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UNDULANT FEVER IN WARE COUNTY, GA.

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INTRODUCTION

Ware County, Ga., is situated in the southeastern part of the State, approximately 31° N. latitude and 82.5° W. longitude. It lies in the low, sandy, coastal plain, its southern tip including a part of the Okefenokee swamp.

The population of the county is approximately 33,000, of which about 23,000 are in the city of Waycross, the county seat. The chief industry in the rural portion of the county is turpentine production. In Waycross the shops and operating department of the Atlantic Coast Line are the largest employers of labor. The city is also a trading center for the whole county. The city has a municipal water system of satisfactory quality. The daily milk consumption is approximately 2,500 quarts. Prior to October, 1929, only one milk pasteurization plant was in operation; this plant supplied about 55 per cent of the total milk consumed in the city. About October 15, 1929, the operation of another plant was begun, and since that date about 90 per cent of the milk supply of the city has been pasteurized. In January, 1930, two dairies were producing and selling grade A raw milk under the standard milk ordinance.

OCCURRENCE OF UNDULANT FEVER IN WARE COUNTY

Undulant fever was first recognized in Ware County, Ga., in 1928. During that year 11 cases came to the knowledge of the county board of health, 6 being in the city of Waycross and 5 in a rural community outside the city limits. Investigation in 1928 by one of us (G. E. A.) showed that the 5 cases outside the city of Waycross (3 in one family and 2 in another) had all used milk from a single cow owned by the family, of which 3 members were ill. The cow died shortly afterwards, before any tests had been made to determine whether the animal was suffering from brucelliasis. The patients all gave positive agglutination reactions to *Br. abortus* when tested in the county health laboratory at Waycross. In January, 1930, these five cases

were checked by the junior author. Though the information lacked certain details, due to uncertainty of memory of the individuals, the evidence collected at this time (16 months after date of illness) agreed essentially with that obtained by the senior author at the time of the illness.

Five of the Waycross cases occurring in 1928 had moved to other localities, and so it was impossible for the junior author to check these histories.

The remaining case that occurred in 1928, that of a clerk aged 19, gave a typical clinical history of undulant fever, had a positive agglutination reaction in 1:200 dilution, and gave a history of having consumed raw milk from several herds found to contain cows that reacted positively to the *Br. abortus* agglutination test when tested by the State veterinarian's department. This patient had no contact with livestock nor with meat-handling establishments.

In 1929, 11 cases occurred in Waycross, and 9 of these 11 persons were interviewed by the junior author in January, 1930, and full information was obtained. This was done independently by one of us (H. E. H.), and the data obtained were found to check with those obtained some months before by the other (G. E. A.). The economic condition of the families in which these nine cases occurred is well above the average, none being in the indigent class. All had recovered or were convalescent.

Clinically, the cases showed a marked similarity in that they were all rather acutely ill for a period of two to three months, and the general description of symptoms indicated that the disease was rather severe. One patient spent but four weeks in bed, while one, who suffered bilateral femoral phlebitis, was unable to walk when visited by one of the writers (H. E. H.) 20 weeks after taking to bed. Of the other patients, 3 gave the duration of their illness as 8 weeks and 4 as 11 weeks. Two of the women reported that they had some swelling of the breasts, and one seemed to have narrowly escaped a mammary abscess. Neither was pregnant nor in a state of lactation.

As in most cases of undulant fever, the patients usually could not give an exact date of onset, but all had felt more or less indisposed for a considerable period of time before taking to bed. Table 1 gives the usual epidemiologic statistics of the nine cases.

EPIDEMIOLOGY

Sex.—The distribution between the sexes is practically equal, in contrast to that usually observed in groups containing cases from rural districts in which the incidence is much greater in males than in females.

Age.—The age incidence corresponds with that normally seen in undulant fever, the youngest being 14 and the oldest 56.

Occupation.—The nine patients were distributed among six different occupations, the only vocation given by more than one patient being that of "housewife," which necessarily groups the majority of married women in that occupation. To throw further light upon the environment of the housewife, the occupation of the husband may be noted. Of the four married women in the group, the husbands' occupations were as follows: Merchant, county official, railroad engineer, and train dispatcher. In no case was there an occupation that could be classed as carrying a special hazard with respect to undulant fever. Three of the housewives stated that they occasionally handled meat in the kitchen in the course of the preparation of meals, or in the storing of meat upon receiving it from the market. In all of these families such duties were usually performed by the servants.

Place of residence.—All had lived in Waycross for a period varying from 6 to 25 years. All but one had lived at the present address for one year, although he had lived in Waycross since birth.

TABLE 1.—*Epidemiologic data of cases in 1929*

Case No.	Sex	Age	Occupation	Approximate date of prodromal symptoms	Date of taking to bed	Duration	Agglutination titer	Remarks
1	M	25	Electrician	July 4	July 12	11 weeks	1:640	
2	F	42	Housewife	July 1	July 30	do	1:300	
3	F	56	do	do	Aug. 5	8 weeks	1:250	
4	F	38	do	Aug. 7	Aug. 21	11 weeks	1:350	
5	F	20	Stenographer	June 1	Sept. 5	20 weeks	1:640	Still convalescing.
6	M	14	High-school student and usher.	Aug. 25	Sept. 15	8 weeks	1:160	
7	F	40	Housewife	Aug. 30	Oct. 4	4 weeks	1:640	
8	M	34	Sheet-metal worker	Oct. 1	Oct. 17	8 weeks	1:160	Absent from work 8 weeks.
9	M	42	Insurance broker	Oct. 15	Nov. 15	11 weeks	1:640	Absent from work 11 weeks.

Temporary absences from the city.—Two patients had not been out of Waycross during the 2 months preceding illness; 1 had been absent for 4 weeks before taking to bed, but suffered prodromal symptoms during her entire visit to another city; 2 had been to a near-by beach resort, one having been there for 1 week immediately preceding taking to bed, and the other stated she was feeling ill at the time and thought the change might benefit her; 4 had made short trips, of 1 or 2 days' duration, to Jacksonville, Fla., or other near-by places. No common source of infection was encountered by these cases during any of these temporary absences.

Milk supply.—Table 2 shows the source of milk supply and habits of consumption of dairy products by the patients in the nine cases investigated.

TABLE 2.—*Consumption of milk and dairy products by cases in 1929*

Case No.	Regular supply	Raw or pasteurized	How used			Extent of use	Ice cream	Butter	Cheese
			Beverage	On cereals or fruits	In coffee				
1	Dairy A	R	Daily	None	None	At least 1 glass daily	Very little	Creamery	Seldom.
2	Dairy B	R	Occasionally	Daily	Daily	1 quart daily for family of 4	do	do	Very little.
3	Dairy A	R	do	do	do	1 quart daily for family of 3	Very seldom	Dairy	Very frequently.
4	do	R	do	Occasionally	do	5 quarts daily for family of 7	Occasionally but does not like it.	Creamery and dairy	Occasionally.
5	Dairy G Dairy A	P R	Daily do	Daily None	None do	1 pint daily, lunch	Very little	Creamery	Very little.
6	do	R	do	do	do	1 quart daily. 2 quarts, family of 4.	Occasionally	do	Frequently.
7	do	R	do	Daily	do	Nearly 1 quart daily. 1 quart for 2 people.	Frequently	Dairy	Seldom.
8	do Dairy G	R P	do None	None Daily	do Daily	1 pint daily, lunch	do	Creamery	Freely.
9	Dairy A Dairy G	R P	Daily do	do do	None do	1 quart daily for 3 people	Very little	do	Occasionally.

It will be noted that all, except the patient in Case 2, used milk from Dairy A either exclusively or partially. Case 5 used pasteurized milk from Dairy G at home, but used a pint of milk daily for lunch on business days, getting this milk at a drug store which obtained milk from Dairy A. This patient stated that she has always been below normal weight, and in order to gain weight had taken milk daily for lunch and frequently between meals, getting this milk at the drug store conveniently located near her place of work. Case 8 had taken milk daily for lunch at his place of work and stated that the milk bore the cap of Dairy A. At home he took pasteurized milk from Dairy G. Case 9 had used raw milk from Dairy A up to some time in August (exact date unknown) when he changed his regular supply to pasteurized milk from Dairy G. He began to show prodromal symptoms of undulant fever about October 15. Whether he had carried the infection from August to October in latent form can not be definitely determined, though such occurrences have been reported. It should also be stated that this patient frequently visited his parents, who lived outside the city, and took raw milk which came from their own cows. These cows seemed apparently healthy, but had not been tested for *abortus* infection.

Ice cream.—The history of consumption of ice cream by this group is unusual in that most of them used very little ice cream. Case 7 ate it frequently but stated that it was usually made at home and that the mixture was heated before it was frozen. There are two ice-cream manufacturing plants in Waycross, and both pasteurize the milk or cream used in the manufacture of their product. The ice cream of these two plants is used generally throughout the city. It should be stated that both ice-cream plants used milk and cream from herds known to contain cows that gave positive reaction to the *abortus* agglutination test.

Butter.—Five of the nine persons suffering attacks of undulant fever stated that they used creamery butter as their general supply. Two used dairy, or country butter, and two used both kinds. Of course, none was able to state the kind of butter used at meals taken away from home. As nearly all creamery butter is made from pasteurized cream it is not likely that it is a carrier of the infection. It has been shown that the souring of cream makes it impossible to recover *Br. abortus* from the sour product; and as a great portion of country butter is made from sour cream, the danger of its carrying the infection is considerably lessened, if not entirely removed.

Cheese.—Two of the nine individuals were fond of cheese and ate it frequently. The others ate it only occasionally or rarely. The ordinary American cream cheese was the kind used by all. Use of imported cheese was not reported by any of the persons interviewed.

Eggs.—In view of the report of the finding of *Brucella* in fowls and the fact that certain diseases of poultry are passed from generation to generation through the egg, an inquiry was made as to the consumption of eggs, particularly uncooked eggs, by the persons that suffered from undulant fever. One had taken raw eggs in an attempt to bring herself up to normal weight; the others used no raw eggs; 6 preferred their eggs soft cooked, 2 medium, and 1 hard cooked.

Meats.—All ate meats to some extent. Beef was used more than any other kind of meat. Pork was used by all, although two stated that they used no pork in the summer, which was the time when they contracted their infection. In this section it appears to be customary to use little or no pork in the hot months. Mutton was used to a slight extent and poultry quite frequently. None ate raw meat. Six preferred all meat well cooked, one preferred beef rare and other meats well done, and two preferred beefsteaks rare and other meat well done. In view of the evidence that butchers, meat packers, and those engaged in occupations that bring them into contact with slaughtered animals, their carcasses, and by-products are frequently infected, the possibility of contracting the disease by handling meat in the home was not overlooked. As previously noted, three of the women said that they occasionally handled meat in the kitchen while two stated that they did not. Two of those who occasionally handled meat employed cooks who usually looked after the storing and cooking of meats.

In the United States the low incidence of undulant fever in persons following the vocation of cook or house servant would suggest that the spread of the disease through handling meat in the kitchen is a rather remote probability, which thus far has not occurred often enough to make it worthy of serious consideration. The temperature and time required to cook meat are sufficient to kill non-spore-forming organisms that may be present, except perhaps in the very rarest of steaks or roasts.

Water.—The water used by all the cases was the Waycross municipal supply, obtained from artesian wells. This is used by practically the entire population of Waycross. The sanitary quality of the water has been good as far as outbreaks of water-borne disease are concerned. Bacteriologically, it occasionally has shown slight contamination, which the health officials believe is due to pollution arising from the accidental drowning of birds in the open standpipe, situated near the center of the town.

If the water had been the vector of undulant fever infection in Waycross we would expect to find the cases equally distributed between the users of raw and pasteurized milk. At the time when these cases occurred, approximately half the milk supply of the city was raw, the other half pasteurized. What was actually the case was

that 66 per cent of those attacked used raw milk exclusively and the remainder used raw milk to some extent. Not a single case occurred in a person using pasteurized milk exclusively who had used such product a sufficient time to exclude the possibility of latent infection from the previous use of raw milk. It therefore seems logical to exclude the Waycross water supply as a vehicle of infection.

Contact with livestock.—None of the nine individuals whose cases constitute the body of this report had any but very remote and infrequent contact with livestock. Case 6 helped a neighbor catch a goat only a few days before the patient went to bed. He was in the prodromal stage of the illness at the time, and so the chance of infection from the goat may be disregarded. Case 9 visited his parents, who lived outside the city, about twice each month. They had two cows and a few hogs, but the patient states that he had no contact with these animals. The husband of Case 4 had a financial interest in a dairy but did not work therein. The patient stated that she had no contact with any of the animals of the dairy. Except for these instances no contact with livestock during the two or three months preceding these illnesses could be recalled by any of the patients that were questioned.

EPIDEMIOLOGIC NOTES IN INDIVIDUAL CASES

Case 1.—Male, 25, electrician. Lived in Waycross, Ga., all his life and in present home 23 years. Prodromal symptoms July 4. Took to bed July 12. One other person in family. Works wherever his vocation calls him, but is in Waycross most of the time. Used no milk except at home. Water supply, city system. Milk supply, raw milk from Dairy A—drank at least one glass a day; regular family supply one quart daily. Ate very little ice cream, used creamery butter, and seldom ate cheese. Ate no eggs, no raw meat, and prefers all meat well done. No contact with livestock. Blood agglutination positive in 1:640 dilution.

Case 2.—Female, 42. Wife of train dispatcher. Lived at present address six years; three others in family. Took to bed July 30, but had symptoms practically all of July. Absent from city from July 2 to July 28, and sick most of the time she was away. Milk used while absent was probably pasteurized, but this is not certain. Home water supply, city system. Regular milk supply, raw milk from a grocery store. This store obtained raw milk from Dairy B only. Used milk on cereals daily and as beverage occasionally. Ate very little ice cream, creamery butter, very little cheese. Ate no raw eggs, but prefers eggs soft boiled. Ate beef and mutton, but very little pork or sausage. Prefers steaks rare, other meats well cooked. Handled meat in her kitchen. No contact with livestock. Blood agglutination test positive in 1:300 dilution.

Case 3.—Female, 56. Wife of railroad engineer. Lived at present address 25 years. Took to bed August 5, but had suffered vague symptoms for the previous month. Was in Atlanta one week in June and made short trips, of a day or two, to Savannah and Jacksonville. Used milk only on cereals and in coffee on these trips. Used city water. Regular home milk supply, raw milk from Dairy A—1 quart daily for family of three (including servant). Used milk and cream daily on cereals and in coffee and occasionally as beverage. Does not care for ice cream,

although she eats it occasionally. Used butter obtained from a farmer. Ate freely of American cream cheese. Took no raw eggs and prefers eggs medium cooked. Ate very little meat—no raw meat—and prefers all meats well cooked. No contact with livestock. Blood agglutination test positive in 1: 250 dilution.

Case 4.—Female, 38. Wife of merchant. Lived at present address 12 years; six others in family, including servant. Took to bed August 21 and had suffered prodromal symptoms for about two weeks prior to that date. During this period spent a week at a beach resort and came home and went to bed. Used no milk except canned milk during this absence. Has city water. Regular home milk supply was raw milk from Dairy A, taking 5 quarts daily for family of seven. She used milk or cream daily in coffee and occasionally on cereals or desserts or as a beverage. Does not like ice cream but eats it occasionally. Butter is partly from a dairy supply and partly creamery butter from stores. Ate cheese occasionally. Ate no raw eggs and prefers eggs soft cooked. Ate all kinds of meats, but took no raw meat; prefers beef rare and other meats well cooked. Occasionally handled meat in the kitchen. Blood agglutination test positive in 1:350 dilution.

Case 5.—Female, 20. Stenographer. Lived at present address 14 years; seven others in family. Took to bed September 5 but had been ailing since about June 1. Spent one week in June at beach resort, but was sick at that time. Usual weight, 100 pounds. Used city water. Regular home milk supply is pasteurized milk from Dairy G. Used this daily at home as beverage and on cereals, etc. In addition to this she took a pint of milk for lunch daily, on business days, at a drug store near her place of work, and occasionally got milk at this drug store between meals in order to gain weight, she having always been below normal weight. Ate very little ice cream, used creamery butter, and ate little cheese. Has taken raw eggs in her endeavor to put on weight; prefers eggs soft cooked. Ate meats, but ate pork in winter only. Ate no raw meat and prefers all meats well cooked. No contact with livestock. Blood agglutination test positive in 1:640 dilution.

Case 6.—Male, 14. High-school student and usher in theater. Lived in Waycross all his life and at present address one year; three others in family. Took to bed September 15, but had suffered prodromal symptoms since about August 25. No absences from city. Used city water. Regular milk supply, Dairy A; used 1 quart daily as beverage, none on cereals or coffee. Ate ice cream occasionally, creamery butter, and is fond of cheese. Ate no raw eggs; prefers eggs soft cooked. Eats only beef during the summer, but takes pork in winter. Ate no raw meat and prefers all meats well cooked. No contact with livestock, except that a few days before he went to bed he helped a neighbor catch a goat. This boy did not care for milk, but on account of his light weight the parents persuaded him to drink a quart of milk daily.

