a width of 1.4 mu. The glands and the tissue of the macerated thoracic material were unusually heavily infected with great numbers of motile sporozoites measuring as previously recorded.

The controls used for the *atropos* infectivity tests were a collection of anophelines of three species captured from a stable about 20 miles from Columbia. They were treated in the same manner regarding the source of infection and exposure to temperature and humidity as the specimens of *atropos* described in Table 1. These data are described in Table 2.

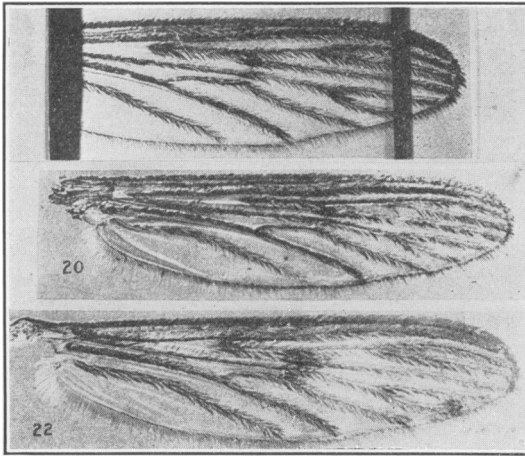


FIGURE 1.—Top: Portion of wing of *Anopheles walkeri* Theob.; 20, wing of *Anopheles atropos* D. & K.; 22, wing of *Anopheles quadrimaculatus* Say. Reproduced from plates of Howard, Dyar, and Knab. Mosquitoes of North America. Carnegie Press

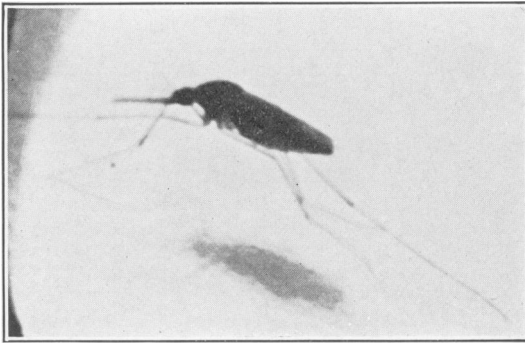


FIGURE 2.—Photograph of *A. atropos* ($\times 4$) specimen No. 16, mentioned in text, showing characteristic Culexi-like attitude

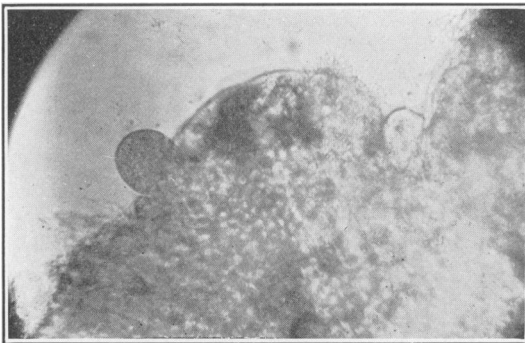


FIGURE 3.—Portion of gut wall of *atropos* No. 16, showing one ripe oocyst and ruptured oocyst capsule

TABLE NO. 2.—Designating controls: *Atropos* infections

Species and serial No.	Dates of biting carrier	Number of feedings	Date dissected	Longest possible incubation—days	Results
Quad. M-2	Oct. 19, 25, 29, and Nov. 2, 5, 8, 11.	7	Nov. 13	25	Several hundreds of oöcysts in all stages up to 65 mu. Sporozoites on gut. Glands: Numerous sporozoites.
Quad. M-4	Oct. 19, 22, 25, 28.	4	Oct. 31	12	Moderate number of oöcysts; none over 24 mu.
Quad. M-6	Oct. 19, 23	2	Oct. 25	7	14 pigmented oöcysts, size 12 mu and under.
Punct. M-7	Oct. 19, 22, 25, 30.	4	Nov. 9	20	33 oöcysts up to 65 mu, 6 with sporozoites; many sporozoites free on gut. Glands: maximum number of sporozoites.
Quad. O-2	Oct. 21, 24	2	Oct. 28	7	Several pigmented oöcysts, pigmented up to 20 mu.
Quad. O-3	Oct. 21, 24, 28	3	Oct. 30	9	22 oöcysts, pigmented and presegmented, size 16-24 mu.
Quad. O-7	Oct. 21, 25, 30, and Nov. 2, 5, 8.	6	Nov. 11	21	More than 100 (majority segmenting) oöcysts, size 48-60 mu. Many free sporozoites seen. Glands: Tremendous sporozoite infection.
Quad. O-9	Oct. 21, 24, 28, 31, and Nov. 3, 8.	6	Nov. 12	22	Specimen blood engorged at dissection; sporozoites seen along gut wall and in thorax.
Quad. O-10	Oct. 21, 24, 28, and Nov. 2, 5.	5	Nov. 8	18	Oöcysts; total number 128, 3 with sporozoites; size 48-52-60 mu. Glands: Quite negative.
Punct. O-12	Oct. 21, 24, 28	3	Oct. 30	9	Moderate number of oöcysts, size 16-24 mu, pigmented.
Punct. P-3	Oct. 22	1	Oct. 29	7	11 oöcysts, size 12-20 mu; average 16 mu.
Punct. P-4	Oct. 22, 25, 28	3	Oct. 31	9	Moderate number of oöcysts; maximum size 20 mu.
Quad. P-6	Oct. 22, 25, 28, and Nov. 1, 4, 8, 11, 13.	8	Nov. 16	24	Approximately 150 oöcysts, 8-68 mu; average about 40 mu. Pigmented, granulated, and segmented forms. Numerous sporozoites in media surrounding stomach. Glands packed with sporozoites. Swarms in fluid active, 12-16 mu in size.
Punct. P-7	Oct. 22	1	Oct. 23	1½	Several hundred oökinetes observed.
Punct. P-9	do	1	Oct. 24	2	A few pigmented forms, quite immature.
Punct. Q-3	Oct. 23	1	Oct. 26	3	Great numbers of pigmented zygotes, less than 8 mu.
Punct. Q-4	Oct. 23, 26, 30	3	Nov. 6	14	About 200 oöcysts pigmented, none reaching segmented stage.
Quad. Q-5	Oct. 9, 24, and Nov. 3, 6, 11, 15.	6	Nov. 17	23	Upward of 100 oöcysts, 20-72 mu in size; majority 40-48 mu. Numerous sporozoites in mounting fluid. Glands packed with sporozoites, 12-16 mu. in size. Active and typical.
Punct. Q-7	Oct. 24, 28, 31	3	Nov. 3	10	8 oöcysts pigmented, 8-12 mu.
Punct. Q-8	Oct. 24, 28, 31, and Nov. 6.	4	Nov. 11	18	Approximately 125 oöcysts (100 counted) in all stages, except pigmented, up to 60 mu; majority with sporozoites. Glands: A scanty number of full-sized active sporozoites.
Punct. R-6	Oct. 30 and Nov. 2, 5, 8, 11.	5	Nov. 12	13	Approximately 125 oöcysts (54 counted); majority 22-28 mu, maximum 32 mu; presegmented stage mostly.
Punct. R-9	Oct. 30	1	Nov. 3	4	4 oöcysts, size 8-21 mu.
Punct. R-11	Oct. 30 and Nov. 2, 7, 10.	1	Nov. 13	14	About 60 oöcysts pigmented, size 5-8 mu.
Punct. R-14	Nov. 1	1	Nov. 8	8	As many as 90 oöcysts pigmented, maximum size 16 mu.
Crucians R-2	Oct. 26, 30, and Nov. 2, 5.	4	Nov. 10	15	Nearly 200 oöcysts (counted 180); majority stage of segmentation; size 60 mu. Glands: Apparently negative.

Summary of Table 2, designating controls: *Atropos* infections

Total dissected	38
Total with oöcysts—5 days or more	21
Total negative	13
Mosquitoes with sporozoites:	
Up to 15 days	0
15 to 25 days—	
Gut with sporozoites	1
Gland with sporozoites	7
Percentage of infections	55.2

There are offered for comparison the results of attempting to infect specimens of *Anopheles quadrimaculatus* obtained in the same general region of the Gulf coast where the specimens of *atropos* were collected.

Six of the specimens which survived the shipment from place of origin and developed the infection after biting the tertian carrier in two to five applications are included in the following table:

TABLE NO. 3.—Regarding infections of *quadrimaculatus*

Serial No. of mosquito	Dates of biting carrier	Number of feedings	Date of dissection	Longest possible incubation	Results
1	Sept. 5, 8, 11, 13.	4	Sept. 28	<i>Days</i> 23	Gut: 9 oöcysts and 5 discharged. Size up to 48 mu granulated and segmenting. Two ripe with sporozoites. Glands: A few sluggishly active sporozoites in mounting fluid. Lobes of glands packed with normal appearing sporozoites, size 12-14 mu.
2	Sept. 5, 8, 11, 13, 15.	5	Oct. 2	27	Gut: Fairly covered with presegmenting oöcysts, size up to 64 mu; average size 45 mu. One with sporozoites. Glands: Devoid of sporozoites.
3	Sept. 5, 8, 11, 13.	4	Sept. 17	12	Gut: 8 oöcysts observed and 2 discharged forms. Glands: Moderate infection; sporozoites quite active and normal.
4	Sept. 5, 8, 12	3	Sept. 14	9	Gut: 14 oöcysts, 4 of them segmented and sporozoites noted in 2 others. Glands: Scanty number of typical sporozoites. Normal in form, size, and motility. Size 12-14 mu.
5	Sept. 5, 9----	2	Sept. 12	7	Gut: 5 oöcysts present, 24-40 mu, pigmented and granulated forms. Sporozoites absent.
7	Sept. 6, 9, 12	3	Sept. 15	9	Gut: A total of 152 oöcysts counted, 3 of these 56-68 mu in size. No sporozoites either on gut or in glands.

Summary of Table 3

Total dissected.....	7
Total with oöcysts—5 days or more.....	6
Total negative.....	1
With sporozoites up to 27 days:	
Gut.....	4
Glands.....	3
Percentage of infections.....	85.7

A note on the biological relationships of *Anopheles atropos* is contributed as a supplement to the present experimental data.

Habitat.—In the course of a survey of salt-marsh mosquito-breeding areas of the South Atlantic and Gulf States, conducted by the United States Public Health Service, *Anopheles atropos* has been recorded in the four States of Mississippi, Louisiana, Alabama, and Florida. It is strictly a salt-water mosquito, frequently found in the same habitat as *Aedes sollicitans*, *Ae. taeniorhynchus*, and *Anopheles crucians*.

At Pointe aux Chenes, near Ocean Springs, Miss., where specimens of adults were captured which were employed in the infectivity tests recorded in this paper, are surrounding marshes characteristic of such habitats having a firm alluvial dense root mat formation, covered with a heavy growth of salt grass (*Spartina* spp.). Where salt pools,

which are the favorite production areas of *atropos*, occur in these marshes, the water can scarcely be muddied, the bottom of the pools being sandy, with sides of a firm clay. When production is said to be heavy, larvae of this species inhabit every square foot of water surface.

The preferential breeding place of *A. atropos* is characterized by the junior author as shallow water on muck or alluvial marshes, or in permanent salt pools whose water has a salinity (salinometer with direct salinity reading) of from 3 per cent to 21 per cent.

