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NONTUBERCULOUS PULMONARY CALCIFICATION AND SENSITIVITY TO HISTOPLASMIN

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One of the significant problems in tuberculosis involves the marked variations in different parts of the country in the frequency of pulmonary calcification observed in roentgenograms of the chest. In a recent paper based on Selective Service records Long and Stearns (1) have shown the prevalence of such calcified lesions to vary from 6 percent in Oregon to 28 percent in Kentucky. In general, an area of high prevalence occurs in the central eastern half of the United States (Kentucky, Arkansas, Illinois, Indiana, Iowa, Maryland, Mississippi, Missouri, North Carolina, Ohio, Tennessee, Virginia, and West Virginia) with the frequency generally lower in the States to the north, south, and west of that area. These roentgenographic findings have been the basis for rejecting appreciable numbers of persons from the armed services.

Although pulmonary calcification is generally interpreted as evidence of healed tuberculosis, it is by no means certain that this disease is the only important cause of such lesions. Some of the States included in the area of high rates of pulmonary calcification do have relatively high mortality rates for tuberculosis, but the distribution of tuberculosis is not at all closely correlated with the frequency of calcification. Furthermore, a number of reports have shown that in the area of high rates of calcification a large proportion of the persons with these lesions have negative tuberculin reactions (Gass et al. (2), Lumsden and Dearing (3), Olson, Wright, and Nolan (4), Dearing et al. (5)). This has led to a search for nontuberculous origins of the lesions. Olson, Wright, and Nolan (4) considered ascariasis, but were unable to prove that it is a significant cause of pulmonary calcification in man. Aronson et al. (6), on the basis of studies of tuberculin and coccidioidin skin tests in Indians in the Southwest, have presented evidence that coccidioidomycosis is responsible in the localities studied for a considerable amount of calci-

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fiction. Smith (7) has recently stated that the area of high prevalence of pulmonary calcification in tuberculin negative reactors corresponds with the endemic area of histoplasmosis; while Christie (8), from his clinical studies, believes that histoplasmosis or some closely related infection is relatively common in Tennessee. These workers who believe that essentially all pulmonary calcification is due to tuberculosis explain the negative tuberculin reactions by assuming that in such cases sensitivity to tuberculin has been lost with the healing of the tuberculous lesion. This explanation is difficult to accept when it is considered that many of the cases occur in children and that studies of repeated tuberculin tests have shown an extremely low rate of reversion to negativity in persons who react to a low dose of tuberculin (9).

An opportunity to study the question of tuberculin negative pulmonary calcification has recently been afforded in an extensive investigation on tuberculosis in student nurses which is being conducted cooperatively by the National Tuberculosis Association, the United States Public Health Service, and a large number of tuberculosis specialists throughout the country. Approximately 10,000 student nurses in 65 nursing schools in 9 widely distributed metropolitan centers are under close observation, including tuberculin tests and 14" x 17" chest films at 6-month intervals. Results from the study bring out clearly the geographic regional differences in the frequency of pulmonary calcification as well as the fact that, especially in States in the central eastern part of the country, the majority of nurses with calcification have negative tuberculin reactions.

In the course of the study attempts were made to determine the etiology of the pulmonary calcification in tuberculin negative persons. Study of the various fungi seemed indicated, especially since the reports of Smith (7) and Aronson et al. (6) have stressed *Coccidioides immitis* as an important pulmonary pathogen. Intradermal tests with coccidioidin (1:100) (generously furnished by Dr. C. E. Smith) were given to a sample group included in the study of student nurses in Detroit, Kansas City, Philadelphia, and Baltimore. The results were essentially negative since only a very few reactors to coccidioidin were found. Many of the nurses who did react had lived or traveled in the southwestern part of the country or in California where coccidioidomycosis is known to be endemic.

In order to investigate the possibility that infection with *Histoplasma capsulatum* is a cause of pulmonary calcification, a large number of nurses were given intradermal histoplasmin tests. Preliminary data are based on records of tuberculin and histoplasmin tests and roentgenograms of 3,105 student nurses: 971 in Minneapolis and St. Paul, Minn.; 859 in Kansas City, Mo., and Kansas City, Kans.; 538 in Detroit, Mich.; and 740 in Philadelphia, Pa.² Results of this

² Analysis of the records for an additional group of 700 nurses in Columbus, Ohio, furnishes results entirely in accord with those given below.

work appear to indicate (a) that infection with histoplasma is very common in widespread localities in the United States, and (b) that it is probably the principal nontuberculous cause of pulmonary calcification. These conclusions are based on the assumption that skin sensitivity to the histoplasmin used in this study is indicative of infection with histoplasma.

TABLE 1.—Number and percentage of histoplasmin reactors among student nurses in specified cities

City	Percentage distribution				Number of persons			
	Histoplasmin reaction				Histoplasmin reaction			
	Positive	Doubtful	Negative	Total	Positive	Doubtful	Negative	Total
Detroit.....	13.8	0.6	85.7	100.0	74	3	461	538
Minneapolis.....	4.7	1.6	93.6	100.0	46	16	909	971
Kansas City, Mo.....	61.5	4.3	34.2	100.0	397	28	221	646
Kansas City, Kans.....	50.2	3.8	46.0	100.0	107	8	98	213
Philadelphia.....	11.8	.8	87.4	100.0	87	6	644	737
Total.....	22.9	2.0	75.1	100.0	711	61	2,333	3,105

METHODS

In order to insure uniformity in interpretation of findings, all skin tests were performed and read by one person and all films were interpreted by one experienced roentgenologist. For purposes of the present paper roentgenographic findings are limited to a report as to the presence or absence of shadows characteristic of calcification in the lung parenchyma or lymph nodes. The interpretation was recorded without knowledge of the tuberculin reaction and prior to testing with histoplasmin.

The tuberculin tests were performed with Purified Protein Derivative (PPD-S) prepared by Dr. Florence B. Seibert of the Henry Phipps Institute in Philadelphia, the same product that has been used for the past several years in the study of student nurses. On the basis of previous work by Furcolow et al. (12) a dose of 0.0001 mg. in 0.1 cc. was employed. Reactions with induration measuring 5 mm. or more in diameter 48 hours after injection were considered positive. All other reactions were considered negative.

The histoplasmin used was kindly supplied by Dr. C. W. Emmons of the National Institute of Health. One dose was used, 0.1 cc. of a 1/1,000 dilution of a filtrate of broth culture of *Histoplasma capsulatum*. Details of the preparation of the histoplasmin will be published later by Dr. Emmons. Measurements of both erythema and induration were recorded at 48 hours. Since most of the nurses tested were given tuberculin and histoplasmin at the same time, it was possible to observe the types of reactions obtained with the two antigens. A

report on this subject is being prepared. At this time, however, it seems sufficient to state that for practical purposes tuberculin and histoplasmin reactions, read 48 hours after injection, are essentially similar and could not be distinguished by their appearance. Reactions classified as positive were those having a diameter of induration of 5 mm. or more; those classified as doubtful include all reactions in which there was only erythema or an area of induration from 3 to 4 mm. in diameter. Negative reactions had no induration or erythema.

RESULTS

Among the 3,105 nurses studied, 711 (22.9 percent) showed a positive reaction and 61 (2.0 percent) a doubtful reaction to histoplasmin (table 1). Very great differences, however, were found in the percentage of nurses reacting to histoplasmin in the several cities: in Minneapolis and St. Paul, 6.3 percent gave a definite or doubtful reaction; in Philadelphia, 12.6; in Detroit, 14.4; in Kansas City, Kans., 54.0; and in Kansas City, Mo., 65.8 percent. Since these figures are for nurses taking their training in the specified locality, they are not entirely representative prevalence rates of reactors for the city or State, for geographical migration tends to blur the marked regional differences. Though some of the histoplasmin-positive nurses in the regions of low reactivity (Minnesota, Michigan, and Pennsylvania) claimed never to have been outside the State and some never to have been away from the city in which they were enrolled as students, many of the positive reactors had lived at some time in a region of higher prevalence of histoplasmin reactors. In the other direction, even the high prevalence of reactors in Kansas City, Mo. (65.8 percent), is probably too low to be representative of Missouri since some nurses had come there for training after having lived most or all of their lives in States in which the present study showed a low prevalence of histoplasmin sensitivity.

The most striking findings in the investigation are derived from the study of the relationship of pulmonary calcification and the results of the tuberculin and histoplasmin tests. Among the total group of 3,105 nurses examined, 294 were noted to have pulmonary calcification. The tuberculin and histoplasmin reactions in the group of 294 with calcification were as follows:

	<i>Number</i>	<i>Percent</i>
Tuberculin positive, histoplasmin positive.....	35	11.9
Tuberculin positive, histoplasmin doubtful.....	8	2.7
Tuberculin positive, histoplasmin negative.....	20	6.8
Subtotal (all tuberculin positive).....	68	21.4
Tuberculin negative, histoplasmin positive.....	198	67.4
Tuberculin negative, histoplasmin doubtful.....	8	2.7
Tuberculin negative, histoplasmin negative.....	25	8.5
Subtotal (all tuberculin negative).....	231	78.6

Summarizing this tabulation, about one-fifth (21.4 percent) of the total group of 294 nurses with calcification had a positive tuberculin. Among the remaining four-fifths of the group (231) who had a negative tuberculin, 206 (198+8) had a positive or doubtful histoplasmin reaction. Only 25 nurses (8.5 percent of the 294 with calcification) had a negative reaction to both tuberculin and histoplasmin. Taking these findings altogether, it is evident that a very high proportion (91.5 percent) of the group having pulmonary calcification react to tuberculin or histoplasmin or both, and that in the group studied many more react to histoplasmin than to tuberculin.