Case 7.—Female, 40. Wife of county official. Lived at present address five years; three others in family, including servant. Took to bed October 4. Prodromal symptoms for over one month previously. Has been absent only for 1-day trips in Jacksonville or Savannah. Took some buttermilk in Jacksonville, but no milk in Savannah. Used city water. Regular home milk supply, raw milk from Dairy A; used it daily as beverage and on cereals and desserts, consuming nearly all of the quart taken daily. Ate ice cream frequently, but usually made it at home, heating the mixture before freezing. Used butter purchased from a woman from the country. Seldom eats cheese. Ate no raw eggs, and prefers eggs medium cooked. Eats the usual kind of meats, but always well cooked; no raw meat eaten. Does not handle meat in the kitchen. No contact with livestock. Blood agglutination test positive in 1:640 dilution and *Br. abortus* isolated from the blood by the State board of health laboratory.

Case 8.—Male, 34. Sheet-metal worker. Lived at present address four years. Took to bed October 17. Prodromal symptoms from about October 1. No absences from city. Used city water. Regular home milk supply, pasteurized milk from Dairy G; used as beverage, on cereals, and in coffee. In addition he got 1 pint of raw milk daily at his place of work and took this with his lunch. This milk was from Dairy A, or at least sold under their cap. Frequently ate ice cream, used creamery butter, ate usual kinds of meat, no raw meat, prefers steaks rare and other meat well done. No contact with livestock. Blood agglutination test positive in 1:225 dilution.

Case 9.—Male, 42. Insurance broker. Lived at present address 20 years; two others in family. Took to bed about November 15. Prodromal symptoms from about October 15. Temporary absences included one trip to Jacksonville and visits to parents, a short distance out of town, about twice a month. On these visits ate dinner at parents' home and may have used milk from their two cows. Used city water at home. Regular home milk supply, raw milk from Dairy A up to some time in August, 1929 (probably about August 25), and since then pasteurized milk from Dairy G; used milk daily as beverage and on cereals. One quart daily taken for family use. Ate very little ice cream, used some creamery and some country butter, and occasionally ate cheese. Ate no raw eggs and prefers eggs well cooked. Ate usual kinds of meat, always well cooked. No raw meat eaten. Contact with livestock very slight, if any. At his father's they had 2 cows and some hogs on the place, but patient did not go near these animals. Blood agglutination titer 1:640 and *Br. abortus* isolated from blood by State health laboratory.

ORGANISMS ISOLATED FROM BLOOD OF PATIENTS

The laboratory of the State board of health was able to grow an organism from the clot of the blood specimen submitted from Cases 7 and 9, which corresponds with the porcine strain of *Br. abortus* (*Br. suis* (Traum) Huddleson, 1929). Both of these cases had practically no contact with livestock and neither handled raw pork. Apparently the explanation lies in the fact that the porcine type of organism has infected the cattle and reached the udder of one or more cows furnishing milk to these persons. Such occurrence would not be surprising in view of the fact that in Ware County most livestock runs at large, there being no fencing of grazing land. Hogs and cattle belonging to different owners may mingle indiscriminately, and under such conditions cross infections may take place.

The finding of the porcine strain of the organism accounts for the rather severe clinical type of the disease, it being quite generally considered that the porcine strain is more pathogenic for man than the bovine strain.

EVIDENCE OF INFECTION IN HERDS SUPPLYING MILK TO WAYCROSS

Late in December, 1928, the application of the *abortus* agglutination test to the dairy herds supplying milk to the city of Waycross was begun by the State veterinarian's department. In a period of 3 months tests were made on 608 cattle in 25 herds and 36 of the cattle reacted positively to the agglutination test. In May, June, and July, 1929,

another test was made, 397 animals being tested, and 21 gave positive reactions. Another test made in December, 1929, included 251 animals, of which 22 gave positive reactions. Dairy A had 1 reactor out of 76 animals in the first test and 2 reactors out of 47 tested on the second test. The dairy was sold before the third test was made, so that the animals would appear under the name of a different owner, if they were still maintained in the vicinity at the time of the third test. Dairy B had no reacting animals on the first test, one reacting on the second test and one on the third test. Dairy C had 6 reacting positively on the first test (23 tested), 7 on the second test (19 tested), and 10 on the third test (13 tested). This herd was by far the worst infected herd in the county. The milk of Dairy C was sold to an ice-cream manufacturing plant which pasteurized its product before freezing.

As the preponderance of evidence obtained by questioning persons who had suffered attacks of undulant fever seemed to point to Dairy A as the disseminator of the infection, and as this dairy never showed more than 2 or 3 reacting animals out of a total number of approximately 75, while Dairy C was extensively infected, inquiry was made to see whether any light could be thrown on this apparent inconsistency. The former manager of Dairy A was questioned (the herd having been sold before this investigation (January, 1930) was made). He stated that Dairy C sold its entire output of milk to one of the ice-cream plants and that this milk was pasteurized before it was made into ice cream. However, when Dairy A was short of milk, he would go to this ice-cream plant and buy sufficient milk to enable him to make delivery to all his customers. This would be raw milk from Dairy C, but would be put into bottles of Dairy A and distributed under the cap of the latter. The manager stated that he usually put this milk into his deliveries to restaurants, drug stores, grocery stores, etc., reserving his own milk for family deliveries.

It was further learned that in the operation of Dairy A it was customary to pour the milk from the receptacle of the milking machine through a strainer into a 10-gallon can. This can of milk would be poured over the cooler, and the milk then went directly to the bottles. As a 10-gallon can would hold the milk of 4 or 5 cows, the milk from 1 infected cow would be mixed with that of 3 or 4 others, and, except for a slight further mixing with milk from the can preceding or following, the infected milk would be diluted only 1 to 5 instead of 1 to 75 as would have been the case had the whole herd's milk been pooled before cooling and bottling was begun. It would also be possible that the milk of more than one infected cow might reach the same can, thereby concentrating the infection, in a comparatively small number of bottles of a day's delivery.

As far as could be learned Case 2 had used no milk from Dairy A though she used milk that came from Dairy B which had shown a reacting animal on the test conducted in May, and another in a later test.

Case 9 is believed to be an example of latent infection, such as those recorded by the Mediterranean Fever Commission, which reported cases that apparently received the infection 1 to 10 months before the disease became apparent. This belief is supported by the fact that this patient used milk of Dairy A up to the approximate time that a relative (Case 4) went to bed with the disease.

DISCUSSION

While the small number of cases investigated precludes any sweeping deductions, there are several facts that deserve comment.

On the whole, it seems highly significant that 9 persons having undulant fever in a city of 23,000, having its milk supply approximately equally divided between raw and pasteurized milk, should all be among users of raw milk—6 having used raw milk exclusively and 3 having used it freely, though not exclusively. It is also rather significant that the raw milk used by 8 of the 9 cases came from a dairy of which the herd is known to have contained reacting animals, and the ninth case used milk from another herd also known to have had reacting animals. Another significant point is that since October 15, 1929, about 90 per cent of the milk of the city has been pasteurized as compared with about 50 per cent before that date, the second pasteurizing plant having been put in operation in October, 1929. Since the latter date no cases have occurred, except Case 9 (reported above), and this patient suffered prodromal symptoms from about October 15.

SUMMARY

1. Nine out of 11 cases of undulant fever occurring in 1929 in Waycross, Ga., were investigated epidemiologically.

2. All of the 9 investigated cases used raw milk, 6 using it exclusively and 3 freely, though not exclusively.

3. Eight of the 9 cases used raw milk from one dairy, 5 using it exclusively.

4. One case used raw milk exclusively from another dairy.

5. Both dairy herds were found to contain cows that reacted positively to the *abortus* agglutination test.

6. The evidence indicates that the cases of undulant fever were due to the porcine strain of *Br. abortus* coming through the milk supply.

Additional note.—On February 4, 1930, the city authorities of Waycross amended the standard milk ordinance so that after March 1, 1930, only Grade A pasteurized milk shall be sold, or offered for sale, for consumption in the city.

Acknowledgments.—It is desired to acknowledge our indebtedness to the State board of health laboratory for information furnished from their records; to the State veterinarian's department for information furnished; to the practicing physicians and hospitals of Waycross for assistance in obtaining data; to the dairy owners, or managers, who furnished valuable assistance; and to the individual patients who cooperated so freely in supplying us the desired information.

THE VISIBLE EFFECT OF CASTOR-OIL SOAP ON CERTAIN ORGANISMS

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The data submitted in this paper demonstrate the visible changes in density of the suspensions of various microorganisms when treated with suitable amounts of castor-oil soap (sodium ricinoleate). So far as we are aware, these changes have not been described heretofore.

Larson and his coworkers (1) (2) (3) (4), in their studies of the effect of surface tension of the menstruum upon bacteria and toxins, have shown that virulent strains of *B. tuberculosis*, *Diplococcus pneumoniae*, and *Streptococcus viridans* can be rendered nonvirulent when suspended in solutions of sodium ricinoleate. Larson is of the belief that the soap, by lowering the surface tension of the menstruum, causes the bacteria to be more readily "wetted," and when the bacteria are introduced into the body their union with the specific antibodies is enhanced. Later it became evident that factors other than the surface tension of the menstrua must be considered, since some soaps which have a marked effect in lowering the surface tension have very little detoxifying action on toxins. Larson did not regard the action of soap as involving a true chemical union, nor did he make note of any physical changes in the bacteria themselves.

Reasoner (5) has suggested that soap lather may be responsible for the rarity of the occurrence of extra genital lesions of syphilis obtained through the barber's manipulation of utensils, since he observed that when a suspension of *Treponema pallidum* was mixed with certain commercial shaving-soap solutions, motility was inhibited at once, and "the organisms became swollen and distorted and reduced in

number." Such a statement seems to imply that many of the organisms were destroyed by the soap solution, although the author does not specifically say so.

Our own observations have shown that the density of suspensions of certain species of bacteria is reduced to zero by appropriate solutions of sodium ricinoleate, while the density of other suspensions is greatly increased. The reaction is apparently an effect not dependent upon the surface tension nor upon the hydrogen ion concentration of the menstruum.

TECHNIQUE FOR TESTING THE CHANGES IN DENSITY OF BACTERIAL SUSPENSIONS

The changes in density of suspensions of various species were tested by arranging a row of 11 agglutination tubes (⅝ inch by 3 inches) and placing in them decreasing graded amounts of the soap dissolved in a volume of ½ cubic centimeter of physiological salt solution. The dilutions ranged from 1:50 (2 grams per 100 cubic centimeters salt solution) in the first tube to 1:25,600 in the tenth tube. The last tube contained ½ cubic centimeter of salt solution without any soap and served as a control.

To each tube of the entire series was then added ½ cubic centimeter of a washed suspension of the organisms to be tested (turbidity 500). The final turbidity of the bacterial suspension in each tube was therefore 250, and the series of soap dilutions now ranged from 1:100 to 1:51,200.

We have included in Table 1 only those organisms which gave visible reactions with the various soap dilutions. Readings were made after standing 24 hours at room temperature. A few of the bacterial species would not remain in suspension throughout this period. On shaking, however, they were easily resuspended, and the effect of the soap solution upon the density of the suspension could be easily compared with that in the final tube which contained no soap.

The symbol "4" represents a complete clearing of the suspension, leaving no visible trace of turbidity. In such tubes the suspensions were as clear as distilled water. The symbol "0" represents no change in density as compared with the control tube of each species. The symbol "◎" represents a change in which the density of the suspension was greater than that of the control tube. The symbols "1," "2," "3," represent decreasing degrees of turbidity less than the control tube or in other words, increasing degrees of clearing less than complete clearing.

TABLE 1.—*The effect of graded dilutions of sodium ricinoleate upon suspensions of various bacteria*

No.	Name	Soap dilutions: 1:100	1:200	1:400	1:800	1:1,600	1:3,200	1:6,400	1:12,800	1:25,600	1:51,200	No soap
1	Bacterium tularense (Pasteurella tularensis)	4	4	4	4	3	3	3	3	2	2	0
2	Proteus X_{19}	3	2	2	0	0	0	0	0	0	0	0
3	Bacillus typhosus (Eberthella typhi)	3	2	1	◎	◎	0	0	0	0	0	0
4	Bacillus paratyphosus A (Salmonella para typhi)	0	0	◎	◎	◎	◎	◎	◎	0	0	0
5	Bacillus paratyphosus B (Salmonella schottmülieri)	1	0	0	◎	◎	◎	◎	◎	0	0	0
6	Bacillus pestis (Pasteurella pestis)	4	4	3	2	1	1	1	1	0	0	0
7	Bacillus aertrycke (Salmonella aertrycke)	2	2	1	1	1	0	0	0	0	0	0
8	Bacillus enteritidis (Salmonella enteritidis)	0	0	0	◎	◎	◎	◎	◎	0	0	0
9	Bacillus subtilis	1	0	◎	◎	◎	◎	◎	◎	◎	◎	0
10	Bacillus prodigiosus (Serratea marcecens)	3	3	2	2	1	1	1	0	0	0	0
11	Spirillum cholerae asiaticae	4	3	3	3	2	1	1	1	1	1	0
12	Bacillus alkaligenes (Eberthella alkaligenes)	4	3	3	2	1	1	0	0	0	0	0
13	Bacillus pyocyaneus (Pseudomonas aeruginosa)	3	3	2	0	0	0	0	0	0	0	0
14	Bacterium suipestifer (Salmonella suipestifer)	2	1	0	0	0	0	0	0	0	0	0
15	Bacillus pestis caviae	2	2	1	0	0	0	0	0	0	0	0
16	Micrococcus intracellularis meningitidis (Neisseria intracellularis)	2	2	0	0	0	0	0	0	0	0	0
17	Lactobacillus cerei	2	2	1	1	0	0	0	0	0	0	0
18	Streptococcus thermophylus	2	1	1	0	◎	◎	0	0	0	0	0
19	Bacillus butylicus	2	2	2	1	1	1	1	1	1	1	0
20	Micrococcus roseus (Rhodococcus roseus)	2	2	2	1	1	1	1	1	1	1	0
21	Bacillus lactis viscosum (Achromobacter viscosum)	2	1	0	0	0	0	0	0	0	0	0
22	Bacillus simplex	0	0	0	0	0	0	1	2	2	1	0
23	Acetobacter acetum	0	0	0	0	◎	0	2	3	3	1	0
24	Bacillus gallinarum (Salmonella gallinarum)	2	0	0	0	0	0	0	0	0	0	0
25	Micrococcus cyaneus	1	0	0	0	0	0	0	0	0	0	0
26	Torrula pink	2	0	0	0	0	0	0	0	0	0	0
27	Micrococcus rubri casei	2	2	1	1	0	0	0	0	0	0	0
28	Bacillus niger	◎	◎	◎	0	0	0	1	2	2	2	0
29	Saccharomyces (species not determined)	1	1	1	1	0	0	0	0	0	0	0
30	Spirillum rubrum	4	2	1	1	1	1	0	0	0	0	0
31	Micrococcus flavus	2	1	0	0	0	0	0	0	0	0	0
32	Endomyces albicans	2	1	0	0	0	0	0	0	0	0	0
33	Sarcina lutea	2	2	0	0	0	0	0	0	0	0	0
34	Bacillus columbense (Salmonella columbensis)	2	1	0	◎	◎	◎	0	0	0	0	0
35	Bacillus albolactis	0	0	0	0	0	0	0	1	1	2	0
36	Bacillus radicicola (Rhizobium radicicola)	2	2	1	1	0	0	0	0	0	0	0
37	Bacillus pneumoniae (Klebsiella pneumoniae)	0	0	0	0	◎	◎	◎	0	0	0	0
38	Bacillus murisepticus (Erysipelothrix murisepticus)	1	1	1	1	1	1	1	1	0	0	0
39	Staphylococcus citreus	2	2	2	1	1	1	1	1	1	1	0
40	Chromobacterium violaceum	3	2	2	0	◎	◎	0	0	0	0	0
41	Staphylococcus pyogenes	0	◎	◎	◎	◎	◎	◎	0	0	0	0
42	Bacillus bovisepticus (Pasteurella bovisepticus)	4	3	2	◎	0	1	2	2	2	1	0
43	Streptococcus lactis	0	0	0	0	◎	2	0	0	0	0	0
44	Bacillus cereus	3	2	2	2	1	2	0	3	3	0	0
45	Bacterium pullorum (Salmonella pullorum)	3	2	0	0	0	0	0	0	0	0	0
46	Diplococcus pneumoniae	2	2	0	0	0	0	0	0	0	0	0

Symbols:
4=complete clearing, no visible opacity.
0=no change, turbidity=250, same as control tube.
◎=density greater than 250.

DISCUSSION OF TABLE 1

In the case of *Bacterium tularense* there is noted a complete clearing of the bacterial suspension with a soap dilution of 1:800 or lower. This reaction of the soap with *B. tularense* is immediately visible. With no other bacterial species did the density of the suspension disappear so promptly, nor did complete clearing take place in as high dilutions of the soap. So far as our tests have been carried out (83 species tested) the reaction with *B. tularense* is unique, and we believe it can be employed as an additional criterion of identity for this organism. A total of 9 strains of *B. tularense* obtained from

various sections of the United States, 1 strain from Japan, and 2 from Russia have been tested. The same specific response was obtained with each. It should be stated that old stock suspensions of *B. tularense* to which formalin had been added as a preservative did not give as complete clearing as did fresh suspensions.

Several other bacterial species are seen to be completely cleared in low dilutions. *B. pestis*, for example, left no trace of turbidity in soap dilutions of 1:100 and 1:200. Likewise, *B. alkaligenes*, *Spirillum cholerae*, and *Spirillum rubrum* were completely cleared in dilutions of 1:100. However, these organisms were not completely cleared immediately, nor were they cleared after 24 hours in as high dilutions of the soap as was the case with *B. tularense*.