Host relations.—*Atropos* have been observed in great numbers in occupied rooms in hotels and private homes within flight distance of the production areas. The junior author has personally collected these mosquitoes at such places at Buras, La., and at Biloxi, Miss.

Biting habits.—Close to its breeding place in marsh areas *atropos* is known to attack in direct sunlight as well as by night. It is then a greater torment as a pest than the redoubtable *Aedes sollicitans*, which shares its intrepidity in persisting in its attacks so that one may easily collect it when attached to its host by dislodging it with thumb and finger.

The culexlike attitude of atropos.—*Atropos* is distinguished at once from the common species of anophelines of America by its decided culexlike appearance, especially when attacking or resting after blood engorgement. This is further emphasized by its unorthodox nonanopheline wing, which is clear in the bright sunlight. When observed biting in the direct sunshine, this species assumes the 2-plane angle which does not characterize the common anophelines, namely, *quadrifasciatus*, *punctipennis*, or *crucians*. *Anopheles atropos* is observed to typify less the "standing-on-head" position while biting and often appears "sprawled" when about ready to finish the blood meal. The brown color of the mesonotum, as well as its near *Culex* position, makes this species often mistaken by the unwary for a *Culex*, especially because of its resemblance to *Culex salinarius*.

Morphological characters.—*Anopheles atropos*² is described by the taxonomist as a rather small blackish *Anopheles* with unspotted wings. Its wing scales are entirely dark, not forming spots. Its mesonotum

² The specimens of mosquitoes employed in our experiments were provisionally identified when collected alive and studied while biting and resting. The authors agreed to the specific identification of these specimens as *A. atropos* D. & K. Following the dissection of the stomach and salivary glands, all of the parts that were possible to salvage namely, wings, legs, abdominal integument, thoracic exoskeleton, and head with mouth parts, were meticulously assembled, placed in gelatine capsules, and submitted to Dr. Harold Morrison, Chief of the Taxonomic Division of the U. S. Bureau of Entomology. He, with the assistance of Dr. Alan Stone, dipterist of the U. S. National Museum, courteously consented to attempt to identify the species of the several mosquito remnants submitted. Their report is as follows: Only one of the specimens, namely, No. 14, was found impossible to examine. The remainder were regarded indeterminately, either *Anopheles atropos* Dyar and Knab, or *Anopheles walkeri* Theobald. "*Anopheles atropos* D. & K. can not be distinguished from *A. walkeri* Theob. in the female. It is difficult to distinguish them from *quadrifasciatus* Say. *Atropos* breeds in salt water, *walkeri* in fresh, and both occur in the South. Only a study of the male genitalia will separate these and there is some question as to their specific distinction."

is elongate and deep brown; abdomen blackish in the integument, with dark hairs; legs and palpi entirely dark, the latter with traces of paler markings at the articulations.

Color.—Recently emerged imagoes are very dark, almost a bluish black. Older specimens appear brownish or even remarkably reddish on the mesonotum.

The species of anophelines discussed in this paper can be distinguished in life from its nearest relatives, *Anopheles quadrimaculatus* Say, and *A. walkeri* Theob., but some confusion arises when identification is required of a specimen preserved for the museum. The following parallel, from a description of the females taken from Dyar's Mosquitoes of the Americas (1928), is offered in identifying the two more closely related species, *A. atropos* and *A. walkeri*:

<i>Atropos</i> (female)	<i>Walkeri</i> (female)
Proboscis: straight, black.	Slightly curved, black.
Palpi: black, small faint white rings, bases of joints.	Rather slender, black, yellowish rings at tips of all joints.
Occiput: black, erect forked scales and long bristles, all black.	Black, whitish spot on each side, scales erect, forked, black.
Mesonotum: black, brownish or black hairs; pleurae black.	Dark brown, more or less streaked with whitish; pleurae brown and grayish.
Abdomen: blackish, with brown-black hairs.	Black, with yellowish-brown hairs.
Legs: brown black, without spottings.	Black, with bronzy reflections, femora and tibiae yellowish white at tips.
Wings: scales black, without spots.	Scales black, not or faintly forming spots at bases of second to fourth veins and forks of second and fourth.

Temperature and humidity.—During the 25 days of the experimental investigation the specimens of *Anopheles atropos* and the controls were maintained at a relatively low temperature of 68° to 70° F. during the months of October and November. The relative humidity registered a high mean percentage of 80 to 90.

The conditions maintained for the specimens detailed in Table 3 were a decidedly higher temperature up to the development of sporozoites. The temperature here went to a maximum of 82° F. during the latter part of September and in October, and may account for the great acceleration of the appearance of gland sporozoites, namely, a minimum of nine days. In the other controls of the same species and the same parasite, *P. vivax* sporozoites did not appear before 18 days.

Conclusions.—*Anopheles atropos* D. & K. is presented as a new potential carrier of *Plasmodium vivax*. In infectivity tests it proved equal in efficiency to *Anopheles quadrimaculatus*, *A. crucians*, and *A. punctipennis* used as controls under similar or more favorable conditions.

Acknowledgments

The work of attempted infectivity was conducted at the South Carolina State Hospital, where, through the courtesy of the superintendent, Dr. C. F. Williams, and the medical director, Dr. E. L. Horger, and the other authorities of the State institution, suitable patients were provided for the use of the Government investigators. Mention should be made of the services of Mr. Hans E. Hingst, senior medical technician, who was indefatigable beyond the call of duty in contributing, largely by his skillful dissections, to the success of the experimental procedure.

CURRENT PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES ¹

November 8–December 5, 1931

The prevalence of certain important communicable diseases, as indicated by weekly telegraphic reports from State health departments to the Public Health Service, is summarized in this report. The underlying statistical data are published weekly in the **PUBLIC HEALTH REPORTS** under the section entitled "Prevalence of Disease."

Poliomyelitis.—Further recovery from the recent epidemic of poliomyelitis continued through the month of November. For the current 4-week period the number of reported cases was only about 72 per cent of the number reported for the same period last year. The number was, however, more than three times the number of cases recorded for the corresponding period in 1929.

In the New England and Middle Atlantic States, where the epidemic first appeared, the number of cases for the current period was still almost double the number of cases reported for the same period last year. The South Atlantic States compared very favorably with last year and in other regions the decreases in the incidence of the disease ranged from 50 per cent in the West North Central States to 80 per cent in the Mountain and Pacific groups. In the latter group, this period last year marked the first appreciable decrease in the outbreak of poliomyelitis which had begun there earlier in the season. A comparison of this group with 1929, a more nearly normal year, shows that the incidence of the disease during the current period was about 15 per cent in excess of its incidence during the same period in that year.

¹ From the Office of Statistical Investigations, U. S. Public Health Service. The number of States included for the various diseases are as follows: Typhoid fever, 47; poliomyelitis, 48; meningococcus meningitis, 48; smallpox, 48; measles, 45; diphtheria, 47; scarlet fever, 47; influenza, 39 States and New York City. The District of Columbia is counted as a State in these reports.

The total number of cases of poliomyelitis reported for the current 4-week period was 625, approximately 1,200 less than were reported for the preceding 4-week period.

Diphtheria.—The total reported incidence of diphtheria (9,357 cases) for the current period was about 33 per cent higher than that of last year for the same period. All areas contributed to the increase except the New England and Middle Atlantic and East North Central. In the former group a slight decrease (6 per cent) was shown and in the latter group the figure for the current period equaled that of last year. The increases in the various groups ranged from 40 per cent in the Far West groups to 90 per cent in the West North Central group.

For the country as a whole the number of cases reported for the current period was approximately 500 less than was reported for the preceding 4-week period which might indicate that the peak for this year was passed during that period (October 11 to November 7). In each of the two preceding years the peak was reached during the period corresponding to the current 4-week period. For this period in 1930 the reported cases totaled 7,031, and in 1929, 9,405 cases were reported.

Measles.—The usual seasonal increase of measles continued through the current 4-week period. The number of cases (8,805) was about 15 per cent in excess of the number reported for the same period in 1930, but was 10 per cent lower than in 1929. The disease was most prevalent in States along the Atlantic coast, the number of cases being much larger than was reported in either of the two preceding years.

In the New England and Middle Atlantic group the number of cases reported during the current period was 4,993, as compared with 2,900 for the same period last year and 2,711 in 1929. The South Atlantic group reported 980 cases, as compared with 218 in 1930 and 212 in 1929. All other areas showed decreases this year, ranging from 75 per cent in the far west groups to 40 per cent in the Great Lakes region. In 1929 the disease was unusually prevalent in some of these areas, especially the East North Central.

Scarlet fever.—Although the usual seasonal increase in scarlet fever was apparent in all sections of the country, the number of cases (15,281) reported for the current 4-week period came closer to the average for previous years than at any time during the current year. States in the North Central groups showed decreases from last year's figure, but in other areas the increases ranged from 11 per cent to 22 per cent.

Smallpox.—The incidence of smallpox maintained the low level which has prevailed throughout the current year. The reported cases for the current 4-week period numbered 1,124, i. e., about 77 per

cent of the cases recorded for the corresponding period last year and considerably less than one-half of the number in 1929.

Areas showing increases over last year were the New England and Middle Atlantic, West North Central, and South Central. In the New England and Middle Atlantic States the disease continued unusually prevalent in Vermont, and during the week ended December 5 there were 39 cases reported in the State of Connecticut. No cases had been reported from Connecticut since 1929. Out of 449 cases reported during the current period from the West North Central group, Iowa reported 249, as compared with 41 in the same period last year. While the number of cases was not high in the South Central States, it represented a 50 per cent increase over the same period last year.

Meningococcus meningitis.—In relation to previous years the incidence of meningococcus meningitis continued considerably below the level of either of the two preceding years for the period involved. The number of cases reported for the four weeks ended December 5 was 279, as compared with 319 cases for the same period last year and 482 cases in 1929. Each geographic area shared in this favorable decrease except the South Atlantic, where, since almost the beginning of the current year, the incidence has been slightly higher than in either 1930 or 1929.

Typhoid fever.—The incidence of typhoid fever continued to decrease during the 4-week period ended December 5. Compared with previous years the incidence (1,967 cases) was about 12 per cent less than that of last year for the same period but was more than 30 per cent in excess of the incidence in 1929. All areas showed considerable decreases in the numbers of cases occurring during the current period as compared with the preceding 4-week period.

Influenza.—The total number of cases (2,593) reported for the 4-week period ended December 5 was about 65 per cent of the number reported for the same period last year and 50 per cent of the number in 1929. All areas shared in this favorable situation except the West North Central. In that group of States 460 cases were reported as compared with 39 for the same period last year and 65 in 1929. Missouri reported 340 of the 460 cases.

Mortality, all causes.—The mortality from all causes in a group of large cities as summarized by the Bureau of the Census was the lowest in six years, viz., 11.1 per thousand population, annual basis.