TABLE 2.—*Number and percentage of student nurses having pulmonary calcification according to tuberculin and histoplasmin reaction*

Tuberculin reaction	Percentage with calcification					Number of persons							
						With calcification				Total			
	Histoplasmin reaction					Histoplasmin reaction				Histoplasmin reaction			
						Positive	Doubtful	Positive and Doubtful	Negative	Total	Positive	Doubtful	Negative
Positive	33.3	38.1	34.1	10.4	19.8	35	8	20	63	105	21	192	318
Negative	32.7	20.0	31.1	1.2	8.3	198	8	25	231	606	40	2,141	2,787
Total	32.8	26.2	32.3	1.9	9.5	233	16	45	294	711	61	2,333	3,105

Still more striking evidence of the relationship between calcification and histoplasmin reactions is shown in table 2, which gives detailed figures on the rate or frequency of pulmonary calcification among the total group of 3,105 nurses classified according to their reactions to tuberculin and histoplasmin. Reviewing the results presented in this table, it is apparent that the association between calcification and the tuberculin reaction is quite different from that between calcification and the histoplasmin reaction. Among nurses reacting only to tuberculin 10.4 percent show pulmonary calcification, while among those reacting only to histoplasmin 31.1 percent show calcification. Among those reacting to both antigens the percentage (34.1) showing calcification is higher, as might be expected, than among those reacting to either antigen alone. Among the large group of 2,141 nurses who are negative to both tuberculin and histoplasmin a very low rate of pulmonary calcification (1.2 percent) is found.

DISCUSSION

The importance of the observations reported in this paper and the conclusions which may be drawn from them depend upon the correctness of certain basic assumptions.

It is clear that any implication of a relationship between a reaction to the histoplasmin antigen and infection with histoplasma rests upon the specificity of the histoplasmin test. Little definitive knowledge on this point is as yet available. By analogy with the tuberculin, coccidioidin, and other intradermal tests, it seems reasonable to believe that a similar relation may exist for the histoplasmin reaction. Van Pernis et al. (10) and Parsons and Zarafonitis (11, 13) have reported positive histoplasmin reactions in infected mice and rabbits and in one of two human cases of histoplasmosis, but these observations are too limited to constitute adequate evidence of specificity.

It is clear from the data presented here that there are wide geographic differences in the frequency of the reactions. Among nurses who have lived essentially all their lives in Minnesota, certainly less than 5 percent show any reaction to histoplasmin, while in Missouri more than 60 percent are sensitive. This geographic distribution may be interpreted as evidence that the histoplasmin reaction is specific indication of some previous experience of the individual, presumably infectious, since it would be difficult to account for such a variation if the reaction were nonspecific. In addition, the consistent high degree of correlation of the histoplasmin reaction with pulmonary calcification in the various localities is similar indirect evidence of its specificity and of its medical significance.

Whether this specificity is an indication of infection with *Histoplasma capsulatum*, which produces fatal disease in recognized cases, is another question. *Coccidioides immitis* and *Mycobacterium tuberculosis* are examples of infectious agents which produce both widespread mild infection and less common fatal disease in man. Since numerous immunological cross reactions are known to exist among bacteria, it seems best at the present state of our knowledge to interpret the histoplasmin reaction as evidence of previous infection with *Histoplasma capsulatum* or an immunologically related organism.

While the epidemiological observations reported here are highly suggestive, it is recognized that they do not constitute proof that infection with histoplasma or a closely related organism is a cause of pulmonary calcification. Studies (reviewed in (11)) on the pathology of histoplasmosis, however, support this possibility, since pulmonary lesions are present in most recognized cases.

Special mention should be made of the fact that among more than 2,000 nurses who failed to react to either antigen, only 25 (1.2 percent) had pulmonary calcifications. Several factors may account for this finding: (1) the possibility of other causes of pulmonary calcification, such as coccidioidomycosis (cf.(6)), (2) difficulty in the interpretation of roentgenograms, which is subject to a considerable technical and observational error, and (3) the error inherent in any biological tests, including intradermal tuberculin and histoplasmin tests.

In the present state of our knowledge, it was necessary to use an arbitrary dosage of histoplasmin and an arbitrary definition of positivity. The 1:1,000 dilution is analogous to that commonly used with tuberculin and coccidioidin, but the optimal dosage may well differ for histoplasmin. The determination of dosage and definition of reactions are problems for future study.

At the present time it is perhaps premature to discuss the significance of the general findings presented in this paper. If the interpretation of the specificity of the histoplasmin test is correct a number of important implications at once become apparent. First, histoplasmosis, in a mild, perhaps subclinical form, may be a very common infection, at least in the States in the central eastern half of the country. The number of persons so affected in this area may total many millions. The epidemiological evidence indicates that a very high proportion of the pulmonary calcification observed in individuals living in these States may be due to infection with histoplasma or a related organism and not to tuberculosis. If such is the case, a number of problems in tuberculosis can be clarified. Many persons now excluded from the armed forces on the basis of roentgenographic evidence of extensive healed tuberculosis can be restudied for acceptability for service. Reconsideration of our concepts of primary and reinfection tuberculosis is also indicated.

SUMMARY

Approximately 3,000 student nurses in Detroit, Kansas City (Missouri and Kansas), Minneapolis, and Philadelphia, representing part of a group being observed in connection with a study of early tuberculosis, were given intradermal tuberculin and histoplasmin tests and chest roentgenograms. Acceptance of the specificity of the histoplasmin reaction, for which indirect evidence has been presented, leads to the following conclusions:

(a) That mild, probably subclinical infection with *Histoplasma capsulatum* (or an immunologically related organism), is widely prevalent in certain States and relatively infrequent in others;

(b) That, in general, those States in which the frequency of reactions to histoplasmin is high are those in which pulmonary calcification is also high;

(c) That a very high proportion of the pulmonary calcifications observed in roentgenograms of tuberculin negative persons is due, not to tuberculosis, but probably to histoplasmosis.

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STUDIES OF THE ACUTE DIARRHEAL DISEASES

XIV. CLINICAL OBSERVATIONS¹

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Clinical records of 1,247 cases of diarrheal disorders of all degrees of severity, obtained in the course of surveys in various localities,² are analyzed and the findings here presented.

The arbitrary definition of a case of diarrhea adopted in this series of investigations was: Any disturbance resulting in four or more abnormal stools in 1 day without other symptoms, or two or more with associated complaints. Cases of acute diarrhea occurring concurrently with other disorders, though possibly secondary to them, are included in this clinical analysis.

TABLE 1.—*The severity of positive¹ and negative² cases included in clinical analysis by study areas*

As grouped for clinical analysis	Severity As recorded on history	New Mexico and Georgia				New York City			
		Positive ¹		Negative ²		Positive ¹		Negative ²	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent
Severe.....	{Death from diarrheal disease.....	39	8.2	13	2.6	0	0	2	1.0
	{Death from other causes.....	2	.4	8	1.6	0	0	4	2.0
	{Severe (nonfatal).....	188	39.8	108	22.0	8	9.8	16	8.0
	Total.....	229	48.4	129	26.2	8	9.8	22	11.0
"Milder".....	{Death from other causes.....	1	.2	1	.2	0	0	0	0
	{Moderate.....	147	31.1	169	34.4	30	36.6	43	21.5
	{Mild.....	84	17.8	184	37.4	42	51.2	128	64.0
	{Unspecified.....	12	2.5	9	1.8	2	2.4	7	3.5
	Total.....	244	51.6	363	73.8	74	90.2	178	89.0
Grand total.....		473	100.0	492	100.0	82	100.0	200	100.0

¹ *Shigella paradyserteriae* isolated.

² *Shigella paradyserteriae* not isolated.

All cases considered here are divided according to the cultural findings into positive and negative groups (table 1). One or more varieties of *Shigella* were isolated from all cases designated "positive." The classification "negative" indicates only the failure to isolate *Shigella*. A second major division is marked by the severity of illness. This classification was entered on the record by the epidemiologist when he completed the history. The cases were graded by severity on the basis of a clinical evaluation of the diarrheal disease as a whole, rather than on fixed criteria for certain findings. It is recognized that the stated degrees are not comparable between the

¹ From the Division of Infectious Diseases, National Institute of Health, with the cooperation of State, Insular, and local health departments of the areas in which the studies were conducted, the Indian Medical Service, and the DeLamar Institute of Public Health, Columbia University.

² Earlier papers in this series, listed in footnote 2 of Studies of the acute diarrheal diseases. XII. Etiology. Albert V. Hardy and James Watt. Pub. Health Rep., 60: 57-86 (1945).

areas. Many "severe" New York cases, for example, would be considered as "moderate" or "mild" if compared with the generally more severe illnesses of the Southwest. Mild cases did not arouse concern, and were rarely seen by practitioners; the severe illnesses caused concern, usually received medical care, and were often admitted to hospitals. The moderate cases fell between these limits. The grouping by severity as used in this analysis and the more detailed classification of the cases as recorded by the epidemiologist are shown in the first table.