Whenever there was a complete disappearance of visible turbidity, a marked increase in viscosity of the solutions resembling pure glycerin in consistency was always apparent.

It was a surprise also to find that the sodium ricinoleate had the effect of increasing rather than decreasing the turbidity of some bacterial suspensions. The dilution of soap at which this increased turbidity occurred was not the same for all species of bacteria showing it, but varied widely. Indeed in some cases the turbidity of the same species was reduced at one concentration of soap, remained unaffected at another, and was increased at still another. For example *Bacillus columbense* (No. 34) was partially cleared in a soap dilution of 1:100 and showed an increased density in dilutions of 1:800, 1:1,600, and 1:3,200. The density of *Bacillus niger* (No. 28), on the other hand, increased in soap dilutions of 1:100, 1:200, and 1:400, but remained unchanged in dilutions of 1:800, 1:1,600, and 1:3,200, and was perceptibly clearer than the control tube in dilutions of 1:6,400 to 1:51,200, inclusive. All those organisms which gave unusual density effects were retested several times, using both washed and unwashed suspensions. The results showed only slight variations.

Suspensions of *Diplococcus pneumoniae* were only slightly cleared by the soap. These tests were repeated with the same result, since Kozlowski (6) reports that sodium ricinoleate may be used instead of bile for dissolving pneumococci.

MICROSCOPIC OBSERVATIONS

If we now observe under the microscope the effect of sodium ricinoleate, in appropriate concentration, upon a suspension of *B. tularense*, we find that the bacterial bodies appear to become only slightly swollen and the outlines of the cell wall less distinct. At the same time one notes a tendency to clump in small masses, the margins of which also gradually become hazy and indefinite. Under

dark field illumination one notices that the individual organisms first begin to lose their refractility as a whole, but have remaining a few refractile granules within shadowlike bodies. Finally, all trace of the bacterial cell disappears.

An actual rupture of the cell membrane, however, has never been observed with any of the bacteria.

However, in the case of a protozoa, such as *Paramecium caudata*, an organism which can be more readily observed, a marked swelling of the cell takes place in the presence of the soap. The protoplasm becomes granular, and the cell membrane can be seen to rupture, extruding the granular contents.

Again, when mammalian erythrocytes (sheep) are treated with sodium ricinoleate, one notices that these cells also exhibit first a considerable swelling and then gradually fade from view without any visible rupture or bursting of the cell as seen in the case of *Paramecium caudata*.

Saponin, which is also a good surface tension depressant, has not the slightest effect upon *B. tularense* or any other bacterial species that we have tested; yet it dissolves red cells in higher dilutions than does sodium ricinoleate.

Table 2 gives a comparison of the effect of sodium ricinoleate and saponin upon three organisms from widely different sources and upon the red cells of the sheep. It can be seen that the visible effect of these two substances upon actively motile *Paramecia* was practically identical. Also, their effect upon live guinea pig spermatozoa was the same so far as could be ascertained.

TABLE 2.—*Comparison of the effect of sodium ricinoleate with that of saponin on B. tularense, Paramecium caudata, guinea pig spermatozoa and red cells of sheep.*

	Suspension of virulent B. tularense	Actively motile Paramecium caudata	Actively motile guinea pig spermatozoa	Red cells of sheep
Sodium ricinoleate.	Complete clearing of a suspension of 250 turbidity in dilutions of 1:800. Suspensions rendered noninfectious to guinea pigs in soap dilutions of 1:12,800 after 1 hour's standing.	Motionless in 9 minutes in soap dilutions of 1:51,200. Cells swollen and many ruptured.	Motionless immediately in dilutions of 1:51,200. No dissolution of the sperms even in 1 per cent solutions.	Complete hemolysis in dilution of 1:3,200 and lower after 1 hour and in 1:6,400 after 24 hours.
Saponin.....	Turbidity of suspensions not affected. Infectiousness for guinea pigs unaffected by 1 per cent saponin after 1 hour's standing.	Motionless in 8 minutes in saponin dilutions of 1:51,200. Cells swollen and many ruptured.	Motionless immediately in dilutions of 1:51,200. No dissolution of the sperms even in 1 per cent solutions.	Complete hemolysis in dilution of 1:12,800 after 1 hour and in 1:25,600 after 24 hours.

On the other hand, sodium ricinoleate immediately cleared suspensions of *B. tularense* and rendered the organisms noninfectious (as demonstrated by inoculation of guinea pigs), while saponin had no apparent effect whatever either upon the density of the suspension or upon the infectivity of the organisms. It is also seen that sheep cells were hemolyzed in high dilutions of saponin, but were not hemolyzed in corresponding dilutions of sodium ricinoleate.

While the soap in strong concentration (0.5 to 1 per cent) was bactericidal to all strains in a suspension of salt solution that were tested, nevertheless some species, such as *Spirillum cholerae*, *Acetobacter acetum* and *proteus* X_{19} grew well in plain broth containing 1 per cent of the soap. In the case of *Spirillum cholerae* this was hardly to be expected, since 1 per cent soap completely cleared and killed a salt solution suspension (250 turbidity) within 24 hours. These observations are being pursued further.

In addition, the 37 bacterial species which are listed below were treated with graded dilutions of sodium ricinoleate in a manner similar to that in which those recorded in Table 1 were treated. In no case was either a decrease or an increase in turbidity noted.

1. *Micrococcus melitensis* (*Brucella melitensis*).
2. *Bacillus abortus* (*Brucella abortus*).
3. *Bacillus leprae* (*Mycobacterium leprae*).
4. *Bacillus tuberculosis* (*bovis*) (*Mycobacterium tuberculosis* (*bovis*))
5. *Bacillus tuberculosis* (*hominis*) (*Mycobacterium tuberculosis* (*hominis*)).
6. *Staphylococcus aureus.*
7. *Bacillus anthracis.*
8. *Bacillus coli* (*Escherichia coli*).
9. *Monilia psilosis.*
10. *Bacillus diphtheriae* (*Corynebacterium diphtheriae*).
11. *Bacillus dysenteriae* (*Eberthella dysenteriae*).
12. *Micrococcus tetragenus* (*Gaffkya tetragena*).
13. *Bacillus lacti acidi.*
14. *Bacillus aerogenes.*
15. *Streptococcus viridans.*
16. *Streptococcus hemolyticus.*
17. *Saccharomyces cerevisiae.*
18. *Baccillus botulinus* (*Clostridium botulinus*).
19. *Bacillus histolyticus* (*Clostridium histolyticum*).
20. *Bacillus tetani* (*Clostridium tetani*).
21. *Bacillus welchi* (*Clostridium welchi*).
22. *Bacillus oedematis maligni* (*Clostridium oedematis maligni*).
23. *Bacillus propionice.*
24. *Bacillus vulgatus.*
25. *Bacillus fusiformis.*
26. *Micrococcus catarrhalis* (*Neisseria catarrhalis*)
27. *Bacillus bronchisepticus* (*Alkaligenes bronchisepticus*).
28. *Bacillus fecalis alkaligenes* (*Alkaligenes fecalis*).
29. *Bacillus biazoteus* (*Cellulomonas biazotea*).

30. *Bacterium lactis aerogenes* (*Aerobacter aerogenes*).
31. *Bacillus cuniculicida* (*Pasteurella cuniculicida*).
32. *Bacillus rubricus* (*Serratia rubrica*).
33. *Cryptococcus metaniger.*
34. *Bacillus mycoides roseus* (*Serratia rosea*).
35. *Torrula red.*
36. *Bacillus megatherium.*
37. *Bacillus mycoides.*

The failure of the soap to affect the turbidity of the above bacterial suspensions does not mean, of course, that the bacteria themselves were in no way affected, but simply that there was no visible change as noted with other species. On the other hand, the complete clearing of a suspension does not mean that the organisms are killed. For example, suspensions of *Spirillum cholerae* are completely cleared by 1 per cent solution of soap, and yet the organism will grow luxuriantly in broth media containing 1 per cent soap. At the present time we are unable to account for these physical or chemical changes responsible for the increased densities of the suspensions of organisms as shown in Table 1. It was noted, however, that when slide preparations were made of those suspensions showing an increased density, it was found that the bacteria stained a deeper hue with aniline dyes than did the organisms from the same suspensions not treated with soap.

SUMMARY

1. Sodium ricinoleate, in appropriate amounts, completely clears the bacterial suspensions of certain species in physiological salt solution, rendering such suspensions water clear.

2. The density of suspensions of certain other bacterial species is increased by appropriate concentrations of sodium ricinoleate.

3. The density of still other bacterial suspensions is increased at one concentration and decreased at another concentration. The explanation of such changes is not yet apparent.

4. Certain bacterial species will grow in plain broth containing 1 per cent sodium ricinoleate.

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MEDICAL SERVICE IN FEDERAL PRISONS

By W. L. TREADWAY, *Assistant Surgeon General, Narcotics Division, United States Public Health Service*

An act of the Seventy-first Congress, second session, approved by the President on May 13, 1930, authorizes that medical relief under the Department of Justice in Federal penal and correctional institutions shall be supervised and furnished by personnel of the Public Health Service.

With the cooperation and support of the two governmental departments concerned, proposed legislation to accomplish this object was introduced in the House of Representatives by Congressman George S. Graham, of Pennsylvania, on January 28, 1930, as H. R. 9235. A report on this bill from the Committee on the Judiciary of the Senate, submitted by Senator Frederick Steiwer, of Oregon, serves to illustrate the attitude of the legislative branch of the Government concerning this proposed activity. The report of the Committee on the Judiciary is quoted as follows:

> The Committee on the Judiciary, to which was referred the bill (H. R. 9235) to authorize the Public Health Service to provide medical service in the Federal prisons, have given full consideration to the same, and now report favorably thereon with the recommendation that the bill pass without amendment.
>
> Medical service is of outstanding importance in the treatment of prisoners in our Federal penal institutions. To eliminate contagious diseases, to properly diagnose physical ailments, to accurately classify men with reference to their mental capacities, is of cardinal importance in the treatment of the individual prisoner; but it is of greatest importance in the protection of our communities. It has been difficult in the past to secure the services of a sufficient number of highly trained physicians, surgeons, and mental experts to fill the posts in our prisons.
>
> There is now within the Federal Government an existing personnel of highly trained medical experts. The United States Public Health Service has acquired an enviable reputation for achievement in its field. It would seem to be a wise scheme to have the Government utilize the services of the United States Public Health Service in its penal institutions. This should result in more expert service and offer a continuation and unification of policies among our institutions which could not perhaps be otherwise obtained.
>
> The committee respectfully urges the support of this bill as an important step to be taken in the reorganization of the Federal prison system.
>
> The Secretary of the Treasury and the Attorney General have both been recorded as favorable to this bill and have expressed the opinion that it offers an opportunity for increased and useful cooperation between Government departments.

Another act of the Seventy-first Congress, second session, approved by the President on May 13, 1930, authorizes the establishment of a hospital for the care and treatment of all persons charged with or convicted of offenses against the United States, who are in actual custody, and during their detention or confinement are or shall become insane, afflicted with an incurable or chronic degenerative disease, or

so defective mentally or physically as to require special medical care and treatment not available in existing Federal institutions. A report on this bill from the Committee on the Judiciary of the Senate, submitted by Senator Hubert D. Stephens, of Mississippi, is quoted below:

The Committee on the Judiciary, to which was referred the bill (H. R. 7410) to establish a hospital for defective delinquents, has given full consideration to the same and now reports favorably thereon with the recommendation that the bill pass without amendment.

This bill, which is one of the series designed to enable the Department of Justice to cope with the present unsatisfactory condition in our prisons, presents an important opportunity for further relief from overcrowding in our Federal penal institutions.

As at present constituted, the Federal penal system makes no special provision for the cases of convicts who are insane, tubercular, or chronically sick. Two hundred and four Federal insane convicts are now crowded into unsuitable and insufficient quarters at St. Elizabeths Hospital in Washington, D. C. The superintendent of that institution is recorded as strongly in favor of this legislation. Tubercular prisoners must, under the present arrangements, be cared for in tents or in portions of buildings located within the prison reservations. The chronically sick among the inmate population, who present but slight necessity for that close restraint typical of a prison, must now be placed in prison cells or in prison environment.

The bill as here proposed would authorize the establishment of a general hospital for the care, custody, and treatment of this difficult and pitiable class of prisoners. The common dictates of humanity would seem to demand something better for them than is possible under existing facilities. Their segregation would form an important element in the program of penal treatment as planned by the group of bills herewith recorded by the committee.

The bill provides for the manner of commitment and discharge, has been carefully studied by the committee and meets its entire approval. There follows a statement from the Department of Justice explaining the aims and purposes of the bill:

BILL TO ESTABLISH A HOSPITAL FOR DEFECTIVE DELINQUENTS

A special hospital is needed for the care and treatment of the relatively large percentage of the prison population which is defective mentally or physically. It is well recognized that very often the cause of crime is some mental or physical handicap which must be removed if the man or woman who gets into prison is to be improved by confinement. It is generally assumed that about 6 per cent of the whole population is so defective mentally that they ought to be segregated. To house and care for even this percentage of the prison population would require an institution built to accommodate about 600 patients. In addition to the mental defectives, a large number of the inmates of correctional institutions are afflicted with diseases which demand special treatment. These include tuberculosis cases, advanced venereal cases, senility, and other types of chronic, degenerative, or incurable diseases.

Those mental cases which are so apparent they can be recognized by the regular prison officials are now sent to St. Elizabeths Hospital in Washington. Less apparent cases of mental instabliliy and those who are suffering from disease are retained at the prison and treated in the prison hospital.

The Government hospital for the insane, in the District of Columbia, is badly overcrowded. The criminally insane ward is particularly congested and can not house any more insane convicts. Moreover, the cost of transporting insane convicts from all over the country is high. It is for these reasons that a medical center for prison cases should be established somewhere in the central part of the United States.

The bill as drafted is substantially the same as the ones authorizing two new correctional institutions. It has, however, one section which provides a board of

examiners to pass on all cases to be sent to the hospital for defective delinquents. The reason for this provision was the feeling that no person, even though he is in prison, ought to be stigmatized as insane except by formal proceedings of a qualified board. Moreover, it was felt some such board was desirable to make certain that only cases really demanding special treatment would be transferred to the hospital for defective delinquents.

The bill also has a section which makes it the duty of the prison officials to see that no person who is suffering from a mental disease is turned loose upon the public without first trying to get the particular State concerned to take him in charge. At present, if the officials believe a convict whose sentence has expired is still insane, they continue to hold him unless his release is sought by one of his friends through legal process. In such cases they have no alternative but to release him, as their jurisdiction ended with the expiration of the sentence. The proposed provision would authorize a definite procedure for handling such cases.

As a matter of convenience to those who may be interested in them, the two acts discussed above are presented in full herewith:

[PUBLIC—No. 203—71ST CONGRESS]

[H. R. 9235]

An Act To authorize the Public Health Service to provide medical service in the Federal prisons

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That hereafter, authorized medical relief under the Department of Justice in Federal penal and correctional institutions shall be supervised and furnished by personnel of the Public Health Service, and upon request of the Attorney General, the Secretary of the Treasury shall detail regular and reserve commissioned officers of the Public Health Service, pharmacists, acting assistant surgeons, and other employees of the Public Health Service to the Department of Justice for the purpose of supervising and furnishing medical, psychiatric, and other technical and scientific services to the Federal penal and correctional institutions.

SEC 2. The compensation, allowances, and expenses of the personnel so detailed may be paid from applicable appropriations of the Public Health Service in accordance with the law and regulations governing the personnel of the Public Health Service, such appropriations to be reimbursed from applicable appropriations of the Department of Justice; or the Attorney General is hereby authorized to make allotments of funds and transfer of credit to the Public Health Service in such amounts as are available and necessary, which funds shall be available for payment of compensation, allowances, and expenses of personnel so detailed, in accordance with the law and regulations governing the personnel of the Public Health Service.

Approved, May 13, 1930.

[PUBLIC—No. 201—71ST CONGRESS]

[H. R. 7410]

An Act To establish a hospital for defective delinquents

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Attorney General is authorized and directed to select a site, either in connection with

some existing institution or elsewhere, for a hospital for the care and treatment of all persons charged with or convicted of offenses against the United States, and who are in the actual custody of its officers or agents, and who at the time of their conviction or during the time of their detention and/or confinement are or shall become insane, afflicted with an incurable or chronic degenerative disease, or so defective mentally or physically as to require special medical care and treatment not available in an existing Federal institution.

SEC. 2. Upon the selection of an appropriate site the Attorney General shall submit to Congress an estimate of the cost of purchasing the same and of remodeling, constructing, and equipping the necessary buildings thereon. The Attorney General, at the same time and annually thereafter, shall submit estimates covering the expense of maintaining and operating such institution, including salaries of all necessary officers and employees.

SEC. 3. That the Secretary of the Treasury is hereby authorized, upon request of the Attorney General, to cause plans, specifications, and estimates for the remodeling and constructing of the necessary buildings to be prepared in the Office of the Supervising Architect of the Department of the Treasury, and the work of remodeling and constructing the said buildings to be supervised by the field force of said office: *Provided*, That if, in his discretion, it would be impracticable to cause such plans, specifications, and estimates to be prepared in the Office of the Supervising Architect of the Department of the Treasury, and such work to be supervised by the field force of said office, the Secretary of the Treasury may contract for all or any portion of such work to be performed by such suitable person or firm as he may select: *Provided further*, That the proper appropriation for the support and maintenance of the Office of the Supervising Architect be reimbursed for the cost of such work and supervision.

