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EDITORIAL

THE MODERN PATTERN OF TUBERCULOSIS CONTROL

Only in recent years have we had the knowledge and techniques necessary for the effective control of tuberculosis. Increased epidemiological information, the development of the photofluorograph, and pioneering research have permitted the establishment of a design of action which includes three spheres of method: (*a*) administration; (*b*) application of tools; (*c*) research.

Before a program of control can go forward forcefully in any State or local community, the extent of the tuberculosis problem must be known in detail. The administrator must have mapped tuberculosis in his area according to morbidity, mortality, and age-specific death rates by sex and race. He must know what has been learned and achieved in other communities. Constantly critical, he must be able to evaluate the effectiveness of present techniques, and, with flexibility of attitude, change methods or shift their emphases as new knowledge demands. The administrator guides, systematizes, and integrates the activities of all elements in the control program, and, in so doing, he must strategically deploy personnel and equipment to areas of greatest need where cases can be found, cared for and followed up most efficiently and in the shortest possible time.

With the development of the photofluorograph, we now have a tool which can examine the chests of as many as 1,000 persons a day. Repeated experience thus far has proved that mass radiography is an efficient low-cost technique for discovering early tuberculosis. Eighty percent of the persons discovered in city-wide surveys and diagnosed as in need of further study were previously unknown to the State or local health department. This is a most forceful argument for the mass survey as an effective means of case finding.

The United States Public Health Service advocates that mass surveys should first be concentrated in the 92 major cities of the Nation. In these cities of over 100,000 population the tuberculosis

morbidity and mortality rates are highest. No city has sufficient equipment to do the job in a short time and, in consequence, requires the assistance of State and Federal agencies. Surveys in such populous areas permit sound public health practice in that significant foci of infection can be relatively easily removed from the population. Finally, such surveys are effective health education techniques, because they promote community organization to combat disease and they inform the people about the nature of tuberculosis and the proper measures for care and rehabilitation.

It is estimated that such a program will reach about 30 percent of the adult population of the United States. A simultaneous program of chest X-ray examination of all hospital admissions and out-patients would reach an additional 30 million persons. A majority of the remainder of the population can be reached by rigorous action on the part of State and local health departments in smaller cities and rural areas.

As the administrator of the control program and his associates apply the tools in the daily task of finding, isolating, and following cases, the researcher must constantly test current knowledge and techniques. Work must go forward to solve the complex problems of differential diagnosis, so that the early determination of tuberculous disease may be arrived at with greater certainty than now is possible. We must know more about non-tuberculous pulmonary calcification as it affects film interpretation. Fluorescent image amplification must undergo increasing refinement. The current attempts to find a drug or biologic that will be effective against tuberculosis must be enlarged in scope and, adequately financed, intensified in effort. The usefulness of tuberculin and the significance of reaction to low doses need clarification. Statistical knowledge of morbidity and mortality, still incomplete, needs extension in accurate record keeping for the sake of a greater dependability of current epidemiological information.

These, and many other problems, in all three spheres of control method, are challenges to the administrator, the radiologist and technician, the research scientist and statistician. Working together, the knowledge and experience of one affecting the work and information of another, changing always as circumstances and new facts demand, these leaders can eventually effect the elimination of tuberculosis as a public health hazard.

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TUBERCULOSIS CASE-FINDING SURVEY OF THE TOTAL POPULATION OF REYKJAVIK, ICELAND IN 1945

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ANTITUBERCULOSIS WORK IN ICELAND

Deaths resulting from tuberculosis have been quite numerous in Iceland during the last generation (see fig. 1). The authorities have