TABLE 2.—The sex and age of positive¹ and negative² cases included in clinical analysis by study areas

Age	New Mexico and Georgia								New York City							
	Positive ¹				Negative ²				Positive				Negative			
	Male	Female	Total		Male	Female	Total		Male	Female	Total		Male	Female	Total	
			Number	Percent ³			Number	Percent ³			Number	Percent ³			Number	Percent ³
Under 1.....	48	46	94	20	90	63	153	31	5	3	8	10	61	67	128	64
1.....	58	50	108	23	41	46	87	18	10	12	22	14	11	27	38	14
2-4.....	47	53	100	21	29	29	58	12	13	15	28	34	14	22	36	11
5-14.....	24	17	41	8	18	19	37	5	15	13	28	34	8	15	23	7
15-54.....	35	78	113	24	46	98	144	29	1	3	4	5	0	2	2	1
55 and over.....	3	11	14	3	5	7	12	2	0	0	0	1	0	0	0	(⁴)
Unknown.....	3	0	3	1	0	1	1	0	2	0	2	2	2	1	1	3
Total.....	218	255	473	100	229	263	492	100	40	42	82	100	102	98	200	100

¹ *Shigella paradyserteriae* isolated.
² *Shigella paradyserteriae* not isolated.
³ Percent in each age group.
⁴ Less than 0.5 percent.

TABLE 3.—Positive¹ and negative² cases included in clinical analysis by area, year of observation, and race

Race	Number of cases									
	New Mexico				Georgia		New Mexico and Georgia		New York City	
	1937		1938		1939-40		1937-40		1939-40	
	Positive ¹	Negative ²	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
White "Anglo".....	57	32	114	158	38	50	209	240	58	122
Spanish.....	41	35	127	143	0	0	168	178	2	26
Negro.....	0	0	0	0	29	43	29	43	22	52
Indian.....	50	18	17	13	0	0	67	31	0	0
Totals.....	148	85	258	314	67	93	473	492	82	200
Percent positive ¹ ...	233		572		160		965		282	
	63		45		42		49		29	

¹ *Shigella paradyserteriae* isolated.
² *Shigella paradyserteriae* not isolated.

In table 2, positive and negative cases, grouped according to sex and age of patient, are summarized. Distribution by study areas, race, and year of observation is shown in table 3. The increase in the number of cases in New Mexico in 1938 is believed to be explained by more intensive case finding and more adequate laboratory facilities. In that year specimens were more commonly obtained from mild cases and late in the disease, either during convalescence or following recovery. As these were frequently culturally negative, the percentage of positive cases decreased.

Since *Shigella* infections are caused by members of a group of organisms, the data on positive cases were analyzed by the variety isolated. The clinical findings were strikingly similar, hence we present the combined data for all *Shigella paradysenteriae* infections observed in our study. The negative cases were also grouped and analyzed as "primary" and "secondary." The latter had no distinctive manifestations other than onset coincident with or subsequent to another systemic illness, usually a cold. Again we present the combined data on all cases in which the etiology was not demonstrated.

Hospitalized cases, which are generally severe, have served as the basis for most of the previously reported clinical studies of enteric disorders. In contrast, the present study includes all reported or discovered cases relatively free of selection by degree of severity. In New Mexico and Georgia 78 percent of the positive and 89 percent of the negative cases were cared for at home. While the clinical records on these were inevitably less exact than on hospitalized cases, such data were essential in providing a balanced view of the varying manifestations of the acute diarrheal diseases.

The detailed analysis of symptoms and findings given here is based on the New Mexico and Georgia cases. These findings are compared with the New York data and are supplemented by observations on cases involving institutional inmates.

PAST MEDICAL HISTORIES

The cases studied, with few exceptions, occurred in persons in good health prior to the reported diarrheal disease. The recorded abnormalities and preceding illnesses were similar to those revealed in the samples of the general population surveyed. Diarrhea within the preceding 12 months was reported by 73 (15 percent) of the 473 positive cases in New Mexico and Georgia and by 58 (12 percent) of the 492 negative cases. Preceding serious illnesses, as pneumonia, were reported in 5 percent of the positive and an equal proportion of the negative cases.

ONSET

The illnesses began suddenly in 80 percent of the positive and 74 percent of the negative cases. The symptoms appeared gradually during a period of 1 or 2 days in almost all of the remainder. An insidious onset was reported in a few chronic cases. In the positive series the initiating symptom, by order of the frequency of occurrence, was diarrhea (in 55 percent of cases), fever (15 percent), abdominal pain (13 percent), vomiting (6 percent), or other (11 percent); and in the negative series, diarrhea (54 percent), abdominal pain (14 percent), vomiting (12 percent), fever (9 percent), or other (11 percent). Convulsions occurred as the initial symptom in 8 of the positive but in only 1 negative case.

SYMPTOMS AND FINDINGS

On the history forms were recorded the presence or absence and degree of severity of 17 listed symptoms or signs. Additional manifestations were noted when present. The gravity of each was measured by fixed standards where practicable. Marked diarrhea indicated a maximum of 15 or more stools in 1 day, moderate 10 to 14, and mild less than 10 on any day. Similarly, when the temperature

TABLE 4.—Clinical manifestations by degree of severity in 229 severe and 244 milder positive cases and in 129 severe and 363 milder negative cases

[New Mexico and Georgia series]

Symptom or finding	Severity of case	Percentage of cases by occurrence of symptoms and findings											
		Positive cases					Negative cases						
		Present				Not present	Not reported	Present				Not present	Not reported
		Severe	Moderate	Mild	Total			Severe	Moderate	Mild	Total		
Diarrhea.....	Severe...	62	26	12	100	0	0	54	37	9	100	0	0
	Milder....	16	22	62	100	0	0	16	21	63	100	0	0
Blood in stools in	Severe...	27	19	18	64	31	6	12	8	8	28	62	10
	Milder....	4	12	22	38	49	13	4	7	9	20	61	19
Mucus in stools in	Severe...	65	17	9	91	3	6	58	20	10	88	6	5
	Milder....	34	33	15	82	12	5	3	30	14	47	20	33
Pain, abdominal	Severe...	43	26	12	82	8	10	38	29	16	82	12	6
	Milder....	23	31	15	69	16	14	19	31	13	63	28	9
Straining.....	Severe...	34	21	8	63	23	14	31	25	17	68	26	12
	Milder....	8	26	14	48	30	20	10	21	10	41	46	13
Anorexia.....	Severe...	38	28	11	77	9	15	51	20	12	83	12	6
	Milder....	16	35	10	61	20	18	16	38	18	70	20	8
Vomiting.....	Severe...	16	21	24	61	30	10	29	24	9	62	29	9
	Milder....	7	11	15	33	47	19	9	17	17	43	42	15
Irritability..	Severe...	20	32	14	66	17	17	20	32	14	66	17	17
	Milder....	8	28	16	52	28	23	8	28	16	52	26	23
Weakness.....	Severe...	41	33	10	84	6	11	41	32	10	84	6	11
	Milder....	10	33	18	61	19	20	10	32	18	61	19	20
Convulsions..	Severe...	3	3	5	11	69	24	0	0	3	5	69	20
	Milder....	0	0	0	0	71	25	0	0	1	2	71	21
Fever.....	Severe...	45	26	12	83	8	5	39	29	11	79	16	5
	Milder....	20	26	17	63	24	13	11	20	21	52	35	12
Dehydration..	Severe...	8	12	13	33	46	22	11	11	16	36	45	19
	Milder....	0	3	6	9	61	30	0	2	4	6	70	24
Loss of weight.	Severe...	10	41	20	71	16	14	27	28	18	73	19	8
	Milder....	4	13	18	35	41	25	3	14	18	35	48	17

had been taken, the three tabulations for fever were for records of 103° F. or above, 101°–102.9° F., and under 101° F. rectally, or 1 degree less per os. Convulsions were recorded as marked, moderate, or mild when there were 3 or more, 2, or 1, respectively, per case. Subjective complaints, such as pain or weakness, were graded by the physician taking the clinical record. Most histories were obtained by us and we endeavored to maintain a constant standard for this evaluation. The case was usually seen before the laboratory report was available, hence the observations on positive and negative cases should be closely comparable.

The more important findings are shown in table 4. The culturally positive and negative cases are separated and both are grouped into the severe and milder disorders. The variation in the gravity of symptoms and the prominence of findings is indicated. The proportion of cases in which it was specifically stated that the symptom or finding was not present is shown; also the cases in which the assumed absence of the finding was based on the lack of record of its presence.

In both the positive and negative series the evacuations were usually described as "watery" and in the young as "green." Our information as to the occurrence of blood and mucus in the stools was obtained by questioning informants, by observations of fecal discharges by the epidemiologist and field nurses during home visits, and by reference to hospital records when these were available. The amount of blood was recorded as slight when "specks" had been seen on one of two occasions only or when it was merely thought to be present. Microscopic quantities, when detected by laboratory observations, were similarly recorded. Blood was reported about twice as frequently in the positive as in the negative group of comparable severity. However, blood was observed in less than two-thirds of the severe positive cases, and marked amounts were reported in only 27 percent. The proportions in the milder cases were much less. Only 4 percent of these culturally positive cases had marked amounts of blood. The records concerning the presence of mucus are admittedly subject to error, but in almost all severe cases and mild positive ones the stools were said to contain "slimy material." This was also observed in about one-half of the mild culturally negative cases. Gross identification of purulent exudate seemed too uncertain to warrant recording. The most striking observation concerning the character of the stools was that the classical dysenteric stools were unusual in the proved positive cases.

Abdominal cramps and tenesmus, anorexia, vomiting, irritability, general weakness, and weight loss were all present in the majority of the severe illnesses. Significant differences were not observed in the frequency of their occurrence in the positive and negative series. Close observation of the cases might have revealed evidence of dehy-

dration more often than is indicated by our tabulation. As observed, this finding was equally distributed in the positive and negative series. Convulsions were unusual. When they did occur they were almost always at the beginning of the disease.