SEC. 4. That the control and management of the institution to be established hereunder shall be vested in the Attorney General, who shall have power to promulgate rules for the government thereof, and to appoint, subject to the civil service laws and regulations of the United States, all necessary officers and employees. In connection with such maintenance and operation the Attorney General is authorized to establish and conduct industries, farms, and other activities; to classify the inmates; and to provide for their proper treatment, care, rehabilitation, and reformation.

SEC. 5. That the inmates of said institution shall be employed in such manner and under such condition as the Attorney General may direct. The Attorney General may, in his discretion, establish industries, plants, factories, or shops for the manufacture of articles, commodities, and supplies for the United States Government; require any department or establishment of the United States to purchase at current market prices, as determined by the Attorney General or his authorized representatives, such articles, commodities, or supplies as meet their specifications. There may be established a working-capital fund for said industries out of any funds appropriated for said institution; and said working-capital fund shall be available for the purchase, repair, or replacement of machinery, or equipment, for the purchase of raw materials and supplies, for personal services of

civilian employees, and for the payment to the inmates or their dependents of such pecuniary earnings as the Attorney General shall deem proper.

SEC. 6. There is hereby authorized to be created a board of examiners for each Federal penal and correctional institution where persons convicted of offenses against the United States are incarcerated, to consist of (1) a medical officer appointed by the warden or superintendent of the institution; (2) a medical officer to be appointed by the Attorney General; and (3) a competent expert in mental diseases to be nominated by the Surgeon General of the United States Public Health Service. The said board shall examine any inmate of the institution alleged to be insane or of unsound mind or otherwise defective and report their findings and the facts on which they are based to the Attorney General. The Attorney General, upon receiving such report, may direct the warden or superintendent or other official having custody of the prisoner to cause such prisoner to be removed to the United States hospital for defective delinquents or to any other such institution as is now authorized by law to receive insane persons charged with or convicted of offenses against the United States, there to be kept until, in the judgment of the superintendent of said hospital, the prisoner shall be restored to sanity or health or until the maximum sentence, without deduction for good time or commutation of sentence, shall have been served.

SEC. 7. Any inmate of said United States hospital for defective delinquents whose sanity or health is restored prior to the expiration of his sentence, may be retransferred to any penal or correctional institution designated by the Attorney General, there to remain pursuant to the original sentence computing the time of his detention or confinement in said hospital as part of the term of his imprisonment.

SEC. 8. It shall be the duty of the superintendent of said hospital to notify the proper authorities of the State, District, or Territory where any insane convict shall have his legal residence, or, if this can not be ascertained, the proper authorities of the State, District, or Territory from which he was committed, of the date of the expiration of the sentence of any convict who, in the judgment of the superintendent of said hospital, is still insane or a menace to the public. The superintendent of said hospital shall cause to be delivered into the custody of the proper authorities of the State, District, or Territory the body of said insane convict.

SEC. 9. All transfers from penal and correctional institutions to or from the hospital for defective delinquents shall be made in such manner as the Attorney General may direct, and the expense thereof shall be paid from such appropriation as may be authorized.

SEC. 10. The expenses incurred in the necessary travel in the selection of a site, in making of surveys, the making of preliminary sketches, and the securing of options shall be payable out of appropriation "Support of prisoners" for the fiscal year in which such expense is incurred, not exceeding, however, the sum of $20,000.

SEC. 11. There are hereby authorized to be appropriated such funds as are necessary to carry out the purpose of this Act.

Approved, May 13, 1930.

A review of the public documents respecting these two acts again calls attention to the fact that important medical problems arise in

connection with the care of Federal prisoners. These may be considered under the headings of routine requirements and of research activities. The routine requirements involve the psychiatric examination and classification of all inmates and physical examinations that will permit of prompt recognition and correction of physical defects and diseases among prisoners.

The psychiatric examination and classification of prisoners is of very great value to those concerned with the application of disciplinary measures, with the treatment of prisoners generally, with the transfer of mentally disordered persons to institutions most suited to give specialized care, and with the subject of parole and discharge of inmates. A more intimate knowledge of the mental characteristics of prisoners will contribute to a better understanding of features involved in correctional systems generally, to the necessity for specialized methods in court procedure, and to the evolution of institutional facilities to meet the requirements applicable to individual cases.

It is obvious that inmates of prisons are subject to the same intercurrent physical and mental defects as are seen among those comprising the general population. A properly organized prison medical service, therefore, must be both general and special in character to meet these needs.

A well-organized medical service in a modern prison can contribute to the welfare of inmates and employees in ways other than those mentioned, such as the following: By rendering advice and counsel respecting sanitation and personal hygiene; by helping to organize and guide recreational, educational, occupational, and vocational activities with a view to promoting the health of both inmates and employees; and, by giving assistance and advice for maintaining a wholesome and well-balanced dietary, the neglect of which is a great source of discord and complaints in all prisons.

It is manifest that the chief medical officer of a large modern prison has an important and specialized duty to perform, and one requiring special training, administrative ability, tact, and judgment. As a rule, the recruiting of medical personnel and the organization of a reliable and competent group to perform the duties incident to the medical service of a large prison are most unsatisfactory unless there is some adequate reward for service. Satisfactory working conditions, reasonable salary and tenure of office, opportunities for advancement, and retirement for disability or old age are important considerations. Above all else, however, and that which makes the greatest appeal, is the satisfaction which comes to medical men and women who are given opportunity to contribute something to the sum of knowledge in respect of a particular and specialized field. Any medical service in any prison which does not assume the flavor of study and investigation is doomed to be perfunctory in character.

It is not assumed that Federal prisoners should be used as experimental animals for the furtherance of medical knowledge. However, a large prison may be regarded as analogous to a laboratory, subject to control, where observations and scientific studies should be made possible. The following are some of the problems of human ills that might be profitably observed and studied under this controlled environment: Cardiorenal diseases; the treatment of syphilis; dental caries and pyorrhea—in fact, the whole array of focal infection; statistical studies of the physical status of prisoners, with special reference to the glands of internal secretion; studies of the social factors instrumental in unsocial reactions; the mental characteristics of individual prisoners; the motivation behind special types of crimes, or habits, such as drug addiction; physiological and chemical studies of the normal in contrast with the abnormal; standardization and the uniform collection of statistics of prisoners with special reference to their physical and mental status; and other contributions on the routine handling of specific illnesses and defects.

It is obvious that the Public Health Service is interested in the investigative and the administrative possibilities which the two laws provide. Apparently no new precedent has been established by charging the Public Health Service with this new responsibility; for it is merely another step in attempting to coordinate and promote uniformity in the medical work of the Federal Government.

COURT DECISION RELATING TO PUBLIC HEALTH

Nuisance caused by sewage and waste disposal enjoined.—(Michigan Supreme Court; Gundy et ux. *v.* Village of Merrill et al., 230 N. W. 163; decided Apr. 7, 1930.) In a suit against a village and a creamery company for an injunction and damages the plaintiffs claimed that one of the outlets of the village sewer ran into a closed, tiled drain, that this in turn emptied into an open drain or ditch which crossed plaintiffs' farm, that foul matter coming from the sewer stagnated in front of plaintiffs' home, that the creamery company deposited waste in the tiled drain with like effect, and that the odors, etc., arising from the open drain or ditch were so offensive that it was impossible for them to live in their home without enduring an almost intolerable nuisance. The creamery company maintained that it no longer deposited offensive substances in the drain. The lower court found in plaintiffs' favor. No damages were awarded, but the nuisance was ordered abated by a certain date, after which date the depositing of offensive substances in the ditch was enjoined. The defendants appealed.

The supreme court held that the village had no right to deposit sewage in an open drain in any manner that would cause a nuisance and that there could be no prescriptive right to maintain a public nuisance. The court said that the measures necessary to abate the nuisance were for the determination of the village's administrative officers. It then extended the time allowed for the abatement of the nuisance and provided that after such time the defendants should be enjoined from depositing sewage and waste in the drain so as to cause offensive odors, smells, or vapors in front of plaintiffs' home.

DEATHS DURING WEEK ENDED MAY 31, 1930

Summary of information received by telegraph from industrial insurance companies for the week ended May 31, 1930, and corresponding week of 1929. (From the Weekly Health Index, June 4, 1930, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 31, 1930	Corresponding week, 1929
Policies in force	75, 782, 122	74, 266, 514
Number of death claims	11, 132	11, 437
Death claims per 1,000 policies in force, annual rate	7. 7	8. 0

Deaths from all causes in certain large cities of the United States during the week ended May 31, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929. (From the Weekly Health Index, June 4, 1930, issued by the Bureau of the Census, Department of Commerce)

City	Week ended May 31, 1930		Annual death rate per 1,000 corresponding week, 1929	Deaths under 1 year		Infant mortality rate, week ended May 31, 1930 [2]
	Total deaths	Death rate [1]		Week ended May 31, 1930	Corresponding week, 1929	
Total (65 cities)	6, 604	11. 6	12. 8	605	698	[3] 50
Akron	28			3	3	27
Albany [4]	20	8. 7	16. 0	0	3	0
Atlanta	80	16. 4	15. 9	6	6	63
White	48			4	3	127
Colored	32	(5)	(5)	2	3	32
Baltimore [4]	196	12. 3	14. 1	20	33	68
White	147			13	24	56
Colored	49	(5)	(5)	7	9	113
Birmingham	62	14. 5	13. 4	3	4	28
White	21			2	1	31
Colored	41	(5)	(5)	1	3	24
Boston	201	13. 1	15. 5	20	22	56
Bridgeport	28			1	3	17
Buffalo	127	11. 9	13. 4	13	9	58
Cambridge	15	6. 2	12. 0	2	2	37
Camden	25	9. 6	9. 6	1	2	18
Canton	12	5. 4	9. 8	2	3	50
Chicago [4]	604	10. 0	13. 3	51	77	45
Cincinnati	86			8	8	47
Cleveland	183	9. 4	10. 4	17	14	51
Columbus	83	14. 5	14. 0	8	4	78
Dallas	58	13. 9	8. 9	10	6	----------
White	43			6	6	----------
Colored	15	(5)	(5)	4	0	----------
Dayton	30	8. 5	11. 9	3	2	44
Denver	78	13. 8	12. 2	7	7	73
Des Moines	31	10. 6	10. 3	1	0	17

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended May 31, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929—Continued.

City	Week ended May 31, 1930		Annual death rate per 1,000 corresponding week, 1929	Deaths under 1 year		Infant mortality rate, week ended May 31, 1930 [2]
	Total deaths	Death rate [1]		Week ended May 31, 1930	Corresponding week, 1929	
Detroit	248	9.4	12.7	22	45	34
Duluth	25	11.2	13.8	6	2	161
El Paso	41	18.1	20.4	10	7	----
Erie	21	----	----	3	2	64
Fall River [4]	27	10.5	8.5	3	2	69
Flint	19	6.7	12.6	4	7	47
Fort Worth	39	11.9	11.0	4	1	----
White	27	----	----	2	1	----
Colored	12	(5)	(5)	2	0	----
Grand Rapids	30	9.5	13.0	3	3	46
Houston	76	----	----	11	4	----
White	51	----	----	7	3	----
Colored	25	(5)	(5)	4	1	----
Indianapolis	74	10.1	15.8	4	9	30
White	55	----	----	3	7	26
Colored	19	(5)	(5)	1	2	54
Jersey City	56	9.0	13.8	7	7	61
Kansas City, Kans	15	6.6	15.0	1	4	24
White	14	----	----	1	3	27
Colored	1	(5)	(5)	0	1	0
Kansas City, Mo	90	12.0	12.1	7	7	54
Knoxville	29	14.3	13.9	5	1	117
White	23	----	----	5	1	130
Colored	6	(5)	(5)	0	0	0
Los Angeles	206	----	----	17	28	52
Louisville	64	10.1	12.2	2	7	17
White	54	----	----	2	6	20
Colored	10	(5)	(5)	0	1	0
Lowell	27	----	----	1	0	24
Lynn	14	6.9	12.9	5	3	126
Memphis	81	22.2	22.5	10	6	119
White	45	----	----	5	5	92
Colored	36	(5)	(5)	5	1	169
Milwaukee	80	7.7	11.7	7	10	35
Minneapolis	80	9.1	11.9	8	11	52
Nashville	39	14.6	12.7	4	6	62
White	20	----	----	2	5	41
Colored	19	(5)	(5)	2	1	127
New Bedford	30	----	----	5	1	128
New Haven	43	11.9	13.6	3	4	58
New Orleans	145	17.6	19.2	10	18	58
White	84	----	----	8	7	71
Colored	61	(5)	(5)	2	11	34
New York	1,416	12.3	12.5	123	140	52
Bronx Borough	203	11.1	11.2	8	18	19
Brooklyn Borough	446	10.1	10.6	50	44	53
Manhattan Borough	588	17.5	17.2	55	58	90
Queens Borough	143	8.7	8.7	10	16	29
Richmond Borough	36	12.5	18.3	0	4	0
Newark, N. J	88	9.7	10.0	7	13	37
Oakland	70	13.3	10.1	5	6	69
Oklahoma City	36	----	----	4	3	79
Omaha	54	12.6	15.4	4	6	45
Paterson	31	11.2	13.7	4	6	70
Philadelphia	448	11.3	10.8	43	29	64
Pittsburgh	185	14.3	13.9	20	23	73
Portland, Oreg	74	----	----	1	2	12
Providence	61	11.1	11.7	4	3	37
Richmond	44	11.8	15.6	7	7	104
White	25	----	----	4	4	90
Colored	19	(5)	(5)	3	3	131
Rochester	55	8.7	11.6	5	5	44
St. Louis	206	12.7	13.4	12	15	39
St. Paul	52	----	----	3	5	30
Salt Lake City [4]	32	12.1	12.5	4	2	63
San Antonio	106	25.3	16.0	32	24	----
San Diego	39	----	----	1	3	21
San Francisco	155	13.8	11.9	7	11	48
Schenectady	23	12.9	15.6	1	3	31
Seattle	72	9.8	10.2	2	3	20

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended May 31, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929—Continued.

City	Week ended May 31, 1930		Annual death rate per 1,000 corresponding week, 1929	Deaths under 1 year		Infant mortality rate, week ended May 31, 1930 [2]
	Total deaths	Death rate [1]		Week ended May 31, 1930	Corresponding week, 1929	
Somerville	14	7.1	7.1	0	2	0
Spokane	26	12.4	16.2	1	4	26
Springfield, Mass	32	11.1	13.6	2	6	32
Syracuse	63	16.5	12.6	4	1	50
Tacoma	24	11.3	9.9	3	1	77
Toledo	54	9.0	11.0	1	8	9
Trenton	41	15.4	13.9	8	1	149
Utica	23	11.5	12.5	3	1	85
Washington, D. C	122	11.5	13.1	5	8	29
White	88			2	2	17
Colored	34	(3)	(3)	3	6	53
Waterbury	11			0	2	0
Wilmington, Del	33	13.4	12.2	1	4	23
Worcester	44	11.6	10.8	4	2	52
Yonkers	8	3.4	10.3	0	1	0
Youngstown	30	9.0	17.1	4	9	63

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 73 cities.
[4] Deaths for week ended Friday.
[5] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Reports for Weeks Ended May 31, 1930, and June 1, 1929

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 31, 1930, and June 1, 1929

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 31, 1930	Week ended June 1, 1929	Week ended May 31, 1930	Week ended June 1, 1929	Week ended May 31, 1930	Week ended June 1, 1929	Week ended May 31, 1930	Week ended June 1, 1929
New England States:								
Maine			9	4	98	131	1	0
New Hampshire			2		18	76	0	0
Vermont	1				30	1	0	0
Massachusetts	57	54	1	4	1,134	465	9	3
Rhode Island	3	8			15	49	0	1
Connecticut	10	17	2	5	26	219	2	1
Middle Atlantic States:								
New York	104	293	[1] 17	[1] 10	1,927	748	6	33
New Jersey	68	109		4	846	239	2	9
Pennsylvania	105	127			1,327	2,074	13	12
East North Central States:								
Ohio	70	75	7	10	629	2,508	7	26
Indiana	10	11			140	444	3	3
Illinois	112	200	4	11	351	1,777	8	18
Michigan	43	62	4	5	913	677	26	71
Wisconsin	16	25	12	12	798	1,372	4	3
West North Central States:								
Minnesota	23	14	1	1	196	341	1	1
Iowa	6	7			167	53	2	1
Missouri	30	55	1	1	56	146	4	16
North Dakota	6	33			16	130	0	4
South Dakota	7	3				23	0	1
Nebraska	12	8		3	224	484	1	1
Kansas	13	3	1	1	365	708	2	5
South Atlantic States:								
Delaware	3	3			2	14	0	0
Maryland [2]	24	11	7	10	69	46	4	1
District of Columbia	9	11			68	28	0	0
Virginia								
West Virginia	7	8	2	14	103	196	2	0
North Carolina	20	17	4		55	16	3	2
South Carolina	4	7	216	198		8	0	0
Georgia	1	2	24	12	140	46	1	0
Florida	5	3	2	1	120	76	0	0

[1] New York City only.