COURT DECISION RELATING TO PUBLIC HEALTH

Ordinance relative to closing of barber shops held invalid.—(Mississippi Supreme Court; Knight, Chief of Police, v. Johns, 137 So. 509; decided Nov. 2, 1931.) By the terms of an ordinance of the city of

Clarksdale it was made unlawful and punishable by fine and imprisonment "for any barber shop in the said city to open for business before 7.30 in the forenoon and/or to remain open for business after the hour of 6.30 in the afternoon, except that, on week days which immediately precede a holiday, said barber shops may remain open for business until 9 o'clock p. m." The ordinance empowered the city health officer to inspect barber shops, and in one section it was declared that the purpose in prescribing the hours of opening and closing was "to promote the general health and sanitary conditions of the said shops, it being apparent that a better inspection may be had and made between the hours prescribed than at any other time."

The appellee, who owned and operated a barber shop in the city, twice violated the ordinance by keeping his shop open after 6.30 p. m. and was twice arrested. He then secured an injunction restraining the chief of police from further arresting him for violating the ordinance. On appeal, one of the reasons assigned for the validity of the ordinance was that it was designed to fix a reasonable time within which the city inspectors could inspect barber shops in order to ascertain whether the city's sanitary and health ordinances were being obeyed. In holding that the ordinance could not be sustained on this ground, the supreme court said:

The city has the right of inspection reasonably necessary for the enforcement of its health and sanitary ordinances. As we understand the argument, the necessity for the barber-shop-closing ordinance arises because of inconvenience to the city's inspectors of inspecting such shops during the hours the ordinance requires them to be closed. It does not, and could hardly be made to, appear that such inspection must be continuous, covering every hour a barber shop is open; and to compel the closing of barber shops between certain hours, because it will be inconvenient for the city to then inspect them, when they are open at other hours amply sufficient for such inspection, would unnecessarily and unreasonably interfere with the operation thereof.

DEATHS DURING WEEK ENDED DECEMBER 5, 1931

Summary of information received by telegraph from industrial insurance companies for the week ended December 5, 1931, and corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended Dec. 5, 1931	Corresponding week, 1930
Policies in force.....	74, 178, 223	75, 098, 994
Number of death claims.....	12, 885	13, 993
Death claims per 1,000 policies in force, annual rate.....	9. 1	9. 7
Death claims per 1,000 policies, first 49 weeks of year, annual rate.....	9. 6	9. 5

Deaths ¹ from all causes in certain large cities of the United States during the week ended December 5, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census.]

City	Week ended Dec. 5, 1931				Corresponding week, 1930		Death rate ² for the first 49 weeks	
	Total deaths	Death rate ²	Deaths under 1 year	Infant mortality rate ³	Death rate ²	Deaths under 1 year	1931	1930
Total (82 cities).....	7,404	10.8	559	4.44	11.8	731	11.8	11.9
Akron.....	42	6.3	2	20	2.9	3	7.5	7.7
Albany ⁴	32	17.0	3	60	13.9	1	14.0	14.8
Atlanta ⁵	65	12.2	2	20	13.4	8	15.0	15.3
White.....	29	8.2	0	0	8.9	5	11.6	11.4
Colored.....	36	20.1	2	58	22.4	3	21.7	23.0
Baltimore ⁶	189	12.1	19	66	15.7	25	14.2	14.0
White.....	156	12.2	15	67	14.4	15	12.9	12.7
Colored.....	33	11.7	4	64	21.8	10	19.9	19.9
Birmingham ⁴	68	13.2	4	40	15.5	12	13.1	13.6
White.....	32	10.0	2	34	11.6	3	10.1	10.1
Colored.....	36	18.3	2	49	21.9	9	18.1	19.3
Boston.....	208	13.7	9	26	11.7	26	14.1	14.1
Bridgeport.....	37	13.1	2	34	12.8	5	11.1	10.9
Buffalo.....	117	10.5	12	54	12.9	22	12.8	12.9
Cambridge.....	21	9.6	3	62	11.5	1	12.0	11.8
Camden.....	31	13.6	2	35	11.0	0	14.1	13.4
Canon.....	14	6.8	1	25	9.9	1	10.0	9.9
Chicago ⁴	590	8.9	48	43	11.4	67	10.5	10.4
Cincinnati.....	128	14.6	7	42	16.0	9	15.7	15.6
Cleveland.....	168	9.6	17	50	10.6	9	11.1	11.1
Columbus.....	68	12.0	3	29	12.9	6	13.5	15.3
Dallas ⁴	64	12.2	9	-----	10.7	8	11.1	11.4
White.....	48	11.1	8	-----	9.6	6	9.8	10.5
Colored.....	16	17.6	1	-----	16.2	2	17.4	16.2
Dayton.....	47	10.6	6	85	11.8	3	10.5	9.6
Denver.....	82	14.7	9	91	12.5	7	13.8	14.9
Des Moines.....	25	9.0	2	38	10.2	0	10.9	11.6
Detroit.....	222	7.0	24	38	8.5	37	8.1	9.2
Duluth.....	24	12.3	3	81	14.4	2	11.3	11.5
El Paso.....	20	9.9	4	-----	17.7	4	15.1	17.0
Erie.....	32	14.2	3	62	5.4	2	10.3	11.0
Fall River ⁵	27	12.2	1	24	10.0	2	11.1	11.6
Flint.....	15	4.8	2	25	7.6	4	6.8	9.0
Fort Worth ⁶	36	11.2	3	-----	14.3	3	10.5	10.9
White.....	31	11.5	3	-----	14.0	3	10.2	10.3
Colored.....	5	9.6	0	-----	15.8	0	12.3	13.5
Grand Rapids.....	14	4.3	1	15	10.5	3	9.0	10.1
Houston ⁶	73	12.3	8	-----	13.4	10	11.0	12.1
White.....	45	10.3	4	-----	12.0	5	10.2	10.8
Colored.....	28	17.6	4	-----	17.3	5	13.5	15.9
Indianapolis ⁴	88	12.4	5	38	14.3	6	13.6	14.4
White.....	72	11.6	3	26	13.5	6	13.1	13.5
Colored.....	16	18.5	2	123	20.0	0	17.1	21.3
Jersey City.....	59	9.6	8	71	11.0	9	11.2	11.3
Kansas City, Kans. ⁴	28	11.9	1	22	11.5	0	12.6	11.7
White.....	24	12.6	1	27	11.6	0	11.9	11.0
Colored.....	4	8.9	0	0	11.4	0	15.5	14.9
Kansas City, Mo.....	88	11.2	8	64	12.6	4	12.9	13.2
Knoxville ⁶	31	14.8	4	87	7.8	2	12.5	13.5
White.....	27	15.4	4	98	5.3	2	11.7	12.5
Colored.....	4	11.7	0	0	21.1	0	16.3	18.3
Long Beach.....	25	8.6	0	0	12.0	4	9.8	10.0
Los Angeles.....	263	10.4	7	20	11.4	24	10.6	11.0
Louisville ⁶	63	10.7	5	45	14.9	12	13.7	13.5
White.....	45	9.0	3	31	13.4	11	12.3	12.1
Colored.....	18	19.7	2	143	23.1	1	21.4	21.6
Lowell ⁷	31	16.1	1	26	10.4	3	12.8	13.3
Lynn.....	21	10.7	2	58	10.2	3	9.4	10.3
Memphis ⁶	70	14.1	3	82	15.2	6	16.4	16.9
White.....	34	11.1	1	17	12.3	1	13.4	13.2
Colored.....	36	19.0	2	58	19.9	5	21.3	22.8
Miami ⁶	20	9.3	0	0	13.2	4	11.6	10.9
White.....	16	9.6	0	0	12.8	4	10.7	9.7
Colored.....	4	8.2	0	0	14.5	0	14.6	15.3

See footnotes at end of table.

Deaths¹ from all causes in certain large cities of the United States during the week ended December 5, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Dec. 5, 1931				Corresponding week, 1930		Death rate ² for the first 49 weeks	
	Total deaths	Death rate ³	Deaths under 1 year	Infant mortality rate ⁴	Death rate ²	Deaths under 1 year	1931	1930
Millwaukee.....	91	8.0	5	22	12.2	13	9.1	9.6
Minneapolis.....	74	8.1	8	51	11.4	10	10.9	10.7
Nashville ⁵	41	13.7	3	45	14.5	3	16.7	16.5
White.....	21	9.7	1	20	8.9	3	14.3	13.9
Colored.....	20	24.4	2	126	29.2	0	22.9	23.2
New Bedford ¹	25	11.6	1	26	12.0	3	12.1	11.0
New Haven.....	44	14.1	3	46	6.1	2	12.5	12.6
New Orleans ⁶	122	13.6	15	84	17.2	20	16.6	17.3
White.....	72	11.3	8	68	14.0	14	13.5	14.3
Colored.....	50	19.4	7	116	25.3	6	24.1	24.9
New York.....	1,306	9.6	89	38	10.7	134	11.0	10.7
Bronx Borough.....	185	7.3	9	26	7.3	12	8.1	7.8
Brooklyn Borough.....	445	8.8	32	34	10.0	49	10.1	9.8
Manhattan Borough.....	495	14.2	39	52	15.6	55	16.5	15.9
Queens Borough.....	145	6.6	5	20	8.1	17	7.1	7.0
Richmond Borough.....	36	11.5	4	76	9.2	1	13.5	13.8
Newark, N. J.....	103	12.1	14	74	12.5	8	11.5	12.0
Oakland.....	78	13.9	2	25	11.5	1	10.7	11.0
Oklahoma City.....	41	10.9	5	70	15.8	8	10.6	10.9
Omaha.....	70	16.8	7	81	9.7	6	13.8	13.5
Paterson.....	31	11.6	3	51	13.5	1	13.2	12.1
Peoria.....	20	9.6	1	26	10.9	4	12.4	12.2
Philadelphia.....	477	12.6	36	52	13.7	55	12.9	12.6
Pittsburgh.....	163	12.6	13	45	13.6	12	14.3	13.8
Portland, Oreg.....	74	12.6	1	12	10.5	4	11.6	12.1
Providence.....	53	10.8	7	37	12.6	1	12.6	12.8
Richmond ⁷	41	11.6	4	102	17.6	3	15.3	14.8
White.....	17	6.7	3	66	17.2	2	12.9	12.2
Colored.....	24	23.7	4	173	18.7	1	21.4	21.3
Rochester.....	64	10.1	4	37	8.6	3	11.7	11.5
St. Louis.....	191	12.0	12	43	12.9	10	14.8	14.0
St. Paul.....	64	12.1	7	72	10.0	1	10.4	10.1
Salt Lake City ⁸	31	11.3	2	30	14.1	5	12.0	12.5
San Antonio.....	72	15.6	8	0	15.2	10	14.1	15.8
San Diego.....	57	19.0	0	0	16.7	3	13.6	14.8
San Francisco.....	163	13.1	7	47	12.1	1	12.9	13.0
Schenectady.....	27	14.6	0	0	9.3	1	10.8	11.1
Seattle.....	91	12.8	0	0	10.8	3	11.3	10.8
Somerville.....	17	8.4	1	31	8.0	2	8.7	9.6
South Bend.....	14	6.8	2	52	9.9	2	8.0	9.0
Spokane.....	26	11.7	2	52	14.9	3	12.4	12.5
Springfield, Mass.....	23	7.9	0	0	11.1	2	11.4	12.0
Syracuse.....	41	10.0	5	61	11.9	4	11.5	11.6
Tacoma.....	33	16.0	0	0	7.8	1	12.3	12.4
Toledo.....	71	12.5	8	75	14.5	7	11.8	12.6
Trenton.....	36	15.2	2	37	24.5	4	16.2	16.6
Utica.....	23	11.7	0	0	8.7	2	14.2	14.6
Washington, D. C. ⁹	156	16.6	20	111	15.0	13	15.9	15.2
White.....	85	12.4	5	41	13.4	9	13.6	13.1
Colored.....	71	27.4	15	256	19.2	4	22.1	20.8
Waterbury.....	16	8.3	3	75	12.5	1	9.6	9.5
Wilmington, Del. ¹	15	7.3	0	0	11.7	2	13.7	14.4
Worcester.....	39	10.3	4	57	10.9	3	12.0	12.6
Yonkers.....	10	8.3	0	0	4.6	1	8.3	8.1
Youngstown.....	26	7.8	2	28	9.2	2	9.9	10.3

¹ Deaths of nonresidents are included. Stillbirths are excluded.