Records were also obtained concerning nausea, excessive thirst, headache, and malaise. The first corresponded in distribution to the vomiting. Excessive thirst was often present in cases in which dehydration could not be diagnosed according to the history or by direct observation. Headache was common in adults with an elevated temperature. General malaise was usually overshadowed by the local discomfort associated with the gastrointestinal disturbances. Other manifestations occasionally mentioned were chilliness and rigors in adults.

Records of temperature were not always obtained on infants of poor families ill at home. Evidence of fever which was known or believed to be above 101° F. rectal (charted as moderate and marked) was reported in 73 percent of the severe and 46 percent of the milder positive cases, and in 68 and 31 percent of the corresponding negative illnesses.

The distribution of symptoms observed in the New York City cases was essentially the same within the major groupings.

The clinical data on the fatal cases in this series (39 positive, 17 negative) resembled closely those for the severe positive infections. The maximum number of stools was regularly in excess of 10 per day, troublesome vomiting occurred in 56 percent, fever above 101° F. (rectal) in 86 percent, convulsions in 13 percent, and marked dehydration in 70 percent. Other symptoms, such as weakness, loss of weight, and anorexia, were pronounced. Only one-quarter of the fatal positive cases had a marked amount of blood in the feces; in an equal number blood was not observed at all.

COURSE

A major portion of our cases had one attack with complete recovery after an uninterrupted convalescence (table 5). Presumably those patients who were improving when last seen were divided along the same lines, as the only element of selection involved was accessibility for follow-up visits. Recurrent illnesses were observed in 16 percent of both the severe and the milder positive cases; in the negative series these were noted in 12 percent of the severe and 7 percent of the milder cases. There was evidence that some of the apparent recurrences were actually two separate infections. There were 298 positive cases with no known recurrence, 6 (2 percent) yielded two varieties of *Shigella* from cultures taken in the acute illness, and 6 (2 percent) had one infection in the illness and a subsequent subclinical infection with another variety of *Shigella* during or after convalescence. There

were 73 positive cases with known recurrence of symptoms; 2 (3 percent) yielded two varieties of *Shigella* from cultures taken during the initial illness but in 14 cases (19 percent) a different variety of *Shigella* was found at the time of the clinical relapse.

TABLE 5.—The outcome in positive¹ and negative² cases by severity, New Mexico and Georgia

Outcome	Positive ¹						Negative ²					
	Severe		Milder		Total		Severe		Milder		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Deaths:												
From primary diarrhea.....	39	17	0	0	39	8	13	11	0	0	13	3
From other causes.....	2	1	1	(?)	3	1	8	6	1	(?)	9	2
Recovery:												
Without recurrences.....	123	54	175	75	298	64	66	53	281	80	347	73
With recurrences.....	35	15	38	16	73	16	14	11	25	7	39	8
Following illness of over 3 months.....	5	2	7	3	12	3	7	6	13	4	20	4
Incomplete data:												
Convalescent when last seen.....	25	11	14	6	39	8	16	13	33	9	49	10
No follow-up.....	0		9		9		5		10		15	
Total.....	229	100	244	100	473	100	129	100	363	100	492	100

¹ *Shigella paradysenteriae* isolated.

² *Shigella paradysenteriae* not isolated.

³ Less than 0.5 percent.

Recurrent cases were of two types as illustrated by the following: (a) A child of 2 years had the initial illness in late July and from then to the end of November she had short attacks of diarrhea approximately every 2 weeks. During this time stools were cultured 16 times with only 3 scattered negative stools. In December and January when the child was free of recurrences she was examined four times. The first test (on December 9) was positive and the remainder negative. An infant sister had similar symptoms but her stools were found positive only at irregular intervals. It seems probable that she was carrying the infection continuously though yielding few positive cultures. In these cases the recurrences apparently resulted from variations in clinical response to one continuing infection. (b) Two other sisters had recurrent diarrhea. The younger, 17 months of age, became suddenly and gravely ill on July 26, 1938, with profuse diarrhea, convulsions, and a very high fever. She was hospitalized and responded to sedatives and subcutaneous fluids. She was discharged on August 1 when convalescing and had recovered a week later (2 cultures, one positive for Newcastle). She remained well until late August (1 culture, negative), when a mild watery diarrhea developed and continued for 5 days, with slight fever and some loss of appetite (2 cultures, both positive for Sonne). After this attack the child remained well till late October (7 cultures, negative). At

that time the diarrhea recurred for a few days without associated complaints (1 culture, positive for Sonne). At our last observation in mid-January, she seemed well, but throughout these later weeks she was a convalescent carrier. Her sister, 1 year older, became ill in mid-August with profuse watery diarrhea, abdominal pain, anorexia, and vomiting. She improved on the second day and was well after the third (2 cultures, both positive for Newcastle). She remained well till mid-November (8 cultures, negative). She again had a mild diarrhea for 3 days (1 culture, positive for Sonne). Up to our last observation she was well but was a convalescent carrier. Here the recurrences of diarrhea were the result of successive infections with different varieties of *Shigella*.

We have classified as illnesses with a chronic course those with symptoms lasting more than a total of 3 months. There were 12 (3 percent) in the positive series and 20 (4 percent) in the negative series. Clinically these varied in type, including an equal number of cases with recurrent and cases with continuous symptoms.

FATALITIES

The distribution of deaths by study areas is given in table 6. [These observations were made before sulfonamides were being used in the treatment of shigellosis.] The case fatality rate varied from 15.5 percent for positive cases in New Mexico in 1937 to no deaths in New York City. There were 39 (7.3 percent) deaths among the 555 culturally positive cases in all 3 areas. The difference in the case fatality rate in 1937 (15.5 percent) and 1938 (5.8 percent) is believed to be related to the more complete reporting of the less severe infections in the latter year. The true case fatality rate for all clinical *Shigella* infections is presumably less than the observed rates, since severe infections more commonly came to attention than the milder ones.

TABLE 6.—Case fatality percent from primary diarrheal disease in positive¹ and negative² cases by area and year

Area and year	Positive ¹			Negative ²			Total		
	Cases	Deaths		Cases	Deaths		Cases	Deaths	
		Number	Per cent		Number	Per cent		Number	Per cent
New Mexico, 1937.....	148	23	15.5	85	6	7.1	233	29	12.4
New Mexico, 1938.....	258	15	5.8	314	7	2.2	572	22	3.8
Georgia, 1939-40.....	67	1	1.5	93	0	0	160	1	.6
New York City, 1939-40.....	82	0	0	200	0	1	282	2	.7
Total.....	555	39	7.0	692	15	2.2	1,247	64	4.3

¹ *Shigella paradyserteriae* isolated.

² *Shigella paradyserteriae* not isolated.

The variations in observed fatality rates by age and variety of *Shigella* are shown in table 7. Deaths were confined to the first 2 years of life, with a much higher rate in the first year. Thus the total rates will vary depending on the age distribution of cases. Conditions similar to those in New York City should result in a low case-fatality rate, since relatively few of the discovered infections were in children under 2 years of age. Conversely, a high fatality rate would be expected in New Mexico where the infection was common in infants. Deaths were observed more commonly in Flexner than in Sonne or Newcastle infections, but the differences were slight and not statistically significant.

TABLE 7.—Case fatality percent by age and variety of *Shigella* in the New Mexico and Georgia positive cases¹

Age	Flexner			Sonne			Newcastle			Total		
	Cases	Deaths		Cases	Deaths		Cases	Deaths		Cases	Deaths	
		Number	Percent		Number	Percent		Number	Percent		Number	Percent
Under 1.....	53	18	34.0	24	6	25.0	11	3	27.3	88	27	30.7
1.....	67	9	13.4	21	1	4.8	10	0	0	98	10	10.2
2 and over.....	135	0	0	55	0	0	48	0	0	238	0	0
Total.....	255	27	10.6	100	7	7.0	69	3	4.3	424	37	8.7

¹ 29 cases with double infections and 20 unclassified by severity or variety of organism were excluded from this tabulation.

There were 15 (2.2 percent) deaths among the 692 culturally negative cases. Five of these fatal cases had 1 stool culture only, four had 2, five had 3, and one had 5 examinations. Clinically all had the course and character of an acute enteric infection. One counted as negative yielded, in 2 of 3 examinations, an organism with the cultural characteristics of "Flexner" which was not agglutinated by our antisera. Another case with 3 negative cultures was examined at autopsy; there were multiple pin-point ulcers in the large bowel which suggested bacillary dysentery. A third, also with 3 negative cultures, had the cellular exudate in the stool which is expected in *Shigella* infections. Cases with 1 or 2 cultural examinations only had similar suggestive findings. The mother and father of an infant, for example, were tested after the child's death and both were positive for Flexner. Although the cause of these "negative" fatal illnesses was not established, the proportion of all 54 deaths actually due to *Shigella* was evidently more than the 39 (72 percent) which were culturally positive.

Twelve patients in New Mexico and Georgia and 4 in New York City died of other causes. The diarrhea in these cases was considered to be secondary. The primary illnesses included respiratory infections, tuberculosis, pertussis, malnutrition, and malignancy.

DURATION

Insofar as possible the duration of the acute phase of the illness and of the period of convalescence was determined. The acute phase was defined as the time during which the individual was seriously troubled by the disorder, convalescence as the period during which the stools gradually became normal, strength was regained, and other complaints disappeared. The changes were so gradual that the time periods were not subject to exact measurement. Occasionally there was no differentiation between illness and convalescence. In these cases the total duration was recorded as the period of acute illness. If there were recurrences, the intervening asymptomatic periods were not counted; the duration was the sum of all the periods of illness.