[2] Week ended Friday.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 31, 1930, and June 1, 1929—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 31, 1930	Week ended June 1, 1929	Week ended May 31, 1930	Week ended June 1, 1929	Week ended May 31, 1930	Week ended June 1, 1929	Week ended May 31, 1930	Week ended June 1, 1929
East South Central States:								
Kentucky	----	5	----	----	----	----	3	2
Tennessee	4	1	17	18	180	22	3	2
Alabama	7	5	33	17	71	48	2	0
Mississippi	11	8	----	----	----	----	1	1
West South Central States:								
Arkansas	1	3	7	2	23	4	0	6
Louisiana	9	9	9	5	28	37	1	0
Oklahoma [2]	13	5	14	10	185	31	0	1
Texas	17	15	12	34	217	172	1	0
Mountain States:								
Montana	1	3	----	----	10	35	0	0
Idaho	----	1	----	----	11	83	0	0
Wyoming	6	1	----	----	45	29	0	0
Colorado	9	6	----	----	686	237	1	3
New Mexico	7	----	----	----	65	8	1	1
Arizona	2	1	4	----	114	1	2	4
Utah [1]	1	1	----	2	264	3	4	5
Pacific States:								
Washington	6	1	----	----	602	150	3	6
Oregon	6	10	14	7	82	205	0	2
California	58	51	18	16	1,977	133	6	14

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 31, 1930	Week ended June 1, 1929	Week ended May 31, 1930	Week ended June 1, 1929	Week ended May 31, 1930	Week ended June 1, 1929	Week ended May 31, 1930	Week ended June 1, 1929
New England States:								
Maine	0	0	27	43	0	0	2	----
New Hampshire	0	0	5	10	0	0	0	0
Vermont	0	0	7	16	0	6	0	0
Massachusetts	0	2	205	200	0	3	7	9
Rhode Island	0	0	23	15	0	0	1	1
Connecticut	0	0	34	41	0	0	1	1
Middle Atlantic States:								
New York	2	1	296	401	3	2	8	15
New Jersey	0	0	121	125	0	0	2	7
Pennsylvania	0	1	350	318	1	0	9	18
East North Central States:								
Ohio	0	1	293	291	145	84	6	17
Indiana	0	0	56	169	8	116	1	6
Illinois	0	0	270	370	65	117	11	9
Michigan	1	2	171	393	33	50	0	4
Wisconsin	0	1	122	144	6	32	1	2
West North Central States:								
Minnesota	1	0	57	77	6	8	5	2
Iowa	0	1	36	94	71	51	0	0
Missouri	0	0	96	52	38	23	4	11
North Dakota	1	1	15	22	3	25	1	0
South Dakota	0	0	10	18	19	17	0	2
Nebraska	0	0	29	85	51	43	0	0
Kansas	0	0	52	79	33	53	3	2
South Atlantic States:								
Delaware	0	0	8	1	0	0	0	1
Maryland [1]	1	0	51	153	0	0	6	6
District of Columbia	0	0	11	15	0	0	1	1
Virginia	1	----	----	----	----	----	----	----
West Virginia	0	0	23	12	0	22	9	6
North Carolina	2	1	16	24	16	3	5	18
South Carolina	3	1	4	6	5	4	51	39
Georgia	0	0	6	7	0	0	1	13
Florida	0	0	5	3	1	0	4	3

[1] Week ended Friday.

[2] Figures for 1930 are exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 31, 1930, and June 1, 1929—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 31, 1930	Week ended June 1, 1929	Week ended May 31, 1930	Week ended June 1, 1929	Week ended May 31, 1930	Week ended June 1, 1929	Week ended May 31, 1930	Week ended June 1, 1929
East South Central States:								
Kentucky	0	0	30	84	4	32	1	0
Tennessee	0	0	11	9	17	22	8	17
Alabama	1	0	4	13	4	1	9	10
Mississippi	1	0	5	10	5	1	11	14
West South Central States:								
Arkansas	0	1	4	15	0	1	4	8
Louisiana	7	0	2	36	14	0	18	6
Oklahoma [3]	0	0	18	26	53	39	3	2
Texas	2	0	26	50	35	45	3	7
Mountain States:								
Montana	0	1	15	25	2	12	2	0
Idaho	0	0	2	2	2	5	0	0
Wyoming	0	0	10	0	5	9	0	2
Colorado	0	0	13	20	3	13	5	3
New Mexico	0	0	13	8	3	1	5	0
Arizona	2	0	14	0	6	1	4	3
Utah [2]	0	0	1	2	1	5	0	0
Pacific States:								
Washington	1	0	17	21	29	40	0	1
Oregon	0	1	14	9	27	21	1	3
California	15	3	94	296	35	28	13	5

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

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
February, 1930										
Colorado	8	40	4	-------	514	-------	1	100	152	2
March, 1930										
Colorado	8	39	8	-------	1,345	-------	0	88	65	12
April, 1930										
California	48	276	109	7	11,707	10	16	780	497	57
Montana	7	13	-------	-------	90	-------	0	152	58	6
South Dakota	1	16	8	-------	488	-------	0	84	299	1
Virginia	11	81	1,708	34	3,757	58	4	172	48	28
Wisconsin	12	57	121	-------	2,988	-------	1	795	70	6

February, 1930

Colorado:	Cases
Chicken pox	275
German measles	7
Impetigo contagiosa	2
Mumps	368
Tularaemia	1
Vincent's angina	1
Whooping cough	180

March, 1930

Colorado:	Cases
Chicken pox	351
German measles	7
Mumps	598
Ophthalmia neonatorum	1
Rocky Mountain spotted or tick fever	1
Vincent's angina	1
Whooping cough	294

April, 1930

	Cases
Chicken pox:	
California	2,739
Montana	50
South Dakota	127
Virginia	785
Wisconsin	1,227
Dysentery:	
California (amebic)	12
California (bacillary)	9
Dysentery and diarrhea:	
Virginia	102
Food poisoning:	
California	29
German measles:	
California	121
Montana	4
Granuloma, coccidiodal:	
California	2
Hookworm disease:	
California	5
Leprosy:	
California	1
Lethargic encephalitis:	
California	5
Wisconsin	1
Mumps:	
California	4,128
Montana	262
South Dakota	41
Wisconsin	840
Ophthalmia neonatorum:	
California	1
Paratyphoid fever:	
California	3
Rabies in animals:	
California	96
Rocky Mountain spotted or tick fever:	
California	2
Montana	6
Septic sore throat:	
Montana	1
South Dakota	1
Tetanus:	
California	4
Trachoma:	
California	18
South Dakota	1
Trichinosis:	
California	31
South Dakota	4
Undulant fever:	
California	7
Virginia	1
Wisconsin	3
Whooping cough:	
California	1,200
Montana	36
South Dakota	99
Virginia	1,177
Wisconsin	817

Cases of Certain Communicable Diseases Reported for the Month of February, 1930, by State Health Officers

	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid and paratyphoid fever	Whooping cough
Maine	224	15	74	287	233	0	37	17	181
New Hampshire	-------	4	-------	-------	63	0	-------	0	-------
Vermont	251	5	44	5	47	14	15	1	32
Massachusetts	1,024	362	2,008	876	1,179	1	551	14	1,337
Rhode Island	71	48	13	2	135	0	32	2	154
Connecticut	579	87	87	160	499	0	95	2	222
New York	2,756	577	2,449	2,142	2,128	22	1,444	85	1,645
New Jersey	1,312	448	1,714	-------	1,016	0	422	6	586
Pennsylvania	2,752	627	3,077	1,425	2,005	10	-------	51	1,551
Ohio	1,863	251	2,488	785	1,396	825	614	37	851
Indiana	379	146	256	38	985	809	177	13	125
Illinois	1,447	633	2,337	786	2,541	493	742	22	811
Michigan	926	281	2,028	591	1,365	311	467	11	577
Wisconsin	1,329	84	4,273	823	727	158	151	7	963
Minnesota	366	48	1,023	-------	575	33	206	11	223
Iowa	-------	41	-------	-------	441	300	-------	3	-------
Missouri	542	164	518	151	554	336	227	7	154
North Dakota	129	16	247	226	148	136	25	1	69
South Dakota	75	12	608	32	226	295	8	3	39
Nebraska	259	71	2,459	122	418	236	14	2	63
Kansas	556	57	1,638	601	571	293	129	6	330
Delaware	40	10	28	-------	41	0	[1] 3	0	3
Maryland	607	108	53	76	400	0	199	12	186
District of Columbia	99	64	48	-------	83	0	76	5	29
Virginia	753	174	1,572	-------	268	27	173	9	1,070
West Virginia	284	39	295	-------	197	141	35	31	189
North Carolina	960	145	46	-------	234	79	-------	12	1,137
South Carolina	284	97	26	148	72	7	121	24	523
Georgia	155	43	732	155	100	2	64	8	109
Florida	329	45	445	378	45	8	30	14	43
Kentucky [1]	-------	-------	-------	-------	-------	-------	-------	-------	-------
Tennessee	134	42	695	32	151	84	93	13	109

[1] Reports received weekly.

Cases of Certain Communicable Diseases Reported for the Month of February, 1930, by State Health Officers—Continued

	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid and paratyphoid fever	Whooping cough
Alabama	414	117	385	77	109	18	273	15	204
Mississippi	1,131	80	385	608	79	28	306	31	1,202
Arkansas	255	23	35	172	80	63	[1] 41	18	32
Louisiana	71	69	428	8	78	25	[1] 135	37	46
Oklahoma [2]	82	80	518	31	165	391	42	28	63
Texas [3]									
Montana	44	3	129	525	172	43	26	9	21
Idaho	43	85	347	63	45	71	9	2	16
Wyoming	10	7	99	67	30	33		1	20
Colorado	275	40	514	368	100	152	93	2	180
New Mexico	104	36	349	110	64	4	66	5	26
Arizona	74	33	20	233	58	93	145	13	39
Utah [2]									
Nevada	42	4	66	9	24	5	7	0	1
Washington	540	43	788	453	281	314	147	33	229
Oregon	190	32	79	175	185	65	56	10	153
California	2,355	276	4,798	3,076	1,221	457	833	34	623

[1] Pulmonary. [2] Reports received weekly. [3] Exclusive of Oklahoma City and Tulsa.

Case Rates per 1,000 Population (Annual Basis) for the Month of February, 1930

[The rates here given have been calculated by use of populations as of July 1, 1930, approximated, authoritative estimates not being available, and may prove to be inaccurate when the results of the fifteenth census are known]

	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid and paratyphoid fever	Whooping cough
Maine	3.65	0.24	1.21	4.68	3.80	0	0.60	0.28	2.95
New Hampshire		.11			1.79	0		0	
Vermont	9.28	.18	1.63	.18	1.74	.52	.55	.04	1.18
Massachusetts	3.04	1.08	5.97	2.60	3.50	0	1.64	.04	3.97
Rhode Island	1.25	.85	.23	.04	2.38	0	.56	.04	2.71
Connecticut	4.37	.66	.66	1.21	3.76	0	.72	.02	1.67
New York	3.04	.64	2.70	2.36	2.35	.02	1.59	09	1.82
New Jersey	4.31	1.47	5.64		3.34	0	1.39	.02	1.93
Pennsylvania	3.55	.81	3.97	1.84	2.59	.01		.07	2.00
Ohio	3.44	.46	4.60	1.45	2.58	1.52	1.13	.07	1.57
Indiana	1.53	.59	1.03	.15	3.98	3.27	.71	.05	.50
Illinois	2.48	1.09	4.01	1.35	4.36	.85	1.27	.04	1.39
Michigan	2.52	.76	5.52	1.61	3.71	.85	1.27	.03	1.57
Wisconsin	5.73	.36	18.43	3.55	3.13	.68	.65	.03	4.15
Minnesota	1.71	.22	4.77		2.68	.15	.96	.05	1.04
Iowa		.22			2.36	1.61		.02	
Missouri	1.99	.60	1.90	.55	2.03	1.23	.83	.03	.57
North Dakota	2.62	.33	5.02	4.59	3.01	2.76	.51	.02	1.40
South Dakota	1.36	.22	11.01	.58	4.09	5.34	.14	.05	.71
Nebraska	2.36	.65	22.38	1.11	3.81	2.15	.13	.02	.57
Kansas	3.92	.40	11.55	4.24	4.03	2.07	.91	.04	2.33
Delaware	2.12	.53	1.48		2.17	0	.16	0	.16
Maryland	4.78	.85	.42	.60	3.15	0	1.57	.09	1.47
District of Columbia	2.22	1.43	1.08		1.86	0	1.70	.11	.65
Virginia	3.73	.86	7.78		1.33	.13	.86	.04	5.34
West Virginia	2.08	.29	2.16		1.44	1.03	.26	.23	1.37
North Carolina	4.14	.63	.20		1.01	.34		.05	4.88
South Carolina	1.95	.66	.18	1.01	.49	.05	.83	.16	3.58
Georgia	.62	.17	2.92	.62	.40	.01	.26	.03	.43
Florida	2.85	.39	3.85	3.27	.39	.07	.26	.12	.37
Kentucky [3]									
Tennessee	.69	.22	3.57	.16	.78	.43	.48	.07	.56
Alabama	2.06	.58	1.91	.38	.54	.09	1.36	.07	1.01
Mississippi	8.23	.58	2.80	4.43	.58	.20	2.23	.23	8.75
Arkansas	1.67	.15	.23	1.13	.53	.41	[1] 27	.12	.21
Louisiana	.47	.45	2.81	.05	.51	.16	[1] 89	.24	.30
Oklahoma [2]	.48	.47	3.06	.18	.98	2.31	.25	.17	.37

[1] Pulmonary. [2] Reports received weekly. [3] Exclusive of Oklahoma City and Tulsa.

Case Rates per 1,000 Population (Annual Basis) for the Month of February, 1930—Continued

	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid and paratyphoid fever	Whooping cough
Texas [2]									
Montana	1.04	.07	3.06	12.47	4.08	1.02	.62	.21	.50
Idaho	.98	1.94	7.94	1.44	1.03	1.62	.21	.05	.37
Wyoming	.50	.35	4.98	3.37	1.51	1.66		.05	1.01
Colorado	3.19	.46	5.97	4.28	1.16	1.77	1.08	.02	2.09
New Mexico	3.36	1.16	11.26	3.55	2.07	.13	2.13	.16	.84
Arizona	1.91	.85	.52	6.03	1.50	2.41	3.75	.34	1.01
Utah [2]									
Nevada	.71	.07	1.11	.15	.40	.08	.12	0	.02
Washington	4.30	.34	6.27	3.61	2.24	2.50	1.17	.26	1.82
Oregon	2.67	.45	1.11	2.46	2.60	.92	.79	.14	2.15
California	6.39	.75	13.03	8.35	3.32	1.27	2.26	.09	1.09

[2] Reports received weekly.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 97 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 32,050,000. The estimated population of the 90 cities reporting deaths is more than 30,460,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended May 24, 1930, and May 25, 1929

	1930	1929	Estimated expectancy
Cases reported			
Diphtheria:			
46 States	937	1,585	
97 cities	499	816	800
Measles:			
45 States	17,243	14,555	
97 cities	7,121	5,774	
Meningococcus meningitis:			
46 States	126	231	
97 cities	63	132	
Poliomyelitis:			
47 States	25	18	
Scarlet fever:			
46 States	3,219	4,177	
97 cities	1,295	1,626	1,164
Smallpox:			
46 States	1,067	1,060	
97 cities	123	63	65
Typhoid fever:			
46 States	220	288	
97 cities	45	48	48
Deaths reported			
Influenza and pneumonia:			
90 cities	641	725	
Smallpox:			
90 cities	0	0	

City reports for week ended May 24, 1930

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

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

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	9	1	0		1	2	35	4
New Hampshire:								
Concord	0	0	0		0	0	0	0
Manchester	0	1	0		0	0	0	0
Nashua	0	0	0		0	1	0	0
Vermont:								
Barre	1	0	0		0	17	0	0
Burlington	0	0	0		0	0	0	0
Massachusetts:								
Boston	51	37	14	2	0	585	52	24
Fall River	4	3	0		0	1	4	1
Springfield	4	2	3		0	0	1	0
Worcester	8	2	7		0	162	2	0
Rhode Island:								
Pawtucket	3	1	0		0	1	0	2
Providence	10	6	4		0	0	0	9
Connecticut:								
Bridgeport	1	5	0		1	1	2	2
Hartford	1	5	0	2	0	3	1	1
New Haven	16	1	0	1	0	4	8	2
MIDDLE ATLANTIC								
New York:								
Buffalo	20	11	6		1	22	19	13
New York	192	259	101	5	6	1,616	195	184
Rochester	3	7	0		0	45	3	3
Syracuse	18	4	1		0	13	58	4
New Jersey:								
Camden	1	7	3		0	3	1	3
Newark	18	13	22		0	183	24	12
Trenton	1	2	2		0	3	0	0
Pennsylvania:								
Philadelphia	95	59	12	13	5	307	106	46
Pittsburgh	43	15	21		4	212	22	22
Reading	3	2	0		0	2	10	0
Scranton	0	3	1			1	1	
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	4	6	2		0	122	10	4
Cleveland	91	23	12	1	0	7	55	15
Columbus	19	3	6		0	85	7	5
Toledo	28	4	4		0	34	12	2
Indiana:								
Fort Wayne	2	1	0		1	0	0	1
Indianapolis	28	3	1		0	15	6	14
South Bend	0	0	2		0	0	0	1
Terre Haute	2	1	0		0	52	0	0
Illinois:								
Chicago	92	82	111	3	3	41	46	58
Springfield	2	0	1		0	10	0	1