² These rates represent annual rates per 1,000 population, as estimated for 1931 and 1930 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 77 cities.

⁵ Deaths for week ended Friday.

⁶ For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; and Washington, D. C., 27.

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 December 12, 1931, and December 13, 1930

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 12, 1931, and December 13, 1930

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930
New England States:								
Maine.....	7	4		1	264	24	0	0
New Hampshire.....	7	2			5		0	0
Vermont.....	1	5			87	11	0	0
Massachusetts.....	66	93	5	9	180	232	2	2
Rhode Island.....	7	16	3		338	2	0	0
Connecticut.....	5	17	3	1	53	105	1	3
Middle Atlantic States:								
New York.....	124	97	11	13	401	209	8	17
New Jersey.....	44	70	11	16	34	118	6	2
Pennsylvania.....	120	138			625	381	10	3
East North Central States:								
Ohio.....	118	98	22	25	124	57	2	5
Indiana.....	72	71	22	2	30	119	6	4
Illinois.....	161	179	73	29	34	253	5	11
Michigan.....	52	81	11	1	87	89	4	7
Wisconsin.....	23	17	19	21	57	206	1	3
West North Central States:								
Minnesota.....	26	15	1		11	11	0	1
Iowa.....	21	7			2	5	1	0
Missouri.....	90	53	7	9	5	554	1	10
North Dakota.....	30	5			16	5	0	0
South Dakota.....	8	5			125	2	0	2
Nebraska.....	17	15			22	1	0	2
Kansas.....	73	34			24	2	1	2
South Atlantic States:								
Delaware.....	14	3		2	2		0	0
Maryland ¹	70	40	16	22	6	8	0	1
District of Columbia ¹	15	19	2		2	3	1	0
Virginia.....							1	
West Virginia.....	53	27	5	32	286	12	1	2
North Carolina ¹	87	89	32	26	19	44	8	3
South Carolina.....	13	29	406	625	13		0	4
Georgia ¹	32	52	67	88	2	37	1	1
Florida ¹	16	15	2		2	12	1	0

¹ New York City only.

² Week ended Friday.

³ Typhus fever, 1931, 8 cases: 1 case in District of Columbia, 1 case in North Carolina, 2 cases in Georgia, 3 cases in Florida, and 1 case in Alabama.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 12, 1931, and December 13, 1930—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930
East South Central States:								
Kentucky.....	94	17					4	1
Tennessee.....	68	29	37	60	8	51	3	3
Alabama.....	84	82	21	52	18	143	3	6
Mississippi.....	51	29					0	1
West South Central States:								
Arkansas.....	30	12	11	29	13	2	1	0
Louisiana.....	37	38	27	5		3	0	5
Oklahoma ¹	97	59	47	45	1	30	0	0
Texas.....	266	56	14	53	3	54	2	0
Mountain States:								
Montana.....	1	2	1		177		0	0
Idaho.....	1					5	0	2
Wyoming.....	7	1		6	1		0	1
Colorado.....	2	11			3	49	1	3
New Mexico.....	14	9			3	38	0	0
Arizona.....	14	4	7	5	4	59	2	3
Utah ²	2	2	3	8	4	1	1	2
Pacific States:								
Washington.....	5	12			57	22	1	2
Oregon.....	1	10	18	17	12	29	0	2
California.....	81	56	105	50	146	221	8	5

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930
New England States:								
Maine.....	0	2	44	15	0	0	3	4
New Hampshire.....	0	0	15	2	0	0	0	0
Vermont.....	2	0	8	7	7	0	0	1
Massachusetts.....	7	6	300	236	0	0	3	9
Rhode Island.....	1	0	18	33	0	0	0	0
Connecticut.....	4	0	48	59	15	0	1	5
Middle Atlantic States:								
New York.....	11	4	432	511	40	9	25	26
New Jersey.....	3	0	111	182	0	0	4	2
Pennsylvania.....	7	1	414	451	1	0	26	34
East North Central States:								
Ohio.....	2	11	516	547	13	53	19	23
Indiana.....	1	1	143	189	8	71	12	4
Illinois.....	13	5	267	388	19	36	19	27
Michigan.....	3	3	188	228	14	34	5	13
Wisconsin.....	5	2	89	121	10	18	1	3
West North Central States:								
Minnesota.....	8	2	40	71	6	11	1	1
Iowa.....	3	4	47	53	41	14	1	1
Missouri.....	2	0	74	93	6	5	4	4
North Dakota.....	0	0	22	25	2	5	1	1
South Dakota.....	0	4	16	11	10	12	1	1
Nebraska.....	0	3	27	38	6	7	2	1
Kansas.....	1	3	68	51	5	25	3	2
South Atlantic States:								
Delaware.....	0	0	7	22	0	0	1	0
Maryland ³	1	0	109	76	0	0	6	9
District of Columbia ⁴	0	0	21	29	0	0	1	0
Virginia.....								
West Virginia.....	0	0	46	57	4	23	21	15
North Carolina ³	0	1	85	82	0	1	6	3
South Carolina.....	0	0	15	20	0	0	6	24
Georgia ³	1	0	35	49	2	0	9	9
Florida ³	0	0	9	5	2	1	14	9

² Week ended Friday.

³ Typhus fever, 1931, 8 cases: 1 case in District of Columbia, 1 case in North Carolina, 2 cases in Georgia, 3 cases in Florida, and 1 case in Alabama.

⁴ Figures for 1931 are exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 12, 1931, and December 13, 1930—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930	Week ended Dec. 12, 1931	Week ended Dec. 13, 1930
East South Central States:								
Kentucky.....	2	0	78	25	0	8	16	1
Tennessee.....	0	1	53	51	3	2	14	3
Alabama ¹	8	0	60	86	0	0	28	22
Mississippi.....	0	0	24	33	4	1	6	10
West South Central States:								
Arkansas.....	0	2	23	17	7	0	14	16
Louisiana.....	0	0	22	24	3	14	33	20
Oklahoma ⁴	3	2	38	34	2	21	11	9
Texas.....	0	3	71	47	7	16	20	6
Mountain States:								
Montana.....	3	0	47	42	1	14	0	2
Idaho.....	0	0	5	1	0	1	0	0
Wyoming.....	0	0	11	21	0	0	0	1
Colorado.....	0	2	40	62	0	4	2	1
New Mexico.....	0	1	9	11	0	2	9	16
Arizona.....	0	0	5	5	0	0	0	4
Utah ²	0	0	12	6	0	0	0	0
Pacific States:								
Washington.....	3	1	66	45	15	25	7	5
Oregon.....	0	1	18	22	6	19	6	4
California.....	3	15	163	99	5	46	10	4

¹ Week ended Friday.

² Typhus fever, 1931, 8 cases: 1 case in District of Columbia, 1 case in North Carolina, 2 cases in Georgia, 3 cases in Florida, and 1 case in Alabama.

⁴ Figures for 1931 are exclusive of Oklahoma City and Tulsa.

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	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Ma- laria	Measles	Pel- lagra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>October, 1931</i>										
Kansas.....	5	217	4	2	59	-----	2	275	11	45
<i>November, 1931</i>										
District of Columbia.....	2	60	2	-----	9	-----	0	92	0	14
Iowa.....	7	83	-----	-----	13	-----	37	201	258	16
Maine.....	2	17	4	-----	782	-----	13	139	0	16
Massachusetts.....	12	243	19	4	390	5	56	906	0	15
Nebraska.....	-----	93	16	-----	42	-----	4	108	29	5
New Hampshire.....	-----	21	-----	-----	-----	-----	2	23	-----	1
Vermont.....	-----	30	-----	-----	141	-----	8	58	75	0
Wyoming.....	-----	-----	-----	-----	6	-----	0	31	2	1

		Lethargic encephalitis:	
<i>October, 1931</i>		Massachusetts.....	3
Kansas:	Cases	Mumps:	
Actinomycosis.....	1	Iowa.....	14
Chicken pox.....	175	Maine.....	10
German measles.....	4	Massachusetts.....	627
Impetigo contagiosa.....	22	Nebraska.....	43
Mumps.....	88	Vermont.....	53
Ptomaine poisoning.....	1	Wyoming.....	20
Scabies.....	23	Ophthalmia neonatorum:	
Septic sore throat.....	4	Massachusetts.....	96
Tetanus.....	1	Rabies in animals:	
Trench mouth.....	1	Vermont.....	1
Tularaemia.....	1	Septic sore throat:	
Undulant fever.....	2	Iowa.....	1
Vincent's angina.....	10	Maine.....	2
Whooping cough.....	62	Massachusetts.....	21
<i>November, 1931</i>		Tetanus:	
Anthrax:		Maine.....	1
Massachusetts.....	1	Trachoma:	
Nebraska.....	1	Massachusetts.....	5
Chicken pox:		Trichinosis:	
District of Columbia.....	22	Massachusetts.....	2
Iowa.....	363	Undulant fever:	
Maine.....	193	Iowa.....	7
Massachusetts.....	488	Massachusetts.....	8
Nebraska.....	165	Vermont.....	1
Vermont.....	253	Vincent's angina:	
Wyoming.....	31	Iowa.....	8
Conjunctivitis:		Maine.....	4
Maine.....	2	Whooping cough:	
Dysentery:		District of Columbia.....	67
Iowa.....	1	Iowa.....	111
Massachusetts.....	5	Maine.....	80
German measles:		Massachusetts.....	474
Iowa.....	6	Nebraska.....	52
Massachusetts.....	66	Vermont.....	277
Impetigo contagiosa:		Wyoming.....	18
Iowa.....	3		
Lead poisoning:			
Massachusetts.....	6		

ADMISSIONS TO HOSPITALS FOR THE INSANE, AUGUST, 1929

Reports for the month of August, 1929, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 115 hospitals, located in 39 States, the District of Columbia, and the Territory of Hawaii. The 115 hospitals had 180,155 patients on August 31, 1929—95,488 males and 84,667 females, 113 males per 100 females.