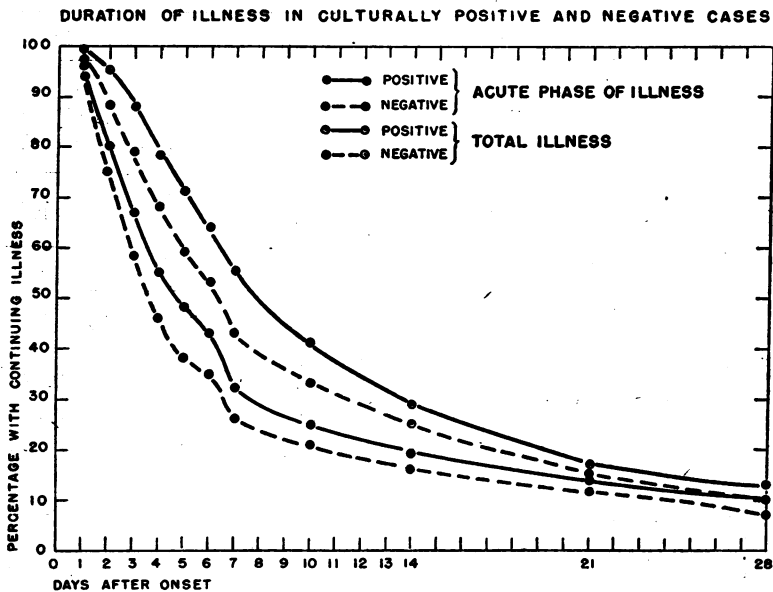


Figure 1.

The distribution of all cases by duration of acute phase and of total illness is given in figure 1. A wide variation is seen. There was no usual duration. Acute symptoms in positive cases continued for only 1 or 2 days in 87 and for more than 2 weeks in 82 cases. There was a similar scatter for the negative cases, with, however, a larger proportion of mild cases with short duration. Illnesses with recurrence were generally prolonged.

The duration of illness was known in 36 fatal positive cases; 2 died within 5 days or less, and 6 were ill for more than 4 weeks before death. Two of 13 negative fatal cases died in less than 5 days, and 1 was ill for more than 4 weeks.

OBSERVATIONS ON INSTITUTIONAL INMATES

It is of interest to compare these detailed findings with general impressions formed in studying institutional inmates. Here, in addition to following the reported cases of diarrhea, all inmates were frequently cultured. The bacteriological findings were then correlated with the recorded diarrheal disorders. Many individuals found positive had no detectable disturbance. A majority of the remaining positive cases had a history of a simple watery diarrhea, frequently without associated complaints. Only a small proportion had the generally described manifestations of bacillary dysentery. Disorders among those who remained culturally negative were infrequent by comparison and, on the whole, were milder. The etiological relationship of *Shigella* infection to simple diarrhea is emphasized by these observations in institutional groups.

SUMMARY

A series of 1,247 cases of acute diarrheal diseases was accumulated through case-finding procedures designed to avoid selection by degree of severity. Observations on 555 cases culturally positive for *Shigella paradysenteriae* are compared with those on 692 cases from which these organisms were not isolated.

Significant predisposing factors were not discovered. The illnesses generally appeared suddenly in persons previously in good health.

There was a very wide range in the gravity of specific manifestations, as in the disease as a whole. The enteric disorder in positive as in negative cases was usually a "simple watery diarrhea," though gross blood was observed in more of the former than in the latter. Classical dysenteric stools were unusual even in proved *Shigella* infections. The associated symptoms and findings did not reveal any prominent differences between the culturally positive and negative series.

Sixteen percent of the nonfatal positive cases had one or more recurrences of illness, though a portion of these were found to be successive infections with different varieties of *Shigella*. Recurrences were not as frequent in the negative cases.

Deaths in positive cases were limited to infants under 2 years of age and were more frequent than in the negative series. The observed case-fatality in the positive series varied from 15.5 percent in New Mexico (1937) to no deaths in New York City, and in the negative series, from 7.1 percent in New Mexico (1937) to 1 percent in New York City and no deaths in Georgia.

Compared with the findings on cases in the general population, the observations on institutional inmates strongly emphasized that "simple diarrhea" rather than classical dysentery was the usual manifestation of *Shigella paradysenteriae* infections.

DEATHS DURING WEEK ENDED APRIL 14, 1945

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended April 14, 1945	Correspond- ing week, 1944
Data for 93 large cities of the United States:		
Total deaths.....	9, 152	9, 572
Average for 3 prior years.....	9, 450	
Total deaths, first 15 weeks of year.....	144, 518	151, 152
Deaths under 1 year of age.....	699	699
Average for 3 prior years.....	648	
Deaths under 1 year of age, first 15 weeks of year.....	9, 554	9, 522
Data from industrial insurance companies:		
Policies in force.....	67, 211, 771	66, 398, 406
Number of death claims.....	14, 301	13, 668
Death claims per 1,000 policies in force, annual rate.....	11.1	10.8
Death claims per 1,000 policies, first 15 weeks of year, annual rate.....	11.0	11.2

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

REPORTS FROM STATES FOR WEEK ENDED APRIL 21, 1945

Summary

A slight decrease was recorded during the week in the incidence of poliomyelitis. The total cases reported for the week is 32, as compared with 36 last week, 26 for the corresponding week last year, and a 5-year (1940-44) median of 16. Only 2 States reported more than 2 cases each for the week—Texas (11) and New York (6). The total for the year to date is 553, a larger number than reported for the corresponding period of any other year since 1928.

The incidence of meningococcus meningitis, of epidemic proportions during the past 2 years, has been abating slowly, and is still considerably above the median expectancy. A total of 190 cases was reported currently, as compared with 194 last week, 491 and 569 respectively, for the corresponding weeks of last year and 1943, and a 5-year median of 79. States reporting the largest numbers (last week's figures in parentheses) are as follows: New York 32 (17), California 28 (22), Tennessee 12 (2), Pennsylvania 11 (13), Illinois 11 (17). The current week's total is larger, except the 2 weeks mentioned, than reported for any other corresponding week since 1936. The total for the first 16 weeks of the year is 3,807, as compared with 8,634 and 7,621, respectively, for the corresponding periods of 1944 and 1943, and a 5-year median of 1,231.

The total of 12 cases of smallpox includes a report of 4 cases of virulent type of the disease, with 1 death, in California, apparently originating in Mexico.

The current week's total numbers of cases reported of certain other diseases (figures for the corresponding week of last year in parentheses) are as follows: Diphtheria 243 (195), dysentery, all forms, 448 (357), infectious encephalitis 4 (17), influenza 1,418 (1,815), measles 4,673 (31,171), Rocky Mountain spotted fever 2 (2), scarlet fever 5,155 (6,826), tularemia 8 (13), typhoid and paratyphoid fever 70 (68), endemic typhus fever 32 (35), whooping cough 2,621 (1,718).

Deaths recorded for the week in 92 large cities of the United States aggregated 9,032, as compared with 9,096 last week, 9,288 for the corresponding week last year, and a 3-year average (1942-44) of 8,973. The cumulative figure for the year to date is 152,317, as compared with 159,052 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended April 21, 1945, and comparison with corresponding week of 1944 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1940-44	Week ended—		Median 1940-44	Week ended—		Median 1940-44	Week ended—		Median 1940-44
	Apr. 21, 1945	Apr. 22, 1944		Apr. 21, 1945	Apr. 22, 1944		Apr. 21, 1945	Apr. 22, 1944		Apr. 21, 1945	Apr. 22, 1944	
NEW ENGLAND												
Maine.....	0	0	1		5		0	238	185	0	3	3
New Hampshire.....	0	0	0					128	30	0	0	0
Vermont.....	0	0	0				8	118	118	0	0	0
Massachusetts.....	2	4	2				118	817	817	2	15	7
Rhode Island.....	0	1	1	39	44	1	7	140	140	0	2	0
Connecticut.....	2	1	1	3		2	169	622	447	1	9	2
MIDDLE ATLANTIC												
New York.....	21	16	17	(1)	12	115	158	2,314	2,314	32	56	13
New Jersey.....	7	5	6	3	7	7	58	1,667	1,545	2	23	5
Pennsylvania.....	8	4	11	1	6		277	966	1,419	11	33	11
EAST NORTH CENTRAL												
Ohio.....	8	1	7	8	7	16	54	1,087	1,084	6	35	2
Indiana.....	6	4	5	2	6	11	34	256	256	2	2	0
Illinois.....	4	8	16	2	15	15	151	1,139	1,139	11	53	2
Michigan ¹	7	8	6	2	3	3	161	944	944	6	15	6
Wisconsin.....	1	1	1	32	37	60	48	2,821	1,620	1	10	2
WEST NORTH CENTRAL												
Minnesota.....	4	8	1	4	1	1	13	983	285	1	6	1
Iowa.....	8	1	3		2	6	39	191	290	2	2	0
Missouri.....	2	0	3	5	1	4	11	375	415	9	15	2
North Dakota.....	1	1	1	7	52	6	3	120	70	0	3	0
South Dakota.....	0	1	0				19	15	13	0	0	0
Nebraska.....	2	3	3	2	5	5	23	198	198	1	1	0
Kansas.....	5	1	3	4		8	35	432	638	0	2	1
SOUTH ATLANTIC												
Delaware.....	0	1	0				1	15	15	1	0	0
Maryland ¹	9	10	4	1	2	5	52	895	378	5	10	4
District of Columbia.....	1	0	0		3	3	12	238	112	3	3	2
Virginia.....	6	6	6	149	111	224	78	903	425	6	13	4
West Virginia.....	2	3	2	3	21	21	32	431	246	2	4	2
North Carolina.....	6	6	7		40	6	82	1,305	864	4	20	2
South Carolina.....	0	4	4	140	288	385	18	552	372	0	18	1
Georgia.....	4	3	6	7	5	55	34	65	201	7	5	2
Florida.....	8	1	1		23	9	28	301	171	5	14	0
EAST SOUTH CENTRAL												
Kentucky.....	1	6	4	3	24	16	6	198	198	2	6	2
Tennessee.....	2	7	3	46	40	69	175	219	219	12	13	4
Alabama.....	9	5	5	20	95	114	17	351	288	1	9	8
Mississippi ¹	5	5	5							3	6	2
WEST SOUTH CENTRAL												
Arkansas.....	5	4	4	30	70	79	49	254	183	1	3	0
Louisiana.....	6	1	2	2	8	8	37	116	116	4	18	1
Oklahoma.....	2	3	3	52	65	65	86	324	106	3	2	0
Texas.....	28	27	22	756	562	555	490	3,636	1,160	9	23	5
MOUNTAIN												
Montana.....	1	1	1	9		2	13	132	132	0	0	0
Idaho.....	0	1	1	1			2	62	62	0	1	0
Wyoming.....	0	0	0				6	100	74	0	0	0
Colorado.....	13	2	6	3	19	26	21	511	511	1	1	1
New Mexico.....	5	0	0	2	3	2	14	229	99	0	0	0
Arizona.....	1	3	2	56	57	80	17	273	145	0	0	0
Utah ¹	0	0	0	1	24	10	319	37	228	0	2	0
Nevada.....	0	0	0		100		1	1	0	0	0	0
PACIFIC												
Washington.....	12	1	1	3	1	1	468	262	377	5	7	3
Oregon.....	1	9	5	8	18	17	85	120	346	1	4	4
California.....	28	18	18	12	43	78	1,139	4,077	842	28	23	5
Total.....	243	195	201	1,418	1,815	2,243	4,673	31,171	25,362	190	491	79
16 weeks.....	4,721	3,783	4,589	56,076	226,447	157,526	45,052	398,809	288,308	3,807	8,634	1,231