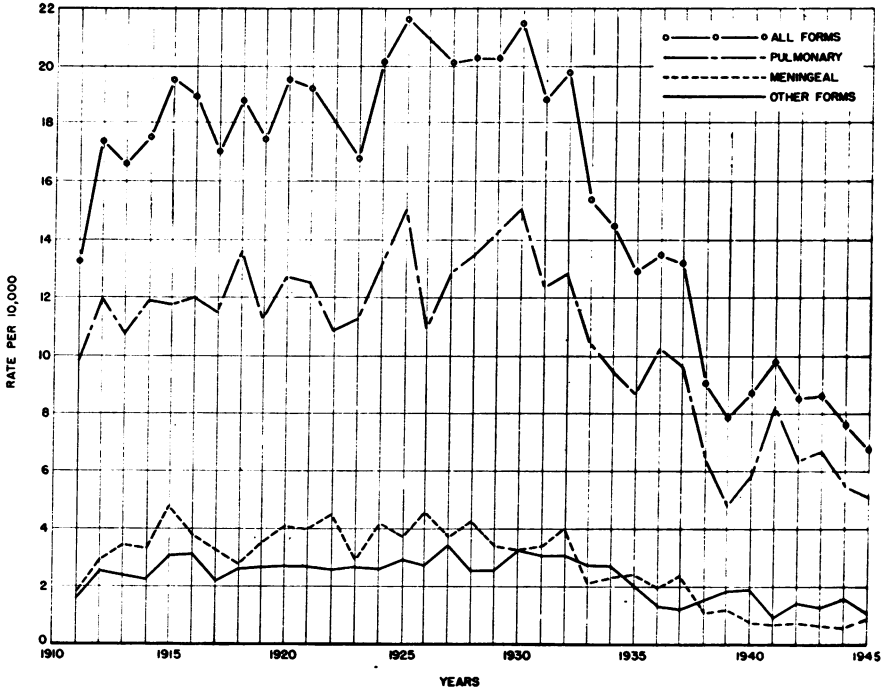

FIGURE 1.—Tuberculosis mortality in Iceland, 1911–45.

repeatedly taken measures to combat the disease. One of the most important steps was a section contained in the Tuberculosis Act of 1921 insuring for poor tuberculous patients free care in sanatoria or suitable hospitals at the expense of the State. Another step of the utmost importance was the reorganization of the tuberculosis campaign in 1935 which laid the main stress on early tracing of unknown active cases. This was accomplished partly by establishing health centers in all the major towns, partly by traversing the more isolated and thinly populated areas with portable roentgen ray units. At the outset these examinations consisted only of systematic group survey work, i. e., examinations of part of the population of the various medical districts; but in 1940 they were extended to the total popula-

tion of a few districts. Such mass surveys are constantly growing in frequency and extent.

In order to facilitate these surveys and to render them still more effective, the Tuberculosis Act was revised as early as 1939 and two new pertinent sections were appended. Section 6 entitles health centers and district physicians to seek the aid of the police in examining persons and households that have refused to submit to necessary examination. Section 7 entitles district physicians to notify the authorities of tuberculous patients who fail to comply with certain medical instructions. Through the intermediation of the authorities, such patients may be forced to stay at a hospital or sanatorium from which they cannot be discharged without the consent of the police.

After repeated group surveys in 48 of the 50 medical districts into which the country is divided and after total mass surveys in 11, all of the inhabitants of Reykjavik, the capital city, were examined in 1945.

This survey was arranged by the Health Center in Reykjavik which was established as early as 1921. It was not, however, until 1937, after a reorganization of its work, that it became a factor of actual importance. Since then the Health Center has been effectively active in the detection and follow-up of tuberculosis in the general population. Every year, since 1937, this work has brought roentgenographic services to 11–17 percent of the total population of the city and is carried on continuously. Health Center action was coordinated with this special extensive survey. In addition, 5,000 to 6,000 pupils of primary and secondary schools have been given tuberculin tests every year.

THE SURVEY

Preparation.—The case-finding survey in Reykjavik was started in January 1945. According to the census list, Reykjavik had, at the end of 1944, 45,842 inhabitants, or 35.9 percent of the aggregate population of the country. The first step was a tuberculin examination of all the school children in the city. The method used was Volmer's patch test for children from 7 to 13 years of age and the reaction was noted 96 hours later. The tests were carried out by physicians and nurses in the schools and were repeated in all doubtful cases. Pupils between 13 and 20 years of age at all other schools in the city were given the Mantoux test with P. P. D. tuberculin. (Park and Davis, first and second doses.) Five mm. induration was regarded as signifying a positive reaction. All subjects exhibiting a positive reaction were called in for photo-roentgenography. Children 1 to 16 years of age were tested in their homes with tuberculin patch tests (Volmer). Infants under 1 year were not tested unless there were special reasons such as a tuberculous milieu. Those who

revealed a positive reaction in the age group 1 to 16 were later examined by roentgenography at the Health Center. Thus, only that portion of the population 1 to 20 years of age was tuberculin tested. The remainder of the population was surveyed by means of roentgenography alone. Those who exhibited roentgenographic evidence of tuberculosis were given routine tuberculin tests in the Health Center. Table 1 shows the number tested and percent reactors by age and sex. It will be observed that almost every child in the population between the ages of 1 and 13 received tuberculin tests. After the age of 14 only the school population was tested. Because school attendance after the age of 14 is not required by law, complete coverage of the age group 14–20 was not possible.