The following table shows the number of new admissions for the month of August, 1929, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses.....	17	2	19
2. Senile psychoses.....	165	145	310
3. Psychoses with cerebral arteriosclerosis.....	186	127	313
4. General paralysis.....	236	75	311
5. Psychoses with cerebral syphilis.....	22	10	32
6. Psychoses with Huntington's chorea.....	1	2	3
7. Psychoses with brain tumor.....	1	1	2
8. Psychoses with other brain or nervous disease.....	27	11	38
9. Alcoholic psychoses.....	125	12	137
10. Psychoses due to drugs and other exogenous toxins.....	16	9	25
11. Psychoses with pellagra.....	12	24	36
12. Psychoses with other somatic diseases.....	43	58	101
13. Manic-depressive psychoses.....	174	243	417
14. Involution melancholia.....	18	48	66
15. Dementia præcox (schizophrenia).....	310	286	596
16. Paranoia and paranoid conditions.....	28	30	58
17. Epileptic psychoses.....	42	29	71
18. Psychoneuroses and neuroses.....	23	52	74
19. Psychoses with psychopathic personality.....	23	9	32
20. Psychoses with mental deficiency.....	63	63	126
21. Undiagnosed psychoses.....	164	103	267
22. Without psychosis.....	184	46	230
Total.....	1,879	1,382	3,261

During the month of August, 1929, there were 3,261 new admissions to the hospitals, 57.6 per cent of these being males and 42.4 per cent females—136 males per 100 females. Four hundred and ninety-seven of the new admissions were reported as undiagnosed or “without psychosis.” There were 2,764 new admissions for whom a provisional diagnosis was made. Of these 2,764 patients, cases of dementia præcox constituted 21.6 per cent; manic-depressive psychoses, 15.1 per cent; psychoses with cerebral arteriosclerosis, 11.3 per cent; general paralysis, 11.3 per cent; and senile psychoses, 11.2 per cent. These five classes accounted for 70.4 per cent of the new admissions for which a diagnosis was given.

The following table shows the number of patients in the hospitals and on parole on August 31, 1929:

	Total patients on books		
	Male	Female	Total
Total patients on books last day of month:			
In hospitals.....	85,443	76,644	162,087
On parole or otherwise absent, but still on books.....	10,045	8,023	18,068
Total.....	95,488	84,667	180,155

Of the 180,155 patients, 10,045 males and 8,023 females were on parole or otherwise absent but still on the books at the end of the month—10.5 per cent of the males, 9.5 per cent of the females, and 10.0 per cent of the total number of patients.

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 83,360,000. The estimated population of the 89 cities reporting deaths is more than 31,815,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended December 5, 1931, and December 6, 1930

	1931	1930	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
46 States.....	2,288	1,666	
96 cities.....	643	560	1,016
Measles:			
45 States.....	2,796	2,896	
96 cities.....	721	894	
Meningococcus meningitis:			
46 States.....	81	105	
96 cities.....	41	37	
Pollomyelitis:			
46 States.....	94	108	
Scarlet fever:			
46 States.....	3,766	3,889	
96 cities.....	1,145	1,270	1,083
Smallpox:			
46 States.....	316	616	
96 cities.....	33	44	23
Typhoid fever:			
46 States.....	416	407	
96 cities.....	47	63	41
<i>Deaths reported</i>			
Influenza and pneumonia:			
89 cities.....	585	650	
Smallpox:			
89 cities.....	0	0	

City reports for week ended December 5, 1931

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 several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during nonepidemic 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 1922 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.....	8	1	2	-----	0	21	0	1
New Hampshire:								
Concord.....	0	0	0	-----	0	0	0	1
Nashua.....	0	0	0	-----	0	0	1	0
Vermont:								
Barre.....	0	0	0	-----	0	1	0	0
Burlington.....	3	1	0	-----	0	10	0	0
Massachusetts:								
Boston.....	64	38	17	1	0	3	10	17
Fall River.....	9	4	2	-----	0	1	1	3
Springfield.....	7	5	0	-----	0	4	8	1
Worcester.....	8	6	0	-----	0	1	61	1
Rhode Island:								
Pawtucket.....	0	2	0	-----	0	0	0	0
Providence.....	4	9	1	2	0	169	12	2
Connecticut:								
Bridgeport.....	2	5	0	3	1	0	0	5
Hartford.....	4	6	2	-----	0	0	16	2
New Haven.....	16	1	0	4	0	0	7	5
MIDDLE ATLANTIC								
New York:								
Buffalo.....	47	15	6	1	1	2	0	12
New York.....	138	173	92	21	3	43	25	120
Rochester.....	17	4	0	-----	0	20	8	4
Syracuse.....	11	2	0	-----	0	3	4	2
New Jersey:								
Camden.....	3	7	5	2	0	0	0	7
Newark.....	22	16	2	3	0	0	8	7
Trenton.....	6	2	2	-----	0	0	4	1
Pennsylvania:								
Philadelphia.....	118	60	6	6	3	2	20	40
Pittsburgh.....	64	22	7	1	3	177	52	18
Reading.....	20	2	0	-----	0	1	0	2
EAST NORTH CENTRAL								
Ohio:								
Cincinnati.....	16	12	12	-----	1	0	0	12
Cleveland.....	171	38	4	6	1	23	32	17
Columbus.....	22	7	8	-----	0	3	6	1
Toledo.....	79	8	6	-----	0	1	0	5
Indiana:								
Fort Wayne.....	2	5	11	-----	0	0	0	0
Indianapolis.....	69	12	6	-----	2	4	53	10
South Bend.....	2	2	0	-----	0	0	0	0
Terre Haute.....	9	1	2	-----	0	0	0	2
Illinois:								
Chicago.....	106	121	74	5	5	15	9	33
Peoria.....	14	2	6	-----	0	0	1	1
Springfield.....	2	2	3	-----	0	0	1	1
Michigan:								
Detroit.....	44	60	30	2	1	1	2	17
Flint.....	24	3	1	-----	0	3	12	0
Grand Rapids.....	21	1	0	-----	0	1	5	0

City reports for week ended December 5, 1931—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—CON.								
Wisconsin:								
Kenosha.....	4	1	0	0	0	0	2	0
Madison.....	8	1	7	1	1	1	1	0
Milwaukee.....	77	15	4	0	0	1	16	0
Racine.....	41	2	0	0	0	0	26	0
Superior.....	2	1	0	0	0	0	8	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth.....	19	0	0	0	0	0	0	1
Minneapolis.....	74	20	14	1	1	1	39	4
St. Paul.....	17	7	1	1	1	0	4	3
Iowa:								
Davenport.....	3	1	1	0	0	0	0	0
Des Moines.....	1	2	6	0	0	0	0	0
Sioux City.....	18	1	4	1	1	1	1	0
Waterloo.....	12	0	1	0	0	0	0	0
Missouri:								
Kansas City.....	30	8	9	0	1	0	0	6
St. Joseph.....	6	2	6	0	1	1	1	2
St. Louis.....	23	43	38	0	3	2	2	3
North Dakota:								
Fargo.....	23	0	0	0	0	0	0	1
Grand Forks.....	4	0	0	0	0	0	0	0
South Dakota:								
Aberdeen.....	20	0	0	0	0	37	0	0
Sioux Falls.....	0	0	0	0	0	0	0	0
Nebraska:								
Omaha.....	30	9	31	0	2	5	5	5
Kansas:								
Topeka.....	7	1	1	0	1	0	0	3
Wichita.....	15	2	11	0	4	0	0	2
SOUTH ATLANTIC								
Delaware:								
Wilmington.....	1	2	0	0	0	1	0	0
Maryland:								
Baltimore.....	71	24	10	4	0	4	26	18
Cumberland.....	12	0	0	0	0	1	0	0
Frederick.....	0	0	0	0	0	0	0	1
District of Columbia:								
Washington.....	4	18	20	1	1	2	0	16
Virginia:								
Lynchburg.....	4	4	0	0	0	0	0	0
Norfolk.....	5	3	4	0	0	0	0	0
Richmond.....	4	14	21	0	0	0	0	4
Roanoke.....	8	3	6	0	0	0	0	0
West Virginia:								
Charleston.....	7	2	6	0	0	0	0	3
Huntington.....	0	2	0	0	0	0	0	0
Wheeling.....	3	1	0	0	0	0	0	2
North Carolina:								
Raleigh.....	1	2	4	0	15	0	0	1
Wilmington.....	0	2	0	0	0	0	0	2
Winston-Salem.....	13	3	2	0	0	0	0	2
South Carolina:								
Charleston.....	1	1	2	25	0	0	0	2
Columbia.....	0	1	1	0	0	0	0	14
Greenville.....	1	0	0	0	0	0	0	0
Georgia:								
Atlanta.....	18	7	5	5	0	1	7	7
Brunswick.....	0	0	0	0	0	3	0	0
Savannah.....	0	2	1	31	1	0	0	1
Florida:								
Miami.....	0	2	2	0	0	0	0	1
Tampa.....	0	2	1	0	0	0	0	0

City reports for week ended December 5, 1931—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.....	0	1	0	0	0	0	0	0
Lexington.....	1		1	0	0	1	0	0
Louisville.....	6		2	0	0	0	0	4
Tennessee:								
Memphis.....	2	8	15	1	1	1	1	4
Nashville.....	0	3	4	3	0	0	0	2
Alabama:								
Birmingham.....	1	7	8	1	2	0	0	9
Mobile.....	0	1	0	1	0	0	0	0
Montgomery.....	1	2	1	4	3	4		
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith.....	0	1	3	0	0	0	0	
Little Rock.....	1	1	7	0	0	1		2
Louisiana:								
New Orleans.....	0	15	10	1	0	0	0	12
Shreveport.....	7	1	2	0	7	0	0	4
Oklahoma:								
Muskogee.....	1		5	0	0	0	0	0
Texas:								
Dallas.....	2	18	17	1	1	0	0	9
Fort Worth.....	1	11	21	0	0	0	0	5
Galveston.....	0	1	5	0	0	0	0	2
Houston.....	0	10	28	0	1	0	0	7
San Antonio.....	0	5	0	1	0	0	0	3
MOUNTAIN								
Montana:								
Billings.....	0	0	0	0	69	0	0	0
Great Falls.....	0	0	0	0	1	0	0	0
Helena.....	1	0	0	0	14	0	0	0
Missoula.....	0	0	0	0	0	0	0	0
Idaho:								
Boise.....	0	0	0	0	0	0	0	1
Colorado:								
Denver.....	35	10	6	1	3	0	0	3
Pueblo.....	16	1	0	0	0	0	0	1
New Mexico:								
Albuquerque.....	7	1	0	0	1	1	1	1
Arizona:								
Phoenix.....	0	0	1	0	1	0	0	1
Utah:								
Salt Lake City.....	90	4	0	0	0	3	3	3
Nevada:								
Reno.....	0	0	0	0	0	0	0	1
PACIFIC								
Washington:								
Seattle.....	79	5	5		32	22		
Spokane.....	8	2	0		1	0		
Tacoma.....	19	3	3	0	0	2		3
Oregon:								
Portland.....	28	11	0	4	0	5	16	3
Salem.....	6	1	0	7	0	0	2	0
California:								
Los Angeles.....	31	38	33	41	5	8	11	11
Sacramento.....	3	3	1	1	1	44	0	3
San Francisco.....	62	14	3	9	2	7	3	10