¹ New York City only.

² Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended April 21, 1945, and comparison with corresponding week of 1944 and 5-year median—Continued

Division and State	Polio-myelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever †		
	Week ended—		Median 1940-44	Week ended—		Median 1940-44	Week ended—		Median 1940-44	Week ended—		Median 1940-44
	Apr. 21, 1945	Apr. 22, 1944		Feb. 21, 1945	Feb. 22, 1944		Apr. 21, 1945	Apr. 22, 1944		Apr. 21, 1945	Apr. 22, 1944	
NEW ENGLAND												
Maine.....	0	0	0	39	55	9	0	0	0	1	1	1
New Hampshire.....	0	0	0	3	15	10	0	0	0	0	1	0
Vermont.....	0	0	0	29	13	12	0	0	0	0	0	0
Massachusetts.....	0	0	0	299	386	386	0	0	0	2	2	0
Rhode Island.....	0	0	0	30	27	25	0	0	0	1	0	0
Connecticut.....	0	0	0	72	88	88	0	0	0	0	0	0
MIDDLE ATLANTIC												
New York.....	6	0	0	797	569	569	0	0	0	3	6	5
New Jersey.....	0	1	0	134	231	231	0	0	0	1	2	2
Pennsylvania.....	0	1	0	514	664	401	0	0	0	6	4	8
EAST NORTH CENTRAL												
Ohio.....	0	0	0	341	434	258	0	0	0	2	1	3
Indiana.....	0	0	0	130	190	154	0	0	0	0	0	0
Illinois.....	1	1	0	313	571	413	0	1	1	3	0	3
Michigan ‡.....	2	0	0	297	334	323	1	0	0	2	0	3
Wisconsin.....	1	0	0	176	329	162	2	0	0	0	0	0
WEST NORTH CENTRAL												
Minnesota.....	0	0	0	97	206	63	0	0	0	0	1	0
Iowa.....	0	0	0	64	195	53	3	1	1	0	1	1
Missouri.....	0	1	0	79	191	116	0	0	1	2	1	2
North Dakota.....	0	0	0	24	38	11	1	0	0	0	0	0
South Dakota.....	0	0	0	20	38	19	0	0	0	0	0	0
Nebraska.....	0	0	0	48	87	28	0	0	0	0	0	0
Kansas.....	0	0	0	65	95	49	0	0	1	1	2	1
SOUTH ATLANTIC												
Delaware.....	0	0	0	5	22	15	0	0	0	0	0	0
Maryland †.....	0	0	0	170	250	74	0	0	0	0	1	1
District of Columbia.....	0	0	0	36	137	19	0	0	0	1	0	0
Virginia.....	0	0	0	90	130	39	0	0	0	1	1	1
West Virginia.....	0	1	1	50	110	31	0	0	0	3	9	4
North Carolina.....	0	2	0	52	42	20	0	0	0	0	2	1
South Carolina.....	0	0	0	6	10	5	0	1	0	2	0	0
Georgia.....	1	0	0	29	11	11	0	0	0	8	5	2
Florida.....	2	1	1	8	11	7	0	0	0	2	1	3
EAST SOUTH CENTRAL												
Kentucky.....	0	1	1	49	99	83	0	0	0	1	2	2
Tennessee.....	2	0	0	63	106	92	0	0	0	4	2	2
Alabama.....	2	1	0	12	12	12	0	0	0	3	0	0
Mississippi ‡.....	2	0	0	15	3	7	0	0	0	1	0	2
WEST SOUTH CENTRAL												
Arkansas.....	0	1	1	8	0	4	0	0	1	4	0	1
Louisiana.....	0	1	0	9	9	6	0	0	0	1	4	4
Oklahoma.....	0	2	1	58	21	19	0	0	0	1	0	2
Texas.....	11	2	2	91	71	46	0	1	3	7	9	6
MOUNTAIN												
Montana.....	0	1	0	19	41	28	0	0	0	1	0	0
Idaho.....	0	0	0	28	34	11	0	0	0	0	0	0
Wyoming.....	0	0	0	11	8	9	0	0	0	1	1	0
Colorado.....	0	1	0	71	79	36	1	0	0	1	0	0
New Mexico.....	0	0	0	32	19	9	0	0	0	2	3	1
Arizona.....	0	0	0	52	39	8	0	1	0	0	1	0
Utah †.....	0	0	0	33	72	16	0	0	0	0	0	0
Nevada.....	0	0	0	1	0	0	0	0	0	0	0	0
PACIFIC												
Washington.....	0	4	0	137	325	35	0	0	0	0	0	1
Oregon.....	0	0	0	35	139	11	0	0	2	0	3	0
California.....	2	4	2	414	270	118	4	0	0	0	2	3
Total.....	32	26	16	5,155	6,826	4,031	12	5	29	70	68	80
16 weeks.....	553	357	384	88,986	98,176	63,798	172	189	424	904	1,146	1,210

† Period ended earlier than Saturday.

‡ Including paratyphoid fever reported separately as follows: Massachusetts 2; Rhode Island 1; New York 1; New Jersey 1; Michigan 1; Georgia 2; Florida 2; Kentucky 1; Texas 2.

Telegraphic morbidity reports from State health officers for the week ended April 21, 1945, and comparison with corresponding week of 1944 and 5-year median—Continued