City reports for week ended May 24, 1930—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Michigan:								
Detroit	58	42	49	4	3	572	75	15
Flint	5	2	0		0	169	4	2
Grand Rapids	3	0	0		0	3	0	1
Wisconsin:								
Kenosha	3	0	0		0	0	0	1
Madison	3	0	0		0	17	1	0
Milwaukee	77	11	2	1	1	19	119	9
Racine	2	1	0		0	19	0	1
Superior	4	0	0		0	0	1	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth	4	0	0		0	39	0	0
Minneapolis	60	14	3		0	34	46	2
St. Paul	13	8	0		0	2	3	2
Iowa:								
Davenport	0	0	1			5	0	
Des Moines	2	1	0			1	2	
Sioux City	4	1	0			71	9	
Waterloo	5	0	0			3	0	
Missouri:								
Kansas City	27	3	5		0	6	4	8
St. Joseph	0	0	0		0	0	0	2
St. Louis	15	33	20			31	12	12
North Dakota:								
Fargo	0	0	0		0	3	26	1
Grand Forks	0	0	0			1	0	
South Dakota:								
Aberdeen	5	0	0			50	1	
Sioux Falls	0	0	0			5	0	
Nebraska:								
Omaha	11	2	8		0	39	1	8
Kansas:								
Topeka	20	1	0		0	113	9	1
Wichita	4	1	1		0	69	5	4
SOUTH ATLANTIC								
Delaware:								
Wilmington	5	0	0		0	2	0	3
Maryland:								
Baltimore	105	21	13		1	24	13	17
Cumberland	1	0	0		0	0	0	0
Frederick	1	0	0		0	0	0	0
District of Columbia:								
Washington	28	9	7		0	49	0	10
Virginia:								
Lynchburg	0	1	0		0	21	4	0
Norfolk	25	0	0		0	10	57	3
Richmond	1	1	0		0	2	1	4
Roanoke	2	1	1		0	220	1	1
West Virginia:								
Charleston	19	0	0		0	0	5	3
Wheeling	7	0	0		0	6	0	2
North Carolina:								
Raleigh	0	0	0		0	0	0	0
Wilmington	2	0	0		0	0	0	0
Winston-Salem	7	0	0		0	4	14	2
South Carolina:								
Charleston	1	0	1	6	0	1	0	1
Columbia	1	0	0		1	0	4	2
Georgia:								
Atlanta	4	2	4	1	0	48	7	8
Brunswick	0	0	0		0	0	0	0
Savannah	2	0	1		0	14	0	1
Florida:								
Miami	1	1	0		0	8	2	1
St. Petersburg		1			0			0
Tampa	2	1	0		1	96	0	1

City reports for week ended May 24, 1930—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington	1	0	0	----	0	4	0	1
Tennessee:								
Memphis	17	0	2	----	0	3	4	2
Nashville	0	0	0	----	1	60	0	1
Alabama:								
Birmingham	4	1	1	1	2	18	2	7
Mobile	0	1	1	----	0	9	2	1
Montgomery	11	0	0	1	----	1	0	----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith	0	0	0	----	----	12	0	----
Little Rock	2	0	1	2	0	0	0	2
Louisiana:								
New Orleans	3	6	5	1	2	3	0	8
Shreveport	0	0	0	----	0	5	3	1
Oklahoma:								
Tulsa	5	1	0	----	----	30	0	----
Texas:								
Dallas	8	3	5	----	0	135	0	4
Fort Worth	4	2	0	----	1	14	0	5
Galveston	0	0	1	----	0	0	0	1
Houston	0	3	2	----	0	1	0	5
San Antonio	0	1	1	----	0	1	0	2
MOUNTAIN								
Montana:								
Billings	0	0	0	----	0	16	0	4
Great Falls	6	0	0	----	0	0	12	0
Helena	0	0	0	----	0	0	0	0
Missoula	0	0	0	----	0	1	0	0
Idaho:								
Boise	2	0	0	----	0	17	1	2
Colorado:								
Denver	15	9	4	----	1	454	19	7
Pueblo	6	1	0	----	0	28	79	0
New Mexico:								
Albuquerque	2	1	0	----	0	10	6	0
Arizona:								
Phoenix	0	0	0	----	0	3	0	3
Utah:								
Salt Lake City	11	3	2	----	0	291	3	1
Nevada:								
Reno	0	0	0	----	0	1	0	0
PACIFIC								
Washington:								
Seattle	25	2	0	----	----	422	86	----
Spokane	14	2	2	----	----	1	0	----
Tacoma	----	1	----	----	----	----	----	----
Oregon:								
Salem	15	0	1	----	----	1	0	----
California:								
Los Angeles	39	34	16	4	0	359	63	7
Sacramento	5	2	3	----	0	32	36	3
San Francisco	38	16	7	1	1	72	69	3

City reports for week ended May 24, 1930—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	2	2	0	0	0	2	0	0	0	1	20
New Hampshire:											
Concord	1	0	0	0	0	0	0	0	0	0	5
Manchester	1	0	0	0	0	1	0	0	0	0	8
Nashua	1	0	0	0	0	0	0	0	0	0	
Vermont:											
Barre	0	0	0	0	0	1	0	0	0	0	3
Burlington	0	0	0	0	0	0	0	0	0	0	3
Massachusetts:											
Boston	60	72	0	0	0	12	1	3	1	44	228
Fall River	3	4	0	0	0	5	0	0	0	2	25
Springfield	6	3	0	0	0	2	0	0	0	4	30
Worcester	7	20	0	0	0	3	1	1	0	15	50
Rhode Island:											
Pawtucket	2	3	0	0	0	0	0	0	0	2	14
Providence	9	9	0	0	0	4	1	3	0	9	69
Connecticut:											
Bridgeport	10	5	0	0	0	3	0	0	0	2	28
Hartford	4	4	0	0	0	0	1	0	0	5	22
New Haven	5	8	0	0	0	1	0	1	0	6	41
MIDDLE ATLANTIC											
New York:											
Buffalo	23	22	0	0	0	14	0	0	0	22	162
New York	253	217	0	0	0	114	9	5	1	68	1,510
Rochester	10	15	0	0	0	3	1	2	1	3	69
Syracuse	8	16	0	1	0	3	0	0	0	57	53
New Jersey:											
Camden	5	7	0	0	0	0	1	0	0	1	26
Newark	24	31	0	0	0	9	0	0	0	12	131
Trenton	3	4	0	0	0	2	0	0	0	2	31
Pennsylvania:											
Philadelphia	85	108	0	0	0	33	2	2	0	24	423
Pittsburgh	31	27	0	0	0	15	0	0	0	33	175
Reading	4	2	0	0	0	0	0	0	0	3	16
Scranton	2	2	0	0	0	0	0	0	0	1	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	14	12	2	0	0	6	0	0	0	7	101
Cleveland	38	65	0	0	0	9	1	2	1	50	198
Columbus	7	1	2	1	0	4	0	3	0	3	78
Toledo	8	10	0	5	0	4	0	0	0	0	54
Indiana:											
Fort Wayne	3	0	2	4	0	0	1	0	0	0	23
Indianapolis	13	15	8	5	0	4	0	1	1	9	
South Bend	3	5	1	0	0	1	0	0	0	1	22
Terre Haute	1	6	0	1	0	0	0	0	0	4	15
Illinois:											
Chicago	106	62	2	0	0	54	2	1	0	62	704
Springfield	4	1	0	0	0	1	0	0	0	2	16
Michigan:											
Detroit	95	108	1	0	0	40	2	1	1	88	322
Flint	8	12	2	5	0	3	0	0	0	19	34
Grand Rapids	7	11	0	0	0	0	0	0	0	7	43
Wisconsin:											
Kenosha	1	10	0	0	0	0	0	0	0	12	7
Madison	2	10	0	0	0	0	0	0	0	10	20
Milwaukee	4	41	1	0	0	3	1	0	0	37	105
Racine	27	13	0	0	0	0	0	0	0	8	21
Superior	2	4	0	0	0	1	0	0	0	0	7
WEST NORTH CENTRAL											
Minnesota:											
Duluth	7	0	0	0	0	0	1	3	1	17	21
Minneapolis	35	24	2	1	0	1	1	0	0	2	78
St. Paul	21	5	0	0	0	2	0	0	0	18	60

City reports for week ended May 24, 1930—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—con.											
Iowa:											
Davenport	1	1	1	31	----	----	0	0	----	0	----
Des Moines	5	7	2	0	----	----	0	0	----	4	35
Sioux City	1	2	0	3	----	----	0	0	----	9	----
Waterloo	2	1	0	20	----	----	0	0	----	2	----
Missouri:											
Kansas City	10	22	1	2	0	6	2	0	0	18	88
St. Joseph	2	6	1	0	0	1	0	0	0	0	17
St. Louis	27	70	2	11	0	15	1	0	0	17	215
North Dakota:											
Fargo	1	5	0	0	0	1	0	0	0	1	7
Grand Forks	1	0	0	1	----	----	0	0	----	0	----
South Dakota:											
Aberdeen	0	1	0	0	----	----	0	0	----	1	----
Sioux Falls	1	0	0	1	----	----	0	0	----	0	5
Nebraska:											
Omaha	3	10	3	17	0	0	0	0	0	3	49
Kansas:											
Topeka	2	3	0	3	0	0	0	0	0	28	22
Wichita	3	10	0	0	0	1	0	1	0	4	40
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	3	0	0	0	0	0	0	0	2	23
Maryland:											
Baltimore	32	42	0	0	0	21	2	2	0	15	189
Cumberland	1	0	0	0	0	0	0	0	0	0	8
Frederick	0	0	0	0	0	0	0	0	0	0	4
District of Columbia:											
Washington	20	16	1	0	0	9	1	1	0	4	132
Virginia:											
Lynchburg	0	1	0	0	0	0	0	0	0	0	10
Norfolk	1	3	0	0	0	3	1	0	0	7	----
Richmond	3	6	0	0	0	6	0	0	0	0	48
Roanoke	0	0	0	0	0	1	0	0	0	10	23
West Virginia:											
Charleston	0	1	0	0	0	0	0	2	0	6	19
Wheeling	2	2	0	0	0	1	0	0	0	1	20
North Carolina:											
Raleigh	0	0	1	0	0	1	0	0	0	0	12
Wilmington	0	0	0	0	0	2	0	0	0	15	9
Winston-Salem	0	0	1	0	0	2	0	0	0	8	15
South Carolina:											
Charleston	0	0	1	0	0	4	1	0	0	3	37
Columbia	0	0	0	1	0	1	1	0	0	15	17
Georgia:											
Atlanta	3	10	5	0	0	4	1	0	0	0	63
Brunswick	0	0	0	0	0	0	0	0	0	0	4
Savannah	0	0	0	0	0	5	1	0	0	0	35
Florida:											
Miami	0	0	0	0	0	2	0	[1] 1	0	0	24
St. Petersburg	0	----	0	----	0	0	0	----	0	----	13
Tampa	0	1	0	0	0	5	1	1	0	0	31
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	3	1	1	0	0	0	0	0	0	18
Tennessee:											
Memphis	5	4	1	0	0	7	1	4	1	3	80
Nashville	2	6	2	4	0	2	1	0	0	3	33
Alabama:											
Birmingham	1	3	4	0	0	1	1	0	0	5	55
Mobile	0	1	0	0	0	0	0	0	0	2	26
Montgomery	1	0	1	0	----	----	0	0	----	1	----

[1] Nonresident.

City reports for week ended May 24, 1930—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	2	0	0			0	0		3	
Little Rock	1	0	0	0	0	5	1	0	0	0	
Louisiana:											
New Orleans	6	10	0	0	0	0	2	2	18	3	129
Shreveport	1	0	1	0	0	0	0	0	0	0	37
Oklahoma:											
Tulsa	0	5	2	7			0	1		14	
Texas:											
Dallas	2	1	1	0	0	3	1	0	0	1	47
Fort Worth	2	0	2	0	0	2	0	0	0	0	29
Galveston	0	0	0	0	0	0	0	0	0	0	7
Houston	2	1	1	3	0	5	0	1	1	2	79
San Antonio	0	0	0	0	0	8	0	0	0	0	67
MOUNTAIN											
Montana:											
Billings	0	0	0	0	0	0	0	0	0	0	19
Great Falls	1	17	0	2	0	0	0	0	1	2	10
Helena	0	1	0	0	0	0	0	0	0	0	5
Missoula	0	0	0	0	0	0	0	0	0	0	4
Idaho:											
Boise	0	0	0	0	0	1	0	0	0	13	9
Colorado:											
Denver	10	14	0	1	0	10	0	0	0	34	90
Pueblo	1	0	1	0	0	2	1	0	0	5	8
New Mexico:											
Albuquerque	0	4	0	1	0	2	0	0	0	1	9
Arizona:											
Phoenix	0	0	0	1	0	3	0	1	0	0	16
Utah:											
Salt Lake City	2	2	1	[1]2	0	2	0	0	0	40	29
Nevada:											
Reno	0	0	0	3	0	0	0	0	0	0	7
PACIFIC											
Washington:											
Seattle	7	11	2	2			0	0		17	
Spokane	5	1	5	11			0	0		10	
Tacoma	3		3				0				
Oregon:											
Salem	0	0	0	0	0	0	0	0	0	3	
California:											
Los Angeles	28	19	4	9	0	25	1	1	0	30	286
Sacramento	2	2	1	8	0	2	1	1	0	6	27
San Francisco	19	12	0	2	0	11	1	1	1	1	156

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									
Massachusetts:									
Boston	2	0	0	0	0	0	1	0	0
Connecticut:									
Hartford	1	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York City	7	3	1	3	0	0	1	0	0
New Jersey:									
Newark	1	0	0	0	0	0	0	0	0
Pennsylvania:									
Pittsburgh	3	1	0	0	0	0	0	0	0

[1] Nonresident.

City reports for week ended May 24, 1930—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	0	1	1	0	0	0	0	0	0
Cleveland	1	2	0	0	0	0	0	0	0
Indiana:									
Fort Wayne	1	0	0	0	0	0	0	0	0
Indianapolis	1	3	0	0	0	0	0	0	0
Illinois:									
Chicago	3	4	0	0	0	0	0	0	0
Michigan:									
Detroit	25	7	0	0	0	0	0	0	1
Wisconsin:									
Kenosha	0	1	0	0	0	0	0	0	0
Madison	0	1	0	0	0	0	0	0	0
Milwaukee	0	0	0	0	0	0	0	1	0
WEST NORTH CENTRAL									
Iowa:									
Waterloo	2	0	0	0	0	0	0	0	0
Missouri:									
Kansas City	3	6	0	0	0	0	0	0	0
St. Joseph	0	1	0	0	0	0	0	0	0
St. Louis	1	1	1	1	0	0	0	0	0
SOUTH ATLANTIC[1]									
West Virginia:									
Wheeling	2	1	0	0	0	0	0	0	0
South Carolina:									
Charleston	0	0	0	0	7	0	0	0	0
Georgia:									
Savannah[1]	0	0	1	0	1	0	0	0	0
Florida:									
Miami	0	0	0	0	0	1	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	5	5	0	0	0	0	0	0	0
Alabama:									
Birmingham	0	1	0	0	1	0	0	0	0
Montgomery	0	0	0	0	1	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	1	1	0	0	3	2	0	1	0
Shreveport	0	1	0	0	0	2	0	0	0
Texas:									
Houston	0	0	0	0	1	4	0	0	0
MOUNTAIN									
Montana:									
Billings	0	1	0	0	0	0	0	0	0
Colorado:									
Denver	0	0	0	1	0	0	0	0	0
Utah:									
Salt Lake City	1	2	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	2	0	0	0	0	0	0	0	0
California:									
Los Angeles	1	0	0	0	0	0	1	0	0
San Francisco	0	0	0	0	0	0	0	1	0

[1] Typhus fever, 3 cases: 1 case at Washington, D. C., and 2 cases at Savannah, Ga.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended May 24, 1930, compared with those for a like period ended May 25, 1929. The population figures used in computing the rates are approximate estimates, authoritative figures for many of the cites not being available. The 98 cities reporting cases have an estimated aggregate population of more than 32,000,000. The 91 cities reporting deaths have more than 30,500,000 estimated population.