City reports for week ended December 5, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re-ported	Typhoid fever			Whoop- ing cough, cases re-ported	Deaths, all causes
	Cases, estimated expect-ancy	Cases re-ported	Cases, estimated expect-ancy	Cases re-ported	Deaths re-ported		Cases, estimated expect-ancy	Cases re-ported	Deaths re-ported		
NEW ENGLAND											
Maine:											
Portland.....	3	12	0	0	0	1	0	0	0	4	27
New Hampshire:											
Concord.....	0	1	0	0	0	0	0	0	0	0	18
Nashua.....	0	0	0	0	0	0	0	0	0	1	-----
Vermont:											
Barre.....	0	0	0	0	0	2	0	0	0	3	5
Burlington.....	1	0	0	0	0	1	0	0	0	0	7
Massachusetts:											
Boston.....	64	60	0	0	0	14	2	1	0	28	206
Fall River.....	3	5	0	0	0	1	0	0	0	1	27
Springfield.....	5	2	0	0	0	0	0	0	1	6	29
Worcester.....	12	26	0	0	0	3	0	0	0	11	39
Rhode Island:											
Pawtucket.....	1	0	0	0	0	0	0	0	0	0	-----
Providence.....	11	9	0	0	0	4	0	0	0	3	53
Connecticut:											
Bridgeport.....	6	4	0	23	0	2	0	1	0	0	37
Hartford.....	6	2	0	0	0	0	0	0	0	4	41
New Haven.....	3	1	0	0	0	0	0	0	0	8	44
MIDDLE ATLANTIC											
New York:											
Buffalo.....	22	24	0	1	0	8	1	1	0	36	115
New York.....	124	114	0	0	0	83	14	6	2	93	1,306
Rochester.....	8	37	0	0	0	2	0	0	0	9	57
Syracuse.....	9	23	0	0	0	0	0	0	0	57	41
New Jersey:											
Camden.....	4	5	0	0	0	1	0	0	0	0	31
Newark.....	13	17	0	0	0	8	0	0	0	32	103
Trenton.....	3	3	0	0	0	7	0	2	0	1	36
Pennsylvania:											
Philadelphia.....	69	71	0	0	0	31	3	1	0	120	477
Pittsburgh.....	39	53	0	1	0	5	0	2	1	25	163
Reading.....	0	0	0	0	0	1	0	0	0	2	29
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	17	49	0	0	0	11	1	0	0	2	128
Cleveland.....	34	54	0	0	0	21	1	0	0	126	168
Columbus.....	10	20	0	0	0	2	0	0	0	5	68
Toledo.....	12	8	1	0	0	1	1	5	0	47	71
Indiana:											
Fort Wayne.....	3	1	0	0	0	1	0	0	0	0	27
Indianapolis.....	14	8	3	0	0	5	0	0	0	9	-----
South Bend.....	3	2	0	0	0	0	0	0	0	1	14
Terre Haute.....	3	1	0	0	0	0	0	0	0	0	19
Illinois:											
Chicago.....	109	125	0	0	0	37	3	3	0	144	590
Peoria.....	-----	5	0	0	0	1	0	0	0	11	20
Springfield.....	2	11	0	0	0	0	0	0	0	8	27
Michigan:											
Detroit.....	82	73	0	0	0	20	1	3	0	46	222
Flint.....	11	4	1	0	0	2	0	0	0	20	15
Grand Rapids.....	10	6	1	0	0	0	0	0	0	2	14
Wisconsin:											
Kenosha.....	0	4	1	0	0	0	0	0	0	5	6
Madison.....	2	1	1	0	0	0	0	0	0	0	-----
Milwaukee.....	19	16	0	0	0	0	1	0	0	93	91
Racine.....	5	3	0	0	0	2	0	0	0	0	13
Superior.....	3	0	0	0	0	0	0	0	0	0	5

¹ Nonresidents.

City reports for week ended December 5, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	9	1	0	0	0	0	0	1	0	0	24
Minneapolis.....	41	14	1	0	0	2	0	0	0	15	74
St. Paul.....	17	16	0	0	0	1	0	0	0	3	73
Iowa:											
Davenport.....	1	2	2	0	0	0	0	0	0	0	0
Des Moines.....	9	10	2	0	0	0	0	0	0	0	25
Sioux City.....	2	1	0	1	0	0	0	0	0	7	0
Waterloo.....	3	1	0	0	0	0	1	0	1	11	0
Missouri:											
Kansas City.....	14	19	0	0	0	4	0	0	0	6	88
St. Joseph.....	3	1	0	0	0	0	0	1	3	3	29
St. Louis.....	36	15	0	0	0	11	2	0	0	51	191
North Dakota:											
Fargo.....	2	4	0	0	0	0	0	0	0	4	10
Grand Forks.....	1	1	0	0	0	0	0	0	0	0	0
South Dakota:											
Aberdeen.....	0	2	0	0	0	0	0	0	0	5	0
Sioux Falls.....	1	0	0	0	0	0	0	0	0	0	7
Nebraska:											
Omaha.....	7	9	2	0	0	2	0	0	0	1	70
Kansas:											
Topeka.....	2	3	1	0	0	0	0	0	0	6	13
Wichita.....	4	0	0	1	0	1	0	0	0	0	31
SOUTH ATLANTIC											
Delaware:											
Wilmington.....	2	0	0	0	0	0	0	0	0	4	15
Maryland:											
Baltimore.....	22	18	0	0	0	10	2	3	0	101	199
Cumberland.....	1	4	0	0	0	0	0	0	0	2	12
Frederick.....	0	2	0	0	0	0	0	0	0	0	4
District of Colum- bia:											
Washington.....	18	16	0	0	0	9	1	0	0	14	156
Virginia:											
Lynchburg.....	1	0	0	0	0	0	0	0	0	0	0
Norfolk.....	3	11	0	0	0	1	0	0	0	0	0
Richmond.....	8	20	0	0	0	3	0	0	0	2	49
Roanoke.....	4	2	0	0	0	0	0	1	1	1	13
West Virginia:											
Charleston.....	2	1	0	0	0	0	0	1	1	3	22
Huntington.....	2	6	0	0	0	0	0	0	0	0	0
Wheeling.....	2	1	0	0	0	1	0	0	0	4	20
North Carolina:											
Raleigh.....	3	1	0	0	0	0	0	0	0	3	11
Wilmington.....	1	0	0	0	0	1	0	0	0	4	13
Winston-Salem.....	2	2	1	0	0	1	0	0	0	7	15
South Carolina:											
Charleston.....	2	1	0	0	0	3	0	0	0	0	20
Columbia.....	1	0	0	0	0	1	0	1	0	0	61
Greenville.....	0	1	0	0	0	0	0	0	0	0	0
Georgia:											
Atlanta.....	6	12	0	0	0	6	0	0	0	0	65
Brunswick.....	0	0	0	0	0	1	0	0	0	0	5
Savannah.....	1	2	0	0	0	0	1	0	0	0	30
Florida:											
Miami.....	1	0	0	0	0	2	0	0	0	0	20
Tampa.....	1	5	0	0	0	0	0	3	0	0	19
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	4	2	0	0	0	0	0	0	0	0	12
Lexington.....											
Lexington.....											
Louisville.....		16		0	0	0	0	0	0	1	15
Louisville.....				0	0	2		0	0	14	63
Tennessee:											
Memphis.....	7	8	1	0	0	6	2	1	1	20	70
Nashville.....	4	3	0	0	0	3	1	0	0	7	41
Alabama:											
Birmingham.....	4	6	0	0	0	3	1	1	0	1	68
Mobile.....	1	3	0	0	0	4	0	0	0	0	31
Montgomery.....	0	0	0	0	0	0	0	0	0	0	0

1 Nonresident.

City reports for week ended December 5, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, estimated expectancy	Cases re-ported	Cases, estimated expectancy	Cases re-ported	Deaths re-ported		Cases, estimated expectancy	Cases re-ported	Deaths re-ported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	1	1	0	0	0	0	0	0	0	2	0
Little Rock.....	3	3	0	0	0	0	0	1	0	0	2
Louisiana:											
New Orleans.....	9	9	0	0	0	4	2	5	2	0	122
Shreveport.....	2	2	0	0	0	1	0	0	1	3	30
Oklahoma:											
Muskogee.....		0		0	0	0		0	0	0	
Texas:											
Dallas.....	9	10	1	0	0	5	0	0	0	8	64
Fort Worth.....	2	8	0	1	0	3	0	1	1	0	36
Galveston.....	0	0	0	0	0	1	0	0	0	0	25
Houston.....	3	5	1	1	0	3	0	1	0	0	73
San Antonio.....	1	2	1	0	0	7	0	1	0	0	72
MOUNTAIN											
Montana:											
Billings.....	1	0	0	0	0	0	0	2	0	2	3
Great Falls.....	2	2	0	0	0	0	0	0	0	0	7
Helena.....	1	0	0	0	0	0	0	0	0	1	7
Missoula.....	1	1	0	0	0	0	0	0	0	0	10
Idaho:											
Boise.....	1	0	0	0	0	0	0	0	0	0	8
Colorado:											
Denver.....	13	19	0	0	0	5	0	0	0	7	80
Pueblo.....	1	1	0	0	0	0	0	1	0	4	7
New Mexico:											
Albuquerque.....	1	1	0	0	0	3	0	4	0	0	11
Arizona:											
Phoenix.....	1	0	0	0	0	2	0	0	0	0	
Utah:											
Salt Lake City.....	2	2	1	0	0	0	0	0	0	0	31
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	6
PACIFIC											
Washington:											
Seattle.....	10	15	1	0			1	0		8	
Spokane.....	8	0	3	2			0	1		4	
Tacoma.....	4	4	1	0	0	1	0	0	0	3	33
Oregon:											
Portland.....	8	1	3	1	0	1	0	0	0	1	74
Salem.....	1	0	0	0	0	0	0	0	0	1	
California:											
Los Angeles.....	27	27	1	0	0	11	1	2	0	18	263
Sacramento.....	3	0	1	0	0	2	0	1	0	0	32
San Francisco.....	15	5	0	3	0	7	0	1	0	9	155

City reports for week ended December 5, 1931—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	1	0
Massachusetts:									
Boston.....	0	0	0	0	0	0	2	3	0
Fall River.....	1	1	0	0	0	0	0	0	0
Rhode Island:									
Providence.....	0	0	0	0	0	0	0	1	0
MIDDLE ATLANTIC									
New York:									
New York ¹	7	3	1	0	0	0	2	3	0
Syracuse.....	0	1	0	0	0	0	0	0	0
New Jersey:									
Newark.....	0	0	0	0	0	0	0	1	0
Pennsylvania:									
Philadelphia.....	3	2	1	1	0	0	0	1	0
Pittsburgh.....	3	1	0	0	0	0	0	1	1
EAST NORTH CENTRAL									
Indiana:									
Indianapolis.....	13	3	0	0	0	0	0	0	0
Illinois ¹ :									
Chicago.....	2	0	1	0	0	0	1	0	0
Michigan:									
Detroit.....	2	0	0	1	0	0	0	0	0
Wisconsin:									
Milwaukee.....	0	0	0	0	0	0	0	1	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth.....	0	0	0	0	0	0	0	1	0
Minneapolis.....	1	0	0	0	0	0	0	1	0
St. Paul.....	0	0	0	0	0	0	0	2	0
Iowa:									
Des Moines.....	0	0	0	0	0	0	0	1	0
Waterloo.....	1	0	0	0	0	0	0	0	0
Missouri:									
Kansas City.....	0	1	0	0	1	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore.....	0	0	0	1	0	0	1	1	0
District of Columbia:									
Washington.....	1	1	0	0	0	0	0	1	0
North Carolina:									
Winston-Salem.....	0	0	0	0	1	0	0	0	0
South Carolina:									
Charleston ¹	0	0	0	0	3	0	0	0	0
Columbia.....	0	0	0	0	0	1	0	0	0
Georgia: ¹									
Savannah ¹	0	0	0	0	3	0	0	0	0
Florida:									
Miami.....	0	0	0	0	2	0	0	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Louisville.....	1	1	0	0	0	0	0	0	0
Tennessee:									
Memphis.....	0	2	0	0	0	1	0	0	0
Nashville.....	1	1	0	0	0	0	0	0	0
Alabama:									
Birmingham.....	0	0	0	0	1	1	0	0	0

¹ Typhus fever, 8 cases: 1 case at New York City, N. Y., 1 case at Springfield, Ill., 3 cases at Charleston, S. C., 1 case at Atlanta, Ga., and 2 cases at Savannah, Ga.