Division and State	Whooping cough			Week ended April 21, 1945							
	Week ended—		Median 1940-44	Dysentery			Enceph- alitis, infectious	Rocky Mt. spot- ted fever	Tula- remia	Ty- phus fever	Undu- lant fever
	Apr. 21, 1945	Apr. 22, 1944		Ame- bic	Bacil- lary	Un- spec- ified					
NEW ENGLAND											
Maine.....	32	24	24	0	0	0	0	0	0	0	2
New Hampshire.....	18	0	6	0	0	0	0	0	0	0	1
Vermont.....	37	2	22	0	0	0	0	0	0	0	4
Massachusetts.....	85	65	116	0	0	0	0	0	0	0	0
Rhode Island.....	14	2	10	0	1	0	0	0	0	0	0
Connecticut.....	38	24	29	0	0	0	1	0	0	0	2
MIDDLE ATLANTIC											
New York.....	242	164	253	2	8	0	0	0	0	1	10
New Jersey.....	128	20	105	0	0	0	0	0	0	0	1
Pennsylvania.....	190	52	265	0	0	0	0	0	0	0	0
EAST NORTH CENTRAL											
Ohio.....	171	66	148	0	0	0	0	0	0	0	3
Indiana.....	9	7	43	0	0	0	0	0	0	0	1
Illinois.....	41	26	104	5	0	0	0	0	1	1	9
Michigan ²	71	80	215	0	0	0	0	0	0	0	5
Wisconsin.....	81	24	100	0	0	0	0	0	0	0	1
WEST NORTH CENTRAL											
Minnesota.....	7	29	40	3	0	0	0	0	0	0	5
Iowa.....	4	8	32	0	0	0	0	0	1	0	0
Missouri.....	19	10	22	0	0	0	0	0	0	0	1
North Dakota.....	1	0	6	0	0	0	0	0	0	0	1
South Dakota.....	2	2	4	0	0	0	1	0	0	0	0
Nebraska.....	1	21	6	0	0	0	0	0	0	0	0
Kansas.....	30	12	33	0	0	0	1	0	0	0	2
SOUTH ATLANTIC											
Delaware.....	3	0	1	0	0	0	0	0	0	0	0
Maryland.....	81	13	81	0	0	1	0	0	0	0	0
District of Columbia.....	9	2	13	0	0	0	0	0	0	0	0
Virginia.....	59	30	54	0	0	43	0	1	0	0	2
West Virginia.....	22	26	38	0	0	0	0	0	0	0	0
North Carolina.....	133	139	139	0	0	0	0	0	1	0	0
South Carolina.....	41	135	63	2	10	0	0	0	0	1	0
Georgia.....	17	6	23	0	1	0	0	0	1	3	4
Florida.....	13	46	14	1	0	0	0	0	0	4	0
EAST SOUTH CENTRAL											
Kentucky.....	22	58	80	0	0	0	0	0	0	0	0
Tennessee.....	26	7	33	0	0	0	0	1	0	0	0
Alabama.....	48	16	34	0	0	0	1	0	0	7	5
Mississippi ²				0	0	0	0	0	0	1	0
WEST SOUTH CENTRAL											
Arkansas.....	13	4	11	0	7	0	0	0	3	0	0
Louisiana.....	3	0	5	4	2	0	0	0	0	2	3
Oklahoma.....	30	14	20	0	0	0	0	0	0	0	0
Texas.....	240	231	231	3	285	46	0	0	0	13	6
MOUNTAIN											
Montana.....	6	4	5	0	0	0	0	0	0	0	0
Idaho.....	0	8	3	1	0	0	0	0	0	0	0
Wyoming.....	1	5	5	0	0	0	0	0	0	0	0
Colorado.....	56	102	34	0	1	0	0	0	0	0	0
New Mexico.....	12	6	19	0	0	0	0	0	0	0	1
Arizona.....	54	16	21	1	0	14	0	0	0	0	0
Utah ²	32	47	73	0	0	0	0	0	1	0	6
Nevada.....	0	0	0	0	0	0	0	0	0	0	0
PACIFIC											
Washington.....	19	50	67	0	0	0	0	0	0	0	0
Oregon.....	23	12	21	0	0	0	0	0	0	0	3
California.....	437	98	354	2	4	0	0	0	0	0	5
Total.....	2,621	1,718	3,749	25	319	104	4	2	8	33	83
Same week, 1944.....	1,718			34	258	65	17	2	13	35	
Average, 1942-44.....	3,147			27	161	50	12	48	12	420	
16 weeks, 1945.....	39,248			442	7,102	1,875	110	8	275	761	1,370
1944.....	28,914			428	3,345	1,023	167	7	163	604	
Average, 1942-44.....	51,531		61,495	302	2,507	774	154	420	242	604	

² Period ended earlier than Saturday.

³ 5-year median, 1940-44.

WEEKLY REPORTS FROM CITIES

City reports for week ended April 14, 1945

This table lists the reports from 90 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	1	0	0	1	0	5	0	0	0	0	8
New Hampshire:												
Concord	0	0	0	0	10	0	0	0	0	0	0	0
Vermont:												
Barrre	0	0	0	0	0	0	0	0	1	0	0	1
Massachusetts:												
Boston	9	0	0	0	120	1	6	0	90	0	0	30
Fall River	0	0	0	0	0	0	2	0	3	0	0	5
Springfield	0	0	0	0	2	0	0	0	16	0	0	0
Worcester	0	0	0	1	0	0	8	0	25	0	0	4
Rhode Island:												
Providence	0	0	0	0	4	0	2	0	15	0	0	29
Connecticut:												
Bridgeport	0	0	0	0	1	0	0	0	9	0	0	0
Hartford	0	0	0	0	32	0	1	0	2	0	0	0
New Haven	0	0	0	0	0	0	2	0	7	0	0	15
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	2	2	2	0	7	1	8	0	0	2
New York	14	1	1	2	54	12	77	3	307	0	1	115
Rochester	0	1	0	1	0	0	3	0	13	0	1	5
Syracuse	0	0	0	0	0	0	4	0	1	0	0	25
New Jersey:												
Camden	0	0	3	1	0	2	0	0	3	0	0	0
Newark	0	0	0	6	0	3	0	0	23	0	0	4
Trenton	1	0	1	0	4	0	3	0	4	0	0	1
Pennsylvania:												
Philadelphia	1	0	3	1	176	4	30	0	95	0	0	57
Pittsburgh	0	0	0	0	2	4	10	0	44	0	0	15
Reading	0	0	0	0	1	0	2	0	6	0	0	0
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	1	0	0	0	3	0	9	0	20	0	0	8
Cleveland	1	0	3	0	15	3	3	0	69	0	0	55
Columbus	0	0	1	1	1	0	2	0	10	0	0	16
Indiana:												
Fort Wayne	0	0	0	0	0	0	1	0	5	1	0	0
Indianapolis	0	0	1	5	1	6	0	0	18	0	0	2
South Bend	0	0	0	1	1	0	0	1	1	0	0	0
Terre Haute	0	0	2	0	0	1	0	6	0	0	0	1
Illinois:												
Chicago	0	0	1	73	10	34	0	0	126	0	0	23
Springfield	0	0	0	1	0	3	0	0	2	0	0	4
Michigan:												
Detroit	4	0	2	1	44	4	11	0	99	0	0	9
Flint	0	0	0	0	0	0	0	0	13	0	0	0
Grand Rapids	0	0	0	0	7	1	4	0	12	0	0	0
Wisconsin:												
Kenosha	0	0	0	1	0	0	0	0	8	0	0	1
Milwaukee	0	0	0	10	1	0	0	0	60	0	0	0
Racine	0	0	0	1	0	0	1	0	5	0	0	5
Superior	0	0	0	3	0	0	0	0	1	0	0	10
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	0	0	1	1	2	0	5	0	0	0
Minneapolis	0	0	1	12	3	4	0	0	23	0	0	2
St. Paul	0	0	0	1	2	5	0	0	12	0	0	3
Missouri:												
Kansas City	0	0	0	2	1	4	0	0	11	0	0	0
St. Joseph	0	0	0	2	0	0	0	0	3	0	0	0
St. Louis	3	0	1	2	6	1	7	0	9	0	0	10

City reports for week ended April 14, 1945—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Polio-myelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
North Dakota:												
Fargo.....	0	0	0	0	3	0	1	0	4	0	0	0
Nebraska:												
Omaha.....	0	0	0	0	0	0	3	0	0	0	0	0
Kansas:												
Topeka.....	0	0	0	0	3	0	1	0	5	0	0	0
Wichita.....	0	0	0	0	1	0	5	0	5	0	0	2
SOUTH ATLANTIC												
Delaware:												
Wilmington.....	1	0	0	0	0	0	1	0	4	0	0	0
Maryland:												
Baltimore.....	5	0	1	1	4	8	7	0	77	0	0	47
Cumberland.....	0	0	0	0	0	0	1	0	8	0	0	0
Frederick.....	0	0	0	0	0	0	0	0	0	0	0	0
District of Columbia:												
Washington.....	0	0	2	1	4	1	6	0	28	0	0	8
Virginia:												
Lynchburg.....	0	0	0	0	1	0	1	0	1	0	0	1
Richmond.....	0	0	0	0	0	0	1	0	13	0	0	4
Roanoke.....	0	0	0	0	4	1	0	0	4	0	0	0
West Virginia:												
Charleston.....	0	0	0	0	0	0	0	0	1	0	0	0
Wheeling.....	0	0	0	0	40	0	0	0	3	0	0	0
North Carolina:												
Raleigh.....	0	0	0	0	2	0	1	0	0	0	0	14
Wilmington.....	0	0	0	0	6	0	0	0	0	0	0	1
Winston-Salem.....	0	0	0	0	1	0	0	0	7	0	0	2
South Carolina:												
Charleston.....	0	0	0	0	3	2	1	0	1	0	0	1
Georgia:												
Atlanta.....	0	0	1	0	0	1	5	1	11	0	1	0
Brunswick.....	0	0	0	0	1	0	1	0	0	0	0	0
Savannah.....	0	0	1	1	0	1	0	0	0	0	0	0
Florida:												
Tampa.....	0	0	0	0	0	1	2	0	3	0	0	9
EAST SOUTH CENTRAL												
Tennessee:												
Memphis.....	0	0	7	1	48	0	3	0	6	0	0	0
Nashville.....	0	0	0	0	0	1	3	0	6	0	0	0
Alabama:												
Birmingham.....	0	0	1	0	0	0	3	0	2	0	1	1
Mobile.....	0	0	1	1	0	0	0	0	1	0	0	1
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock.....	0	0	1	0	6	0	2	0	1	0	0	0
Louisiana:												
New Orleans.....	2	0	5	2	17	1	3	1	11	0	0	3
Shreveport.....	1	0	0	0	0	0	4	0	0	0	0	0
Texas:												
Dallas.....	0	0	0	1	19	0	3	0	5	0	0	4
Galveston.....	1	0	0	0	0	0	0	0	0	0	0	0
Houston.....	1	0	0	0	0	1	7	0	8	0	0	0
San Antonio.....	4	0	0	1	0	0	6	0	3	0	1	3
MOUNTAIN												
Montana:												
Billings.....	0	0	0	0	1	0	2	0	8	0	0	0
Great Falls.....	0	0	0	0	0	0	1	0	0	0	0	1
Helena.....	0	0	0	0	1	0	0	0	0	0	0	0
Missoula.....	0	0	0	0	0	0	0	0	0	0	0	0
Idaho:												
Boise.....	0	0	0	0	0	0	0	0	0	0	0	0
Colorado:												
Denver.....	4	0	0	0	4	0	6	0	19	0	0	17
Pueblo.....	0	0	0	0	1	0	1	0	3	0	0	2
Utah:												
Salt Lake City.....	0	0	0	0	87	0	2	0	5	0	0	9

City reports for week ended April 14, 1945—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Pollomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle.....	2	0	1	1	22	0	4	0	21	0	0	2
Spokane.....	4	0	2	0	1	0	1	0	3	0	0	0
Tacoma.....	0	0	0	0	10	0	0	0	13	0	0	0
California:												
Los Angeles.....	3	0	8	1	66	5	5	0	62	0	0	39
Sacramento.....	0	0	0	0	14	1	2	0	19	0	0	7
San Francisco.....	0	0	1	1	85	1	11	0	53	0	0	0
Total.....	62	3	42	29	1,061	75	370	6	1,604	1	5	643
Corresponding week, 1944.....	49	75	30	7,227	461	2,244	0	9	292	0	14	292
Average, 1940-44.....	61	142	34	7,050	449	1,792	2	14	970			

1 3-year average, 1942-44.