TABLE 1.—*Number of persons tested with tuberculin and percent reactors by age and sex in Reykjavik, 1945*

Age (years)	Number of persons tested			Percent reactors	
	Total	Male	Female	Male	Female
1	1,063	545	518	0.9	0.8
2	1,043	507	536	1.4	2.1
3	880	454	426	2.4	2.4
4	764	354	410	3.1	4.6
5	693	354	339	3.1	6.2
6	707	374	333	4.0	6.0
7	733	378	355	6.9	3.1
8	733	373	360	8.6	9.2
9	726	323	403	6.8	8.7
10	719	341	378	9.1	8.7
11	661	321	340	8.7	12.7
12	698	334	364	12.4	15.7
13	745	363	382	19.5	18.1
14	473	217	256	25.8	27.7
15	295	139	156	29.5	28.2
16	232	117	115	35.1	28.7
17	175	97	78	42.3	30.8
18	157	101	56	40.6	39.3
19 to 20	108	77	31	44.2	45.2
Total	11,605	5,769	5,836		

Photo-roentgenography was performed at the State Hospital, Roentgenology Department (Chief, G. Claessen). The films used were 4 by 5 inches in size, and the X-ray apparatus was an installation from the General Electric X-Ray Corp., with a rotating anode tube capable of handling 400–450 ma. of current at 55–70 kv. Tube-screen distance was 40 inches. Exposure time was from $\frac{1}{20}$ to $\frac{1}{5}$ second, according to the antero-posterior diameter of the subject, which was measured in the majority of cases. It soon appeared that the film was unsatisfactory in cases where the diameter exceeded 13 inches. This was particularly true of muscular persons.

All the films were read, first in the Roentgenology Department and then reviewed by the medical staff of the Health Center which decided what persons were to be called in for further examination.

The subjects were called in according to a special form (fig. 2) made out from the census list of 1944.

TUBERCULOSIS SURVEY REYKJAVIK, FEBRUARY 24, 1945.

Street and number	Number of families in house	Names of household members	Occupation	Date of birth D/M/Y	Tuberculin reaction	Half-hourly appointments for examinations	Date of roentgenograph	Date of re-examination	Remarks
Baldursgata 25 (cont'd)		Gudlaugur Narfason	Fisherman	27/7/03	(1)	3½ 4 4½ 5 5½ 6 7½ 8 8½ 9 9½	24/2/45		
		Sigridur Sigurjonsd	Housewife	9/7/03			24/2/45		
25 B	1	Jon Magnusson	Laborer	25/6/94			27/2/45		
		Sigurlaug Fridjonsd	Housewife	14/4/05			27/2/45		
		Kristiana S	Child	17/1/33	[2] 0		Jan. 45		School.[3]
		Erla M	Child	14/10/35	0		Jan. 45		School.[3]
		Sigurbjorg F	Child	30/12/38	0			24/2/45	
	2	Sigurveig Sigfusd	Woman laborer	10/6/96			27/2/45		
26	1	Gudmundur S. Karlsson	Laborer	12/10/18			27/2/45		
		Margret Sveinssdottir	Laborer	24/6/22			27/2/45		
		Gunnar V. Gudmundss	Child	1/10/41	0			24/2/45	
	2	Gudlaug Petursdottir	Laborer	27/3/82			27/2/45		
		Petur H. Karlsson	Laborer	30/12/20			28/2/45		
	3	Gudmundur Jasonarson	Laborer	10/10/25			27/2/45		
27	1	Gudmundur Gudmundss	Mason	6/11/92			27/2/45		
		Marta Thorleifsdottir	Housewife	20/1/01			27/2/45		
		Svanhildur Gudmundss	Dressmaker	11/4/28			27/2/45		
		Haraldur Gudmundss	Son	18/8/30			27/2/45		
		Porleifur Gudmundss	Son	23/11/31			27/2/45		
		Sigurbjorg Gudmundss	Daughter	11/1/34	0		Jan. 45		School.[3]
		Gudrun Gudmundss	Daughter	5/2/36	0			18/6/45	
		Gudmundur Gudmundss	Son	31/3/38	0		Jan. 45	(st. 20103) [4]	School.[3]
		Hrafnhildur Gudmundss	Daughter	17/12/39	0			26/2/45	
		Helga Gudmundss	Dressmaker	23/1/23			27/2/45		
		Domhildur A Gudmundss	Clerk	3/8/24			27/2/45		
		Hjordis Gudmundss	Clerk	11/4/27			27/2/45		
	2	Asgeir H. Gudmundss	Laborer	17/6/20			6/6/45		
		Maria Ingimundard	Housewife	2/2/23			6/6/45		
(cont'd).		Oskirt Meybarn	Child	1/11/43	0		12/3/45		