City reports for week ended December 5, 1931—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans.....	0	0	0	0	1	1	1	0	0
Texas:									
Dallas.....	0	0	0	0	1	1	0	0	0
Galveston.....	0	0	0	0	0	2	0	0	0
Houston.....	0	1	0	0	0	1	0	1	0
MOUNTAIN									
Utah:									
Salt Lake City.....	1	2	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle.....	3	0	0	0	0	0	0	0	0
Spokane.....	0	0	0	0	0	0	0	1	0
Tacoma.....	0	0	0	0	0	0	0	1	0
California:									
Los Angeles.....	1	0	0	0	1	0	1	0	0
San Francisco.....	2	2	0	0	0	0	1	3	0

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended December 5, 1931, compared with those for a like period ended December 6, 1930. The population figures used in computing the rates are estimated mid-year populations for 1930 and 1931, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 33,000,000. The 91 cities reporting deaths have more than 31,500,000 estimated population.

Summary of weekly reports from cities, November 1 to December 5, 1931—Annual rates per 100,000 population compared with rates for the corresponding period of 1930¹

DIPHTHERIA CASE RATES

	Week ended—									
	Nov. 7, 1931	Nov. 8, 1930	Nov. 14, 1931	Nov. 15, 1930	Nov. 21, 1931	Nov. 22, 1930	Nov. 28, 1931	Nov. 29, 1930	Dec. 5, 1931	Dec. 6, 1930
98 cities.....	94	82	96	89	96	100	85	87	101	90
New England.....	84	85	50	82	70	123	67	87	58	121
Middle Atlantic.....	32	33	52	44	53	52	58	48	54	58
East North Central.....	97	109	80	128	91	124	72	122	94	112
West North Central.....	155	77	184	107	174	110	151	110	222	101
South Atlantic.....	182	86	146	120	172	164	144	66	159	112
East South Central.....	268	215	227	185	169	275	145	138	163	143
West South Central.....	203	199	233	160	206	171	207	153	244	147
Mountain.....	44	123	61	26	17	26	27	79	52	18
Pacific.....	100	93	127	63	98	63	67	95	88	65

MEASLES CASE RATES

98 cities.....	44	59	55	91	85	126	91	107	114	142
New England.....	161	128	238	172	233	179	315	162	481	229
Middle Atlantic.....	27	34	38	68	92	76	82	69	111	85
East North Central.....	18	16	18	17	29	31	15	28	31	28
West North Central.....	15	282	17	502	19	767	15	649	27	953
South Atlantic.....	12	48	10	26	34	64	28	44	44	62
East South Central.....	12	84	12	18	29	149	35	66	35	155
West South Central.....	27	0	24	0	10	3	24	10	27	11
Mountain.....	444	229	400	308	757	326	1,277	282	757	53
Pacific.....	104	24	135	32	149	28	123	10	180	26

SCARLET FEVER CASE RATES

98 cities.....	169	169	170	187	187	195	156	174	179	202
New England.....	202	225	221	276	260	237	262	264	293	298
Middle Atlantic.....	134	133	131	126	163	159	147	143	155	178
East North Central.....	239	231	215	287	241	263	171	221	229	257
West North Central.....	140	140	149	143	132	219	123	139	161	198
South Atlantic.....	190	158	239	154	259	216	178	188	175	230
East South Central.....	99	293	198	275	145	209	122	215	128	299
West South Central.....	95	91	122	118	78	94	93	132	103	92
Mountain.....	252	282	313	388	218	282	198	229	218	141
Pacific.....	121	95	96	99	129	87	108	83	100	97

SMALLPOX CASE RATES

98 cities.....	3	2	1	4	1	3	3	8	5	7
New England.....	0	0	0	0	0	0	0	0	55	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	1	0
East North Central.....	0	4	0	2	0	0	0	4	0	1
West North Central.....	11	6	4	21	10	23	13	68	4	48
South Atlantic.....	0	0	0	0	0	0	0	0	0	0
East South Central.....	12	0	6	0	0	0	6	0	0	0
West South Central.....	3	7	3	3	0	3	21	3	3	4
Mountain.....	0	9	0	0	0	44	0	35	0	106
Pacific.....	6	6	4	18	6	6	6	8	10	10

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 estimated as of July 1, 1931, and 1930, respectively.

² Waterloo, Iowa, not included.

³ South Bend, Ind., St. Paul, Minn., Fort Smith, Ark., and Reno, Nev., not included.

⁴ Lynchburg, Va., not included.

⁵ Shreveport, La., not included.

⁶ South Bend, Ind., not included.

⁷ St. Paul, Minn., not included.

⁸ Fort Smith, Ark., not included.

⁹ Reno, Nev., not included.

Summary of weekly reports from cities, November 1 to December 5, 1931—Annual rates per 100,000 population compared with rates for the corresponding period of 1930—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Nov. 7, 1931	Nov. 8, 1930	Nov. 14, 1931	Nov. 15, 1930	Nov. 21, 1931	Nov. 22, 1930	Nov. 28, 1931	Nov. 29, 1930	Dec. 5, 1931	Dec. 6, 1930
96 cities.....	12	11	12	15	12	15	17	10	17	10
New England.....	10	5	7	24	10	17	2	12	5	7
Middle Atlantic.....	11	5	6	4	8	5	4	3	5	3
East North Central.....	5	9	11	5	5	9	6	4	4	10
West North Central.....	21	14	13	19	8	23	19	8	4	5
South Atlantic.....	30	32	36	34	24	28	34	32	16	13
East South Central.....	17	24	23	48	41	12	6	12	12	12
West South Central.....	30	28	24	87	41	34	17	70	27	26
Mountain.....	9	18	0	26	9	53	10	9	26	9
Pacific.....	0	16	10	10	18	10	2	6	10	10

INFLUENZA DEATH RATES

91 cities.....	7	9	8	9	7	10	17	9	17	19
New England.....	12	2	14	5	7	7	0	2	2	5
Middle Atlantic.....	8	12	10	8	6	7	9	11	4	6
East North Central.....	5	6	2	9	4	5	4	7	6	8
West North Central.....	6	3	6	6	6	6	3	0	6	12
South Atlantic.....	4	10	6	6	12	24	6	10	4	20
East South Central.....	0	26	0	39	25	13	13	26	38	13
West South Central.....	17	14	7	28	10	36	17	14	7	24
Mountain.....	17	9	27	9	17	62	27	26	9	13
Pacific.....	5	7	12	5	5	7	7	7	19	3

PNEUMONIA DEATH RATES

91 cities.....	88	101	86	115	101	116	106	109	109	100
New England.....	67	89	101	114	84	126	90	77	91	73
Middle Atlantic.....	107	116	106	129	116	133	96	118	96	101
East North Central.....	64	74	52	85	70	82	52	78	56	77
West North Central.....	80	87	88	78	115	138	119	93	88	132
South Atlantic.....	117	152	97	172	152	156	122	160	146	154
East South Central.....	120	136	151	186	183	175	107	136	95	155
West South Central.....	66	110	55	103	79	114	66	153	135	128
Mountain.....	139	194	148	220	174	167	126	229	122	132
Pacific.....	53	42	70	67	50	80	74	70	77	60

1 Waterloo, Iowa, not included.
 2 South Bend, Ind., St. Paul, Minn., Fort Smith, Ark., and Reno, Nev., not included.
 3 Lynchburg, Va., not included.
 4 Shreveport, La., not included.
 5 South Bend, Ind., not included.
 6 St. Paul, Minn., not included.
 7 Fort Smith, Ark., not included.
 8 Reno, Nev., not included.
 9 South Bend, Ind., St. Paul, Minn., and Reno, Nev., not included.

FOREIGN AND INSULAR

BRITISH GUIANA

Deaths from certain diseases—1928, 1929, 1930.—According to the annual report of the Surgeon General of British Guiana for the year 1930, deaths from certain diseases were reported in the colony during the years 1928, 1929, and 1930, as follows:

Disease	1928	1929	1930	Disease	1928	1929	1930
Ancylostomiasis.....	33	10	28	Influenza.....	91	121	94
Blackwater fever.....	6	11	12	Malaria.....	1,563	1,198	1,104
Diarrhea and enteritis.....	557	448	380	Nephritis.....	694	514	528
Dysentery.....	185	141	105	Pneumonia.....	711	661	588
Filariasis.....	47	52	37	Tuberculosis.....	301	276	302
Heart disease.....	363	351	359	Typhoid fever.....	58	44	53

Population Dec. 31, 1930, 312,489.

CANADA

Provinces—Communicable diseases—Week ended November 28, 1931.—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended November 28, 1931, as follows:

Province	Cerebro-spinal fever	Influenza	Lethargic encephalitis	Poliomyelitis	Smallpox	Typhoid fever
Prince Edward Island ¹						3
Nova Scotia.....		19			1	4
New Brunswick.....						4
Quebec.....	2			17		15
Ontario.....	1	6	2		2	11
Manitoba.....	1				1	8
Saskatchewan.....					5	
Alberta.....					2	
British Columbia.....						1
Total.....	4	25	2	17	11	42

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

Quebec Province—Communicable diseases—Week ended November 28, 1931.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended November 28, 1931, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	2	Paratyphoid fever.....	1
Chicken pox.....	142	Poliomyelitis.....	17
Diphtheria.....	53	Scarlet fever.....	80
Erysipelas.....	6	Tuberculosis.....	17
German measles.....	9	Typhoid fever.....	14
Measles.....	165	Whooping cough.....	73
Mumps.....	29		

CUBA

Habana—Communicable diseases—Four weeks ended November 7, 1931.—During the four weeks ended November 7, 1931, certain communicable diseases were reported in the city of Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox.....	2	.....	Poliomyelitis.....	2	.....
Diphtheria.....	9	1	Scarlet fever.....	2	.....
Leprosy.....	2	.....	Tuberculosis.....	23	4
Malaria.....	18	.....	Typhoid fever.....	9	4
Measles.....	54	.....		

GREAT BRITAIN

England and Wales—Vital statistics—July–September, 1931.—During the third quarter of the year 1931, 161,267 births and 96,745 deaths were registered in England and Wales, giving a birth rate on an annual basis of 16.0 per 1,000 population and a death rate of 9.6 per 1,000. The figures are provisional. The mortality of infants under 1 year of age was 45 per 1,000 live births.