Summary of weekly reports from cities, April 20 to May 24, 1930—Annual rates per 100,000 population, compared with rates for the corresponding period of 1929 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Apr. 26, 1930	Apr. 27, 1929	May 3, 1930	May 4, 1929	May 10, 1930	May 11, 1929	May 17, 1930	May 18, 1929	May 24, 1930	May 25, 1929
98 cities	93	136	85	135	79	139	[2] 76	124	[3] 81	135
New England	78	110	75	81	60	118	97	94	62	108
Middle Atlantic	104	194	76	190	89	206	78	159	80	188
East North Central	114	143	131	160	104	145	[4] 92	143	117	165
West North Central	66	85	66	77	44	104	[5] 74	123	70	100
South Atlantic	59	58	46	69	57	64	49	62	49	49
East South Central	54	55	0	21	7	27	40	27	27	14
West South Central	108	126	101	99	78	88	71	110	56	46
Mountain	86	78	43	61	69	52	[6] 0	26	51	61
Pacific	57	58	71	72	57	39	50	56	[3] 70	60

MEASLES CASE RATES

98 cities	1,387	838	1,332	928	1,443	894	[2] 1,207	890	[3] 1,158	903
New England	1,566	561	1,779	496	2,109	480	1,688	431	1,719	552
Middle Atlantic	1,256	153	1,353	165	1,365	186	1,410	196	1,150	196
East North Central	1,009	1,964	1,015	2,322	936	2,194	[4] 830	2,138	692	2,286
West North Central	1,324	1,713	983	1,776	1,243	1,549	[5] 659	1,753	778	1,441
South Atlantic	1,194	536	1,086	434	1,187	521	1,123	474	875	242
East South Central	459	21	209	130	499	41	405	68	641	27
West South Central	635	278	785	343	762	366	788	331	587	430
Mountain	8,573	366	5,758	444	8,891	296	[6] 4,624	183	6,934	313
Pacific	2,412	377	2,069	287	2,324	422	1,949	425	[3] 2,206	529

SCARLET FEVER CASE RATES

98 cities	267	295	303	299	264	289	[2] 230	290	[3] 211	268
New England	319	292	246	278	284	260	239	247	288	281
Middle Atlantic	252	246	300	245	281	209	234	220	215	196
East North Central	363	451	398	467	321	454	[4] 308	472	229	449
West North Central	243	281	376	262	233	277	[5] 252	281	300	208
South Atlantic	227	97	269	114	222	243	157	210	150	159
East South Central	142	109	148	226	155	130	27	103	115	137
West South Central	64	217	123	274	101	309	78	179	52	118
Mountain	223	122	352	78	360	52	[6] 171	104	292	113
Pacific	205	394	128	345	151	282	149	297	[3] 112	336

[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, 1930 and 1929, respectively.
[2] South Bend, Ind., Sioux City, Iowa, and Denver, Colo., not included.
[3] Tacoma, Wash., not included.
[4] South Bend, Ind., not included.
[5] Sioux City, Iowa, not included.
[6] Denver, Colo., not included.

Summary of weekly reports from cities, April 20 to May 24, 1930—Annual rates per 100,000 population, compared with rates for the corresponding period of 1929—Continued

SMALLPOX CASE RATES

	Week ended—									
	Apr. 26, 1930	Apr. 27, 1929	May 3, 1930	May 4, 1929	May 10, 1930	May 11, 1929	May 17, 1930	May 18, 1929	May 24, 1930	May 25, 1929
98 cities	30	13	28	12	24	11	[2] 22	11	[3] 20	14
New England	0	0	0	0	2	2	0	0	0	7
Middle Atlantic	0	0	1	0	0	0	0	0	0	0
East North Central	18	17	21	15	23	17	[4] 15	14	10	20
West North Central	142	13	129	13	99	27	[5] 117	15	108	15
South Atlantic	0	2	0	0	0	0	4	2	2	4
East South Central	47	0	40	21	7	27	81	14	34	27
West South Central	41	23	34	42	41	8	22	50	11	15
Mountain	94	26	146	122	77	26	[6] 120	148	69	35
Pacific	128	80	85	39	97	39	54	14	[3] 80	75

TYPHOID FEVER CASE RATES

98 cities	6	8	7	8	7	11	[2] 8	9	[3] 7	8
New England	4	4	2	7	0	11	9	9	18	7
Middle Atlantic	5	4	3	5	4	3	7	6	4	5
East North Central	6	4	6	3	3	6	[4] 2	3	5	3
West North Central	4	12	4	10	8	31	[5] 8	6	8	8
South Atlantic	11	17	5	11	15	15	13	17	11	15
East South Central	0	21	27	27	20	27	47	0	27	75
West South Central	26	34	22	30	4	53	37	65	11	11
Mountain	0	0	51	9	17	0	[6] 0	0	0	17
Pacific	5	7	7	10	24	7	2	7	[3] 7	10

INFLUENZA DEATH RATES

91 cities	12	13	9	8	10	10	[7] 8	8	[3] 6	10
New England	11	7	4	2	9	2	0	2	4	7
Middle Atlantic	9	12	10	6	10	8	7	8	8	8
East North Central	14	6	7	5	9	7	[4] 4	7	5	8
West North Central	9	12	9	18	3	3	3	0	0	15
South Atlantic	11	13	15	11	5	17	18	7	5	6
East South Central	44	30	22	30	15	37	44	30	22	45
West South Central	27	43	23	8	31	27	4	4	8	27
Mountain	17	52	0	17	0	26	[6] 0	17	9	9
Pacific	0	13	6	16	9	13	15	22	[3] 3	6

PNEUMONIA DEATH RATES

91 cities	144	117	139	123	137	109	[7] 104	106	[3] 104	116
New England	173	144	151	106	120	90	102	88	100	121
Middle Atlantic	168	130	172	136	185	123	130	114	137	129
East North Central	109	99	108	125	93	101	[4] 68	115	80	118
West North Central	80	111	112	126	124	105	106	75	83	123
South Atlantic	192	127	187	109	121	109	156	120	101	94
East South Central	258	97	140	172	162	149	96	90	88	104
West South Central	142	90	119	90	176	94	84	109	88	66
Mountain	146	87	60	165	120	87	[6] 51	13	120	139
Pacific	61	119	52	72	64	94	58	47	[3] 43	82

[2] South Bend, Ind., Sioux City, Iowa, and Denver, Colo., not included.
[3] Tacoma, Wash., not included.
[4] South Bend, Ind., not included.
[5] Sioux City, Iowa, not included.
[6] Denver, Colo., not included.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Week ended May 17, 1930.—The Department of Pensions and National Health reports cases of certain communicable diseases in Canada for the week ended May 17, 1930, as follows:

Province	Cerebro-spinal fever	Influenza	Poliomyelitis	Smallpox	Typhoid fever
Prince Edward Island [1]					
Nova Scotia		4			
New Brunswick	1				1
Quebec	4				19
Ontario	2	6		24	8
Manitoba [1]					
Saskatchewan				6	1
Alberta	1		1		
British Columbia			1		3
Total	8	10	2	30	32

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

Quebec Province—Communicable diseases—Week ended May 24, 1930.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended May 24, 1930, as follows:

Disease	Cases	Disease	Cases
Chicken pox	76	Mumps	75
Diphtheria and croup	29	Scarlet fever	85
Erysipelas	4	Tuberculosis	87
German measles	42	Typhoid fever	7
Influenza	1	Whooping cough	27
Measles	116		

CHINA

Meningitis.—During the two weeks ended May 17, 1930, 7 cases of meningitis, with 5 deaths, were reported at Canton, China.

During the two weeks ended May 24, 1930, 22 cases of meningitis were reported at Shanghai, China.

CUBA

Provinces—Notifiable diseases—Four weeks ended May 10, 1930.—During the four weeks ended May 10, 1930, cases of certain diseases were reported in Cuba as follows:

Disease	Pinar del Rio	Habana	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cancer		10			2	1	13
Chicken pox	5	44	3	9	1	7	69
Diphtheria		17	1	4		1	23
Malaria		12		1	10	45	68
Measles		5		1	1		7
Paratyphoid fever		4	1		1	2	8
Scarlet fever	1	33	2				36
Tetanus (infantile)					1		1
Typhoid fever	2	16	7	36	15	24	100

DENMARK

Communicable diseases—March, 1930.—During the month of March, 1930, cases of certain communicable diseases were reported in Denmark as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	8	Mumps	2,598
Chicken pox	103	Paratyphoid fever	5
Diphtheria and croup	524	Puerperal fever	17
Erysipelas	274	Scabies	902
German measles	40	Scarlet fever	174
Influenza	5,584	Tetanus	1
Jaundice	262	Typhoid fever	2
Lethargic encephalitis	10	Undulant fever	39
Measles	2,523	Whooping cough	1,469

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

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

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

Place		Nov. 17–Dec. 14, 1929	Dec. 15, 1929–Jan. 11, 1930	Jan. 12–Feb. 8, 1930	Feb. 9–Mar. 8, 1930	Week ended— March, 1930			April, 1930				May, 1930				
						15	22	29	5	12	19	26	3	10	17	24	31
China:																	
Canton	C	2													1		
Manchuria—Dairen	C				1												
Swatow	D	2															
India	C	19,582	12,350	6,461	5,914	1,834	2,278	2,087	4,018								
	D	10,903	6,507	3,606	3,371	929	1,225	1,526	2,186								
Bassein	C									3	1	1	2	3	4		
	D									2	1	1	1	3	2		
Bombay	C								4								
Calcutta	C	265	138	202	269	97	53	110	94	137	165	165		194	175		
	D	114	90	110	153	73	25	51	71	85	118	118	93	125	107		
Madras	C	2															
	D	2															
Negapatam	C		1	12													
	D		1	4													
Rangoon	C	1	0	3	3	1	1						1		5		
	D	1	5	3	1	1	1						1		1		
Tuticorin	C	23	35	3													
	D	6	9	1													
India (French):																	
Chandernagor	C	14	1		4	1				1	2		1				
	D	12	1		2		1		2			4			4		
Karikal	C		1		4			1	11		1						
	D				1			1	8		1						
Pondicherry Province	C	4															
	D	3															
Indo-China (see also table below):																	
Pnompenh	C	4	3	11	9							2		1			
	D	3	3	8	7	1	2	1	2							2	
Saigon and Cholon	C	2	1	2	5	1	6	1	6	17	12	19	28	59	40		
	D		1	2	4	1	5			10	10	13	22	43	27		

Place		October, 1929	November, 1929	December, 1929	January, 1930			February, 1930			March, 1930			April, 1930		
					1-10	11-20	21-31	1-10	11-20	21-28	1-10	11-20	21-31	1-10	11-20	21-30
Philippine Islands.[1]																
Manila	C													[3]1		
Siam	C	7	11	3	7					1	8	7	3	12	4	
	D	3	2		4						6	3	2	10	2	
Bangkok	C	5	9	3	2		1			1	1	5	4	5		
	D	1	1							1	1	2	1			
Nagara Pathom	C				1								4	6		
	D				1								2			
On vessel:																
S. S. at Suva, Fiji Islands	C				1											
S. S. Sutley, at Batavia, from Calcutta	C				1											
S. S. Sassari, at Massoua, from Jeddah	C															1
	D															1
Indo-China (French) (see also table above):																
Annam [3]	C		2		1			2	2			52				60
Cambodia [3]	C	221	43	41	71		76	41	3	46	49	32		18	6	
Cochin-China [3]	C	3	15	46	67		110	64	39	21	5	22	55	48		

PLAGUE

Place		Nov. 17-Dec. 14, 1929	Dec. 15, 1929-Jan. 11, 1930	Jan. 12-Feb. 8, 1930	Feb. 9-Mar. 8, 1930	Week ended—										
						March, 1930			April, 1930				May, 1930			
						15	22	29	5	12	19	26	3	10	17	24	31
Argentina:																
Andalgala.[4]																
Rosario	C			P												
Santa Fe	C			6												
Villa Lia	D				2											

[1] From June 4 to 6, 1930, cholera was reported in the following places in the Philippine Islands: Santa Fe, Cebu, 1 case, 1 death; Bantayan, Cebu, 3 cases, 3 deaths; Malolos, Bulacan, 1 case, 1 death. Ten cases of cholera with 7 deaths were reported at Cadiz, Negros Island, Philippine Islands, up to May 30, 1930.
[3] Diagnosis not confirmed.
[3] Reports incomplete.
[4] On Mar. 11, 3 deaths from bubonic plague were reported in Andalgala, Catamarca Province, Argentina, since Feb. 5, 1930.

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

PLAGUE—Continued

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

Place		Nov. 17–Dec. 14, 1929	Dec. 15, 1929–Jan. 11, 1930	Jan. 12–Feb. 8, 1930	Feb. 9–Mar. 8, 1930	Week ended— March, 1930 15	22	29	April, 1930 5	12	19	26	May, 1930 3	10	17	24	31
Azores: Ponta Delgada	C		P														
Belgian Congo: Djugu	D	2															
Brazil:																	
Rio de Janeiro	C			1													
	D			1													
Sao Paulo.[2]																	
British East Africa (see also table below):																	
Tanganyika	C				7						11						
	D										10						
Uganda	C	281	127	82	47	30	40		28								
	D	262	112	70	43	26	33		28								
Ceylon:																	
Colombo	C	5	2	4	3		1	1	2			1		4	1		
	D	4	1	4	3		1	1	2			1		3	1		
Plague-infected rats		1		1	3		2			2			2				
Chile: Antofagasta	C			1	1				1								
	D								2								
Dutch East Indies:																	
Batavia and West Java	C	340	286	167	153	34	41	23	26								
	D	335	280	164	150	33	42	23	25								
Plague-infected rats		8		3	3		2		1		6	2					
Celebes—Makassar	C	1		1													
	D			1													
Plague-infected rodents		1	4														
East Java and Madura	C	29	2														
	D	29	2														
Java and Madura	D	537	458	317	296	59	73	45						8			
Surabaya	C	4															
	D	4															
Ecuador (see table below).																	
Egypt:																	
Alexandria	C	6	2	4	1	1	1	1	1			1	1	2	3	3	5
	D	3	3	1			1					1	1			1	2
Assiout	C	1	4									7	3	9	2	1	1
	D	1	2									3	2		3	1	

Assuan	C		2														
Beheira	C	1		2		3	1										
Beni Suef	C					3		1									
Dakahlieh	C	1	1		8	4		1		2		1	2	3	1	2	5
	D		1			1									1		
Gharbieh	C	3	2	1								1					
	D	2	1									1					
Girga	C									1							
Port Said	C									1					1	1	
Greece (see also table below):																	
Patras	C						P	1									
Piraeus	C	1		1													
Pyrgos	C	2							1								
India	C	6,016	4,713	4,814	5,639	1,090	1,187	1,005	805								
	D	3,457	3,093	3,308	3,940	838	911	889	706								
Bassein	C			1		2	1										
	D			1		1											
Bombay	C			1	1		2	2	3		4			4	1		
	D			1	1		2	2	1	1	3	4		1	4		
Plague-infected rats		36	29	28	31	21	7	33	25	20	28	25	35				
Madras Presidency	C	236	336	27	230	56	67	14	20	12							
	D	108	174	13	140	34	32	6	15	6							
Rangoon	C	1	3	3	7		1	2			3		2		1		
	D	1	4	2	6		1	2			2	1	1	1	1		
Plague-infected rats		2		1	7			2	1	1	2		1	1	3		
Indo-China (see also table below):																	
Pnompenh	C	5		1						2			1	1			
	D	5		2	13	7	2	2	2	2	1	1					
Saigon and Cholon	C		1	2				1						1			
	D		1	2				1									
Iraq:																	
Baghdad	C	3	2	6	6	2	1	1	3				4	7	11	7	12
	D	1	1	2	1	1			3				2	3	5	4	6
Basra	C		1														
Naudham	C		1														
Japan: Osaka (vicinity of)—Plague-infected rats			1	7	6	2		1	1	1	1						
Kwang-Chow-Wan	C			25	25				7								
Madagascar (see also table below):																	
Tamatave	C		4								1						
	D		3														
Morocco	C	9	12	4	48	8	5	26	16	14	41	34	32	19	22		
	D				13	4	1	7	6	6	26	12	11	11	14		
Nigeria: Lagos	C	10	15	6	7	4	1	7	1					1	1		
	D	10	15	6	7	4			1					1	1		
Plague-infected rats		21	18	44	42	7	12	3	3	3		1		1			
Senegal (see table below).																	

[1] 21 cases of plague with 8 deaths were reported Jan. 29, 1930, in the State of Sao Paulo, Brazil; 15 of these cases were in the city of Sao Paulo.

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

PLAGUE—Continued

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

Place		Nov. 17–Dec. 14, 1929	Dec. 15, 1929–Jan. 11, 1930	Jan. 12–Feb. 8, 1930	Feb. 9–Mar. 8, 1930	Week ended— March, 1930			April, 1930				May, 1930				
						15	22	29	5	12	19	26	3	10	17	24	31
Siam	C	3	11	8	17	1	4	8	3	4							
	D	3	9	6	13	1	3	8	3	4							
Bangkok	C		1		1	1	1	2	1						1		
	D		1		1	1	1	2							1		
Nagara Pathom	C	1	6	7	5				1	4	3	2	1				
	D	1	5	7	6				1	4	3	1	1				
Nagara Rajsima	C		2	2	2				1		1						
	D		1						1		1						
Syria: Beirut	C	1															
Tunisia:																	
Sfax district	C	20	14	18	22							1		17			
Tunis	C		42	6	5	1											
	D		21														
Union of Socialist Soviet Republics: Kazaks	C		P														
Union of South Africa:																	
Cape Province	C	4		1	2		1										
	D		7		1		1										
Orange Free State	C	6	5	15	11	3	1		1	1							
	D	3	1	9	3	2	1										
Transvaal	C			8	2		1										
	D			3			1										
On vessel:																	
At Rio de Janeiro, Brazil, from Argentina	C			1													

Place		November, 1929	December, 1929	January, 1930	February, 1930	March, 1930	April, 1930
British East Africa (see also table above):							
Kenya	C	157	54	34	-----	-----	-----
Uganda	C	179	216	87	-----	-----	-----
	D	164	199	75	-----	-----	-----
Ecuador: Guayaquil	C	14	17	4	2	2	0
	D	3	6	2	2	-----	0
Plague-infected rats		9	13	4	2	2	0
Ecuador (outside of Guayaquil)	C	-----	19	4	-----	-----	-----
	D	-----	5	2	-----	-----	-----
Greece (see also table above)	C	2	1	-----	-----	-----	-----
	D	1	-----	-----	-----	-----	-----
Indo-China (see also table above)	C	-----	10	10	30	27	4
Madagascar (see also table above)	C	182	264	282	-----	-----	-----
	D	163	248	258	-----	-----	-----
Ambositra Province	C	42	111	128	49	-----	-----
	D	33	96	111	41	-----	-----
Antisirabe Province	C	5	16	26	22	-----	-----
	D	5	16	25	22	-----	-----
Itasy Province	C	10	19	31	-----	-----	-----
	D	10	16	31	-----	-----	-----
Madagascar—Continued.							
Miarinarivo Province	C	5	3	-----	25	-----	-----
	D	5	3	-----	25	-----	-----
Moramanga Province	C	4	12	22	7	5	-----
	D	3	12	21	4	5	-----
Tamatave Province	C	-----	2	3	-----	-----	-----
	D	-----	2	1	-----	-----	-----
Tananarive Province	C	103	97	88	110	-----	-----
	D	93	98	83	107	-----	-----
Senegal:							
Baol [1]	C	23	5	-----	-----	18	24
	D	16	2	-----	-----	8	12
Dakar [1]	C	17	8	-----	-----	-----	1
	D	5	1	-----	-----	-----	-----
Louga [1]	C	-----	-----	-----	2	-----	33
	D	1	-----	-----	-----	-----	10
Thies [1]	C	-----	-----	3	-----	3	12
	D	-----	-----	-----	-----	2	9
Tivaouane [1]	C	8	-----	1	-----	11	61
	D	4	-----	-----	-----	8	35

[1] Incomplete reports.