2 5-year median, 1940-44.

Anthrax.—Cases: Philadelphia, 1; Kenosha, 1.

Dysentery, amebic.—Cases: Nashville, 1.

Dysentery, bacillary.—Cases: Providence, 1; Buffalo, 1; New York, 2; Charleston, S. C., 8; Los Angeles, 5.

Dysentery, unspecified.—Cases: Richmond, 1; San Antonio, 7.

Leprosy.—Cases: St. Louis, 1.

Typhus fever, endemic.—Cases: New York, 1; Savannah, 2; Tampa, 3; Birmingham, 1; New Orleans, 1.

Rates (annual basis) per 100,000 population, by geographic groups, for the 90 cities in the preceding table (estimated population, 1943, 34,394,800)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Pollomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England.....	23.5	2.6	0.0	0.0	447	2.6	68.0	0.0	439	0.0	0.0	240
Middle Atlantic.....	7.4	0.9	2.3	3.7	114	9.3	65.3	1.9	233	0.0	0.9	104
East North Central.....	3.6	0.0	3.6	3.6	100	12.8	45.6	0.0	277	0.6	0.0	81
West North Central.....	6.0	0.0	2.0	6.0	60	15.9	63.7	0.0	153	0.0	0.0	34
South Atlantic.....	9.8	0.0	8.2	4.9	108	24.5	44.1	1.6	263	0.0	1.6	142
East South Central.....	0.0	0.0	53.1	11.8	283	5.9	53.1	0.0	89	0.0	5.9	12
West South Central.....	25.8	0.0	17.2	11.5	121	5.7	71.7	2.9	80	0.0	2.9	29
Mountain.....	31.8	0.0	0.0	0.0	747	0.0	95.3	0.0	278	0.0	0.0	230
Pacific.....	14.2	0.0	15.8	4.7	313	11.1	36.4	0.0	255	0.0	0.0	76
Total.....	9.4	0.5	6.4	4.4	161	11.4	56.2	0.9	244	0.2	0.8	98

TERRITORIES AND POSSESSIONS

Hawaii Territory

Plague (in rodents and ectoparasites).—A rat found on March 7, 1945, in District 10A Paauhau area was proved positive for plague on March 12, 1945. A rat found on February 28, 1945, in District 15A, Hamakua Mill area, was proved positive for plague on March 10, 1945. A rat found on March 9, 1945, in District 15A, Hamakua Mill area was proved positive for plague on March 18, 1945. Plague infection was also proved positive on March 14, 1945, in a mass of 40 fleas combed from 129 rodents on March 7, 1945, in District 15A, Hamakua Mill area. This plague infection was all reported in Honokaa, Island of Hawaii, T. H.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended March 31, 1945.—

During the week ended March 31, 1945, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		13		104	274	23	10	84	100	608
Diphtheria	1	2	2	26	2	7	6	3		49
Dysentery:										
Bacillary				3						3
Unspecified					1					1
German measles		2		4	32	1	1	18	9	67
Influenza		9			61				55	125
Measles		3	1	182	106	2	22	30	194	540
Meningitis, meningococcus		2	1		1				1	5
Mumps				171	110	72	45	142	34	574
Polomyelitis				1						1
Scarlet fever		4	4	42	67	11	19	27	40	214
Tuberculosis			2	94	47	6		9	13	171
Typhoid and paratyphoid fever				9		1			12	22
Undulant fever				5	1				1	8
Venereal diseases:										
Gonorrhoea	1	29	6	76	123	27	32	28	29	351
Syphilis	4	13	6	135	73	14	5	2	19	271
Whooping cough		21		62	42		3	8	13	149

CUBA

Habana—Communicable diseases—4 weeks ended March 31, 1945.—

During the 4 weeks ended March 31, 1945, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chickenpox	31		Measles	5	
Diphtheria	23		Tuberculosis	5	2
Malaria	3		Typhoid fever	32	

PERU

Notifiable diseases—October–December 1944.— During the months of October, November, and December 1944, cases of certain notifiable diseases were reported in Peru as follows:

Disease	October	November	December	Disease	October	November	December
Cerebrospinal meningitis	5	5	5	Scarlet fever	26	41	20
Diphtheria	58	60	109	Smallpox	43	26	16
Dysentery, unspecified	621	653	683	Syphilis	423	524	419
Gonorrhoea	583	690	588	Tuberculosis	1,537	1,454	1,313
Influenza	2,855	2,488	2,014	Typhoid and paratyphoid fever	256	266	211
Leprosy	7	22	10	Typhus fever	160	70	116
Lethargic encephalitis	2	1	1	Typhus fever, recurrent	19	4	
Malaria	6,574	7,026	5,912	Undulant fever	73	80	71
Measles	703	582	494	Veruga peruana	51	51	33
Plague	5	6	8	Whooping cough	3,987	3,488	2,287
Polomyelitis	3	3	1				

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual incidence, only those places are included which had not previously reported any of the above-mentioned diseases, except yellow fever, during the current year. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

(Few reports are available from the invaded countries of Europe and other nations in war zones.)

Plague

Ecuador—Chimborazo Province—Quimiag.—During the week ended March 10, 1945, 1 case of plague was reported in Quimiag, Chimborazo Province, Ecuador.

Morocco (French).—For the period March 21–31, 1945, 19 cases of plague were reported in French Morocco.

Peru.—For the month of February 1945, plague was reported in Peru as follows: Lambayeque Department, 1 case; Libertad Department, 3 cases, 1 death; Lima Department, 5 cases, 2 deaths.

Smallpox

British East Africa—Tanganyika.—For the week ended March 17, 1945, 245 cases of smallpox with 10 deaths were reported in Tanganyika, British East Africa.

Egypt.—For the week ended March 17, 1945, 57 cases of smallpox were reported in Egypt.

French Guinea.—For the period March 21–31, 1945, 246 cases of smallpox were reported in French Guinea.

Sudan (French).—For the period March 21–31, 1945, 142 cases of smallpox were reported in French Sudan.

Venezuela.—For the month of March 1945, 196 cases of smallpox (alastrim) with 1 death were reported in Venezuela. The States reporting the highest incidence of the disease are as follows: Federal District, 112 cases, 1 death; Miranda State, 40 cases; Bolivar State, 15 cases.

Typhus Fever

Algeria.—For the period March 1–10, 1945, 83 cases of typhus fever were reported in Algeria, and for the period March 11–20, 1945, 49 cases of typhus fever were reported.

Bulgaria.—For the week ended March 31, 1945, 94 cases of typhus fever were reported in Bulgaria.

Chile.—For the period January 28 to February 24, 1945, 31 cases of typhus fever with 3 deaths were reported in Chile. The Provinces reporting the highest incidence of the disease are as follows: Antofagasta, 7 cases; Santiago, 6 cases, 1 death; Concepcion, 4 cases, 1 death; Valdivia, 4 cases; Tarapaca, 4 cases.

Ecuador.—For the month of March 1945, 37 cases of typhus fever with 3 deaths were reported in Ecuador. Provinces reporting the highest incidence of the disease are as follows: Pichincha, 18 cases, 2 deaths; Carchi, 6 cases, 1 death; Imbabura, 4 cases; Cotopaxi, 4 cases.

Egypt.—For the week ended March 17, 1945, 759 cases of typhus fever with 67 deaths were reported in Egypt.

Libya—Tripolitania.—For the month of January 1945, 7 cases of typhus fever were reported in Tripolitania, Libya.

Turkey.—For the week ended April 14, 1945, 104 cases of typhus fever were reported in Turkey.

Venezuela.—For the month of March 1945, 21 cases of typhus fever (murine type) with 1 death were reported in Venezuela, including 7 cases in La Guayra and 6 cases in the State of Lara.

Yellow Fever

Peru—Cuzco Department—Quincemil.—A telegraphic report dated April 17, 1945, states that 1 case of yellow fever (jungle type) has occurred in Quincemil, Cuzco Department, Peru.

Venezuela—Bolívar State—El Palmar Jurisdiction—Buen Retiro.—A telegraphic report dated April 12, 1945, states that 1 confirmed case of yellow fever (jungle type) has occurred in the village of Buen Retiro, Jurisdiction of El Palmar, Bolívar State, Venezuela.

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