During the 13 weeks ended October 3, 1931, deaths from certain communicable diseases were reported in 107 boroughs and great towns, including Greater London, as follows:

Disease	Number of deaths	Death rate per 1,000 population	Disease	Number of deaths	Death rate per 1,000 population
Diarrhea and enteritis (under 2 years).....	566	.....	Scarlet fever.....	44	0.01
Diphtheria.....	298	0.06	Smallpox.....	0	.....
Influenza.....	259	.05	Typhoid fever.....	18	.....
Measles.....	146	.03	Whooping cough.....	315	.03

Deaths from certain communicable diseases in 159 smaller towns for the quarter ended September 30, 1931, were as follows:

Disease	Deaths	Disease	Deaths
Diarrhea and enteritis (under 2 years).....	73	Scarlet fever.....	10
Diphtheria.....	46	Smallpox.....	0
Influenza.....	63	Typhoid fever.....	9
Measles.....	35	Whooping cough.....	38

England and Wales—Communicable diseases—Thirteen weeks ended October 3, 1931.—During the 13 weeks ended October 3, 1931, cases of certain communicable diseases were reported in England and Wales as follows (civilians only):

Disease	Cases	Disease	Cases
Diphtheria.....	10, 820	Puerperal pyrexia.....	1, 408
Ophthalmia neonatorum.....	1, 369	Scarlet fever.....	18, 941
Pneumonia.....	6, 701	Smallpox.....	459
Puerperal fever.....	512	Typhoid fever.....	737

Scotland—Vital statistics—Quarter ended September 30, 1931.—The Registrar General of Scotland has published the following statistics for the third quarter of the year 1931:

Population (provisional).....	4, 842, 554	Deaths from—Continued.	
Births.....	22, 659	Heart disease.....	1, 016
Birth rate per 1,000 population.....	18. 6	Influenza.....	56
Deaths.....	13, 242	Pneumonia.....	133
Death rate per 1,000 population.....	10. 8	Pneumonia, lobar.....	185
Marriages.....	9, 351	Measles.....	97
Deaths under 1 year.....	1, 353	Nephritis (acute).....	46
Deaths under 1 year per 1,000 births.....	60	Nephritis (chronic).....	293
Deaths from—		Puerperal sepsis.....	31
Bronchitis.....	433	Scarlet fever.....	19
Broncho-pneumonia.....	304	Syphilis.....	24
Cerebrospinal fever.....	54	Tetanus.....	2
Diabetes.....	164	Tuberculosis.....	928
Diphtheria.....	69	Typhoid fever.....	6
Dysentery.....	2	Whooping cough.....	121
Erysipelas.....	29		

SWITZERLAND

Deaths from tuberculosis—1911–1920, 1921–1930.—According to a recent report, deaths from all forms of tuberculosis occurred in Switzerland, during the 10-year periods 1911–1920 and 1921–1930, as follows:

Age group	Deaths			
	1911–1920		1921–1930	
	Males	Females	Males	Females
0–14.....	4, 757	5, 505	2, 588	2, 998
15–29.....	9, 495	13, 911	7, 039	11, 353
30–49.....	12, 276	11, 459	8, 737	8, 120
50–69.....	8, 148	7, 115	7, 135	5, 982
70 and over.....	1, 488	2, 241	1, 406	2, 158
Total.....	36, 164	40, 231	26, 905	30, 601

The population of Switzerland, according to the census of Dec. 31, 1930, is 4,082,511.

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

PLAGUE—Continued

[O indicates cases; D, death; F, present]

Place	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	November, 1931	December, 1931
British East Africa (see also table above):							
Kenya.....	184	484	235	14	28		
Equador:							
Alamor Parish—Los Hoyos.....	O						
Amaluza Parish—Cangochapa.....	O			1	2		
Calvas Canton.....	O						
Carlamanga.....	O			4	1		
Ovejeria.....	O	1					
Celicia Canton—Choras.....	O				1		
Lola Canton.....	O						
Lapaz.....	O			20	2		
Nalmuro.....	O						
Paterillo.....	O	1					
Tuburo.....	O				7		
Palas Canton—San Antonio.....	O			1	1		
Indo-China (see also table above):							
D.....	2	1			3		
Madagascar (see also table above):							
Ambositra Province.....	O	15	2	1			
D.....	15	1	1				
Antisirabe Province.....	O	12	22	19			
D.....	12	12	22	19			
Miarinarivo Province.....	O	8	20	14			
D.....	7	7	19	12			
Place							
Madagascar—Continued.							
Moramanga Province.....	O						
D.....	1	1	3	12			
Tananarive Province.....	O						
D.....	10	5	45	11			
Pern.....	O	9	5	44	63		
D.....	5	3	19	2			
D.....	1	2	14	2			
Senegal:							
Baol ¹	O	27	101	13			6
D.....	64	13	58	8			2
Dakar ¹	O	96	194	45			4
D.....	56	73	106	31			4
Diorboul ¹	O						10
D.....							5
Longa ¹	O	4	3	2			6
D.....	2	2	1	1			1
Rufisque ¹	O	2	34	2			1
D.....							8
Thies ¹	O	12	16	28			7
D.....	3	7	16	8			6
Tiessouane ¹	O	3	3				2
D.....	2	2					

¹ Reports incomplete.

Karikal.....	D	6	4	7	2	5	5	3	3	3	3	3
Pondicherry Province.....	C	6	4	6	2	1	1	3	3	3	3	3
Indo-China (see also table below):	D	7	28	20	6	1	18	4	9	18	5	5
Phnompenh.....	C	7	28	20	6	1	16	4	9	16	5	5
Saigon and Cholon.....	C	2										
Iraq:	D		3	2	3	2	1	4	1	4	2	6
Baghdad.....	D		1	1	2	2	1	2	4	4	1	1
Beers.....	C	1										1
Meal Livra.....	C	1		1			5					1
Ivory Coast (see table below).	C											
Japan: Nagoya.....	C		1									
Mexico (see also table below):	D	1	3	2	2	1	1	2	2	1	2	1
Mexico (State)—Guadaluajara.....	C	25	22	10	2	1	2	1	1	1	1	3
Mexico City and surrounding territory.....	D	13	8	2								
Monterrey.....	D	1										1
Turreon.....	D	2			1	1	1	1				
Morocco (see table below)	C											
Netherlands: Friesland—Opsterland.....	C									11		
Nigeria.....	D						186	318				
Panama: Chiriqui.....	D						89	102				3
Poland.....	C	3	18									
Portugal: Lisbon.....	C	48	45	37	10	21	18	17	16	11	6	15
Rumania (see table below).	C	5										19
Siam.....	D	1										16
Spain.....	D	5	1				3					22
Straits Settlements.....	C	1										
Sudan (Anglo-Egyptian).....	D	1										2
Syria (see table below).	C											
Turkey (see table below).	C											
Union of Socialist Soviet Republics (see table below).	C											
Union of South Africa:	C											
Natal.....	C	P	P	P	P	P	P	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	P
Upper Volta.....	D	12	2									
On vessel:	C											
S. S. Taik (pilgrim ship) at Suakin from Jeddah.....	O			1								

1 Imported case.

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

SMALLPOX—Continued

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

Place	April, 1931		May, 1931	June, 1931	July, 1931	August, 1931			September, 1931			October, 1931			Nov. 1-10, 1931
	April, 1931	June, 1931	May, 1931	June, 1931	July, 1931	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	21-31
	142	C	58	47	8	29					7	10	11	26	20
Indo-China (see also table above).....		D			4	11					8	3	3	10	4
Ivory Coast.....		C						7							
Syria: Beirut.....		C		1			4								

Place	March, 1931	April, 1931	May, 1931	June, 1931	July, 1931	August, 1931	September, 1931
	7	13	1	10	4	2	1
China: Harbin.....	C						
Chosen.....	C	11	1	4			
France.....	D	3					
Greece.....	C	16	6	9	20	1	
Mexico (see also table above).....	C	1	1	1	2		

Place	March, 1931	April, 1931	May, 1931	June, 1931	July, 1931	August, 1931	September, 1931
	6	7	49	23	48	7	6
Morocco.....	C		1				
Rumania.....	C	1	1				
Turkey.....	C	1	9				
Union of Socialist Soviet Republics.....	C	1,903	1,516	1,345			

TYPHUS FEVER

Place	Week ended—																			
	May 31- June 27, 1931		June 28- July 25, 1931		July 26- Aug. 22, 1931		September, 1931				October, 1931				November, 1931					
							Aug. 29, 1931	5	12	19	26	3	10	17	24	31	7	14	21	28
Algeria:																				
Algiers.....		9	2											1		1	1			
Bone.....	C	26	3						2						11	16	11			
Constantine Department.....	C	2							1								1			
Oran.....	C	30							1						1					1
Bulgaria.....	C	6																		
D																				
Chile:																				
Antofagasta.....	C															1				
Santiago.....	C														3					
China:																				
Manchuria—Harbin.....	C	16	3	1			1													
Shanghai.....	C																			
Chosen (see table below).																				
D																				
Colombia: Cali.....																				
Czechoslovakia (see table below).																				
Egypt:																				
Alexandria.....	C	3								1	1									
Rehela.....	C																1			
Cairo.....	C									1										
Gharbieh.....	C																	1		1
D																				
Greece (see table below).																				
Guatemala (see table below).																				
Irish Free State:																				
Cork County—																				
Schull.....	C		1																	
Kerry County—Listowel.....	C	2	1																	
Limerick County—	C	1																		
Cork County—																				
Groon.....	C																			
Glin.....	C									2										
Limerick.....	C																			
Michelstown.....	C									1										
Rathkeale.....	C																			
Mayo County—																				
Castlebar.....	C																			
Westport.....	C	1								1										
D																				
Japan.....	C																			

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

TYPHUS FEVER—Continued

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

Place	Week ended—																	
	May 31— June 27, 1931			June 28— July 25, 1931			July 26— Aug. 22, 1931			September, 1931			October, 1931			November, 1931		
Lithuania (see table below).																		
Mexico:																		
Durango.....			1															
Guadaluajara.....																		
Mexico City, including municipalities in Federal District.....	46	53	18	2	2	4	2	2	5	3	7	3	1	7				
San Luis Potosi.....	19	12	10	1	2	2	2	2	2	2	2	2	2	1				
Torreon.....	4	4	1															
Morocco.....	101	102	8				1		1	1	3	3	1	1				
Durango.....	6	6	2															
Palestine.....			11				4	4	1	1	2	2	1	1				
Paraguay: Asuncion.....	97	53	31	6	2	1	1	2	8	3	1	2	6	6	6			
Poland.....	4	6	2						1									
Rumania.....	80	11	23	4	6	3	1	6	7	4	12	12	1	2				
Tunisia: Tunis.....	13	6	2	2	1	1	1	1	2	1	3	3	3					
Turkey (see table below).	4																	
Union of Socialist Soviet Republics (see table below).																		
Union of South Africa:																		
Cape Province.....																		
Municipality of East London.....																		
Natal.....	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
Orange Free State.....	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
Transvaal.....	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
Yugoslavia (see table below).	P	P	P	P	P	P	P	P	P	P	P	P	P	P				