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

SMALLPOX

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

Place		Nov. 17–Dec. 14, 1929	Dec. 15, 1929–Jan. 11, 1930	Jan. 12–Feb. 8, 1930	Feb. 9–Mar. 8, 1930	Week ended— March, 1930 15	22	29	April, 1930 5	12	19	26	May, 1930 3	10	17	24
Algeria:																
Algiers	C	3		6	1	2	2	1		1					1	
Constantine	C			1												
Oran	C	3		5		1										
Arabia: Aden	C	4	1	1	2		1	1	1			1				
	D	1														
Bolivia: La Paz (see table below).																
Brazil: Rio de Janeiro	C		1													
British Borneo: Sarawak	C			4	19											
British East Africa (see also table below):																
Tanganyika	C	50	27	5	49	17	32	53	1							
	D	10	5		8	3	1	3								
British South Africa:																
Northern Rhodesia	C	54														
Southern Rhodesia	C	58	33	1	6											42
	D	4	6													8
Canada:																
Alberta	C	22	16	22	4	2	5	2	1	3	1					
Edmonton	C	11	15	19	1	1		1	2	3						
British Columbia—Vancouver	C	14	17	16	16	1	7	3	9	8	1	5	3			1
Manitoba	C	6	8	6	2	2	1	1		2			2			7
Ontario	C	63	51	63	86	38	27	26	9	17	30	18	12	14	24	24
Fort William	C			4												
North Bay	C	2		2	1									1		
Ottawa	C	4	7	10	11	9		6	4	8	4	7	2	3	10	7
Toronto	C			2												3
Quebec	C	10	3	11												
Montreal	C			1												
Saskatchewan	C	40	61	86	76	9	11	15	12	3	10	7	21	20	6	10
Regina	C		31											1		3
Ceylon:																
Angoda, Western Province	C				10								6			
	D				1								2			
Colombo	C		1	1	3											
	D				2											

China:																
Canton	C	4	5	7	11	1	1	4			2	1				
	D			2	3		1		1	1	1		1			
Chungking	C	P	P	P	P	P	P	P	P	P	P	P	P	P		
Foochow	C	P	P	P	P	P			P		P		P			
Hong Kong	C	62	102	118	62	12	10	5	11	20	7		1	5	5	2
	D	55	73	109	51	6	10	4	5	11	9	3		4	2	3
Manchuria—																
Harbin	C	2	1	3							1					
Kwangtung—Dairen	C		1	6	5						1			1		
Nanking	C		P	P	P	P				P			P	P		
Shanghai—																
Foreigners only	C	5	7	5	2	1		1		2	1					
Including natives	D	2	6	8	7	4	1	3	2	4	3	2	1		1	
Swatow	D		2	3	6		3	2	1	2			1			
Tientsin	C	4	2	1	1		2			1						
Chosen (see table below).																
Colombia:																
Barranquilla	C		1		102					1						
Buenaventura	C	56	13		1	1	1			7	5	2	1			
	D	1														
Costa Rica:																
Port Limon	C											1	2			
San Jose [1]	C							10		7						
Curacao (alastrim)	C					10	3		1			1	1	2		
Dutch East Indies:																
Belawan Deli	C	1	1													
Borneo	C			1			25	98	62	17	43	20				
	D			1			1	5	6	16	12	2				
Java—																
Batavia and West Java	C	37	17	14	12			1		2		1	1	1		
	D	8	10	7	7					2			1			
East Java and Madura	C	13														
Sanggi Islands	C	105	17	25	12		5									
	D	6	3				1									
Sumatra	C	1	1	2		48										
	D					5										
Egypt:																
Alexandria	C	5														
Port Said	C			2						1						
Great Britain:																
England and Wales	C	994	1,005	1,455	1,530	433	361	449	457	423	345	353	306	462		
Ashton under Lyne	C	6	3	4	29	5	4	2	4	9	3	4	2	6		
Bradford	C	20	8	5	2					1			2		1	
Cardiff	C	1						2		1	2					
Leeds	C			6	11	6	3	4	3	1	1					
London	C	321	480	597	699	210	124	195	181	160	169	129	137	222		
London and Great Towns	C	783	799	1,101	1,156	323	213	350	332	308	264	205	229	339		
	D	1		2	5	1		1	1	2	1	1				
Newcastle on Tyne	C	1														
Sheffield	C							5	3	1	1					
Stoke-on-Trent	C	1	12	12	41	18	23	40	41	17	23	33	12	19		

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

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

SMALLPOX—Continued

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

Place		Nov. 17–Dec. 14, 1929	Dec. 15, 1929–Jan. 11, 1930	Jan. 12–Feb. 8, 1930	Feb. 9–Mar. 8, 1930	Week ended— March, 1930 15	22	29	April, 1930 5	12	19	26	May, 1930 3	10	17	24
Greece: Patras	C		1													
Hedjaz	C	6	11	11												
India	C	7,644	12,789	26,524	36,036	9,269	10,122	10,174	9,764							
	D	1,963	3,730	6,186	7,710	1,826	2,128	2,213	1,948							
Bombay	C	42	119	342	638	233	187	114	184	143	114	89	84	52	68	
	D	14	57	164	314	123	114	78	116	88	78	64	44	33	49	
Calcutta	C	54	88	185	399	106	155		100	153	116	122		109	70	
	D	39	62	130	287	77	138		90	124	97	103		94	72	
Cochin	C	387	234	234	184	87	71	72	61	56	49	58	20	13	8	
	D	72	20	27	29	14	11	3	7	3	4	6	2	5	1	
Karachi	C	7	17	30	38	14	13	12	8	10	9	7	4		6	
	D	2	11	9	16	5	3	3	4	10	3	2	2	2		
Madras	C	64	85	105	159	38	53	43	39	55	26	27	25	24	13	
	D	11	16	16	29	8	9	12	7	6	6	5	10	4	5	
Moulmein	C	6	18	65	143	39	43	40	25	10		33		27	29	
	D	3	9	18	40	15	9	8	9	4		3		4	6	
Negapatam	C	1			7											
Rangoon	C	1	2	7	2	5	1	3	1		1	1	2	2		
	D			4		2	1	2								
Tuticorin	C			3	9											
Vizagapatam	C		2	5	1	4	8	53	4	1		2	3	3	1	
	D					1	1	14	2	1			1		3	
India (French): Chandernagor	C			3	11		4	2		4		6		6	2	
	D				5			2				2		2	4	
Karikal	C	1		3	12		10	12	2	8	9	2		6	5	
	D	1		3	8		5	2		3	3	2		2	1	
Pondicherry Province	C	7	20	22	52		9	12		12	1	11		9	13	
	D	7	19	19	40		7	6		11	1	8		7	12	
India (Portuguese)	C	1		16	50	5	21	3	9	5	6					
	D				6		1		1							

Indo-China (see also table below):																
Pnompenh	C													1		
	D			1							1	1				
Saigon and Cholon	C		4	3	4		2		1			4		1		
	D		2	3	2		1				1	3	1		1	
Iraq:																
Baghdad	C	20	16	7	3					1	2	3	2			
	D	10	5	3	1								1			
Basra	C	5			1								1			
Diyalah Liwa	C	46														
	D	7														
Kirkuk Liwa	C	70														
	D	19														
Mossoul	C	48	80	26	12						22			13		
	D	17	3	7	2						3			2		
Ivory Coast (see table below).																
Macao	D				2	1	2			1			1	1		
Mexico (see also table below):																
Jalisco (State): Guadalajara	D	6	9	9	14	3	7	5	7	6	4	8	2			
Juarez	C	11	3	2	3			2								
	D	2	2	1	1											
Mexico City and surrounding territory [1]	C	19	25	30	38	26	13	21	46	36	19	20	24			
	D	9	4	7	21	3	9	6	13	14	8	14	11			
Morelos State.[2]																
San Luis Potosi	C				1											
	D				1											
Morocco (see table below).																
Netherlands: Rotterdam	C	5	1													
	D	1														
Nigeria: Lagos	C		2	5	2				1	1						
	D		1	2												
Persia (see table below).																
Philippine Islands: Sarangani and Balut Islands [3]	D		40	18	3											
Poland	C	4	2		2							2			1	
Portugal:																
Lisbon	C	3	6	4	7		4	1	2	2	3	3		6		
Oporto	C	1														
Rumania	C			1	1											
Siam	C	3	42		2					2	2			2		
	D	1	9	1							2					
Somaliland, British: Boales	C	24	5	35	19		2									
	D	9	9	8	2	2	3	1								
Straits Settlements	C			2				2	3	1	1			1	3	
	D			1				1							1	
Sudan (Anglo-Egyptian)	C	254	290	230	79	8	5	22	25	2	9	31			5	13
	D	45	65	34	6		2		3	1		3				1
Sudan (French) (see table below).																
Syria (see table below).																
Tunisia: Tunis	C	47	20	7	3			2	1			1	3			

[1] During the month of March, 1930, 100 cases of smallpox were reported in Mexico City, Mexico, and surrounding territory.
[2] Newspaper reports of Feb. 4 show an epidemic of smallpox in Ionacatepec, Morelos State, Mexico, and vicinity, giving 600 deaths in preceding 2 weeks.
[3] On Feb. 1, 1930, 317 cases of smallpox with 102 deaths were reported to that date in the Sarangani and Balut Islands.

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

SMALLPOX—Continued

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

Place		Nov. 17–Dec. 14, 1929	Dec. 15, 1929–Jan. 11, 1930	Jan. 12–Feb. 8, 1930	Feb. 9–Mar. 8, 1930	Week ended— March, 1930: 15	22	29	April, 1930: 5	12	19	26	May, 1930: 3	10	17	24
Turkey (see table below).																
Union of South Africa:																
Cape Province	C	P	P	P	P	P				P						
Natal	C	P														
Orange Free State	C	P	P	P	P	P	P									
Transvaal	C	P	P	P	P	P										
Upper Volta	C				26	1	1	2								
Zanzibar	C					9	2		2							
On vessel:																
S. S. Tairoa, at Liverpool, from London	C				1											
S. S. Karagola, at Zanzibar, from India	C			4												
S. S. Karagola, at Lourenço Marques, from India	C				1											
S. S. Elysia, at Port Sudan, from Bombay	C										1					
S. S. Naldera, at Port Said	C													1		

Place		October, 1929	November, 1929	December, 1929	January, 1930	February, 1930: 1–10	11–20	21–28	March, 1930: 1–10	11–20	21–31	April, 1930: 1–10	11–20	21–30
Belgian Congo	C		42	74										
	D		2	4										
Dahomey	C	4	19	19										
Indo-China (see also table above)	C	128	245	142	460	148	286				26	261		
Ivory Coast	C									7				
Sudan (French)	C		P	17	229	12	P	201		200	409	371		150
	D				25	1		10		18	31	30		6
Syria: Beirut	C	28	60	25	70	4	7	7	4	8	5	10	2	
	D	1	6											
Taiwan: Taihoku	C						31	12	31	12	15	10	2	

Place		November, 1929	December, 1929	January, 1930	February, 1930	March, 1930	April, 1930
Bolivia: La Paz	C	22					
British East Africa (see also table above):							
Kenya	C	278	168	12	12	6	
Chosen	C	2		1	4		
Mexico: Durango (see also table above)	D	2	4	12	6	5	4
Morocco	C	41	84	29	74		
Nigeria	C	228	293				
	D	45	70				
Persia	C		P				
	D	37					
Turkey	C	136	883	215	114		3
	D	12	457	66	42		

TYPHUS FEVER

Place		Nov. 17–Dec. 14, 1929	Dec. 15, 1929–Jan. 11, 1930	Jan. 12–Feb. 8, 1930	Week ended— February, 1930		March, 1930					April, 1930				May, 1930		
					15	22	1	8	15	22	29	5	12	19	26	3	10	17
Algeria:																		
Algiers	C	1	14	3	3		1		2	1		3	2	3	2	1		2
Constantine Department	C	3	2	4	3	2			2	3			4	9	2			4
Oran	C	1		2														
Bolivia: La Paz	C	14																
Brazil: Sao Paulo.[1]																		
Bulgaria	C	9	41					13	9				15				1	
	D	1	2					1					1				1	
Sofia	C			1														
Chile:																		
Talcahuano	D			1														
Valparaiso	C			1														
China: Tientsin	C		1	1														
Chosen (see table below).																		
Czechoslovakia (see table below).																		
Egypt:																		
Alexandria	C										1							
Assuan	C		9															
	D		1															
Beheira Province	C		7	14	5	13					2						2	
	D					5												

[1] Press reports show that 10 deaths from typhus fever occurred in Sao Paulo, Brazil, from Nov. 3 to 30, 1929.

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

TYPHUS FEVER—Continued

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

Place		Nov. 17–Dec. 14, 1929	Dec. 15, 1929–Jan. 11, 1930	Jan. 12–Feb. 8, 1930	Week ended— February, 1930		March, 1930					April, 1930				May, 1930		
					15	22	1	8	15	22	29	5	12	19	26	3	10	17
Egypt—Continued.																		
Cairo	C	1				5												
	D	1																
Dakahlieh	C		11															
	D		2															
Port Said	C			2			1											
Suez	C			1														
Great Britain: Scotland—Glasgow	C																	1
	D																	1
Greece (see table below).																		
Iraq: Baghdad Liwa	C		1									2						
	D		1															
Ireland:																		
Irish Free State	C		1															
Dingle—Kerry County	C													3	2			
Swinford—Mayo County	C																	7
Northern Ireland—Cookstown	C							3										
Latvia (see table below).																		
Lithuania (see table below).																		
Mexico: Mexico City, including municipalities in Federal District	C	5	6	12	4	2	3			2	1	1	2	1		1		
	D		2	4							1		2	1		1		
Morocco	C	2	6	23		2	8	11	4	7	14	13	6	5	3	1	8	6
	D										4	3	2	1				
Palestine	C	1				1			1	1	2	2		1			2	
Peru: Arequipa (see table below).																		
Poland	C	74	61	296		72	55	56	69	54	43	61	59	64	53	67	64	45
	D	10	4	21		3	2	3	5	2	2	4	4	2	3	6	2	2
Portugal: Oporto	C	3					1			2			1					
Rumania	C	103	82	241	88	58	54	93	90		95							
	D	10	5	25	11	2	5	5	7		5							
Tunisia	C	3	2			3												

Turkey (see table below).																		
Union of South Africa:																		
Cape Province	C	P	P	P	P	P	P	P	P	P	------	P	P	P	------	------	------	------
Natal	C	P	P	1	P	------	------	3	------	------	------	P	P	P	------	------	------	------
Orange Free State	C	P	P	P	P	P	P	P	P	P	------	P	------	------	------	------	------	------
Transvaal	C	------	------	------	------	------	------	------	------	------	------	------	P	P	------	------	------	------
Yugoslavia (see table below).																		

Place		October, 1929	November, 1929	December, 1929	January, 1930	February, 1930	March, 1930
Chosen: Seoul	C	------	------	1	------	17	------
Czechoslovakia	C	------	3	------	10	2	42
France	C	------	------	1	------	------	------
Greece: Athens	C	7	------	6	12	6	3
Latvia	C	------	------	2	18	------	------
Lithuania	C	6	4	5	2	70	62
	D	1	1	1	------	5	4
Peru: Arequipa	D	1	------	------	------	------	------
Turkey	C	10	2	4	2	3	1
Yugoslavia	C	1	------	6	26	33	46
	D	------	------	1	3	5	2

YELLOW FEVER

On April 22, 1930, two cases of yellow fever were reported in Mage, Brazil, located on the Leopoldina Railway, between Rio de Janeiro and Nichtheroy; one case of yellow fever was reported in Campos, Rio de Janeiro Province, Brazil, on May 23, 1930; and one case of yellow fever was reported in the Gold Coast during the week ended December 21, 1929. A case of yellow fever was reported in Monrovia, Liberia, on June 3, 1930.