[1] Blank space means no tuberculin test made.
[2] Means a record of nonreaction to tuberculin.
[3] Tuberculin test performed on child in public school.
[4] Journal (case) number at the Health Center. The patient has also been examined there.

FIGURE 2.—Appointment form used by the nurses.

All of the inhabitants of the city were visited by four nurses who at the same time performed tuberculin tests, as mentioned, on all children from 1 to 16 years of age.

On the day prior to the examination the nurses went from house to house making appointments for the 300 to 400 persons who were called in daily, so that the group was equally distributed over a 5½ hour period, at ½-hour intervals. Due regard was, however, paid to individual wishes as to the hour fixed for the examination. This was without a doubt a factor of the utmost importance in keeping up a satisfactory collaboration with the public and contributory to the great success of the survey.

The roentgen examination took place after usual working hours in the department, from 3:30 p. m. to 10 p. m. with a break of 1 hour. An average of 35 persons were photographed each half-hour. The entire survey took about 4 months. Those who had not been examined within this period were later gathered into groups and examined, either at the hospital or at the Health Center.

The public exhibited unparalleled understanding and cooperation. There was full agreement about the necessity of the examination and most people were more than willing to do their duty in keeping their appointments. Due to the careful preparations made by the nurses, there was practically no waiting time in the Roentgenology Department; the maximum being 15 to 20 minutes.

Population response.—A total of 43,595 persons, or 98.15 percent of those expected to be able to attend, were submitted to tuberculin tests, photo-roentgenography, or examination at the Health Center (see table 2).

TABLE 2.—*Percent attendance at the case-finding survey in Reykjavik in 1945*

Census list October 1944	45, 842		
Reported later	639		
Total number notified in the city during the survey		46, 481	
Excepted:			
(*a*) Infants under 1 year	740		
(*b*) Tuberculous patients in sanatoria	92		
(*c*) Dead after date of census list	175		
(*d*) Moved or absent for some length of time	1, 055		
		2, 062	
Called in for examination		44, 419	*Percent*
Examined by tuberculin test or roentgenograph		43, 595	98. 15
Physical examination but no roentgenograph:			
(*a*) Invalids and old persons	268		
(*b*) Persons sick in their homes, nursing homes, or mental hospitals	254		
		522	1. 17
Not examined:			
(*a*) Absent for a brief period	220		
(*b*) Address unknown	82		
		302	0. 68

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Five hundred and twenty-two persons or 1.17 percent were not examined by roentgenograph but if their physicians thought it necessary, these persons were given physical examinations and their sputa were analyzed. This group included invalids, old persons who could not easily leave their houses, persons bedridden in their homes, and a few individuals in nursing or mental hospitals. If a child in the household of such a person showed a positive reaction to the tuberculin test, everyone belonging to the household was examined by roentgenograph.

It was impossible to get in touch with 220 individuals, mainly sailors, because of temporary absence, and 82 could not be traced. The 2 last mentioned groups, a total of 302, persons or 0.68 percent, are considered as not examined. It is practically certain that the majority of them were absent from the city during the survey.

Reexaminations.—One thousand three hundred and twenty-nine persons were called in for further examination at the Health Center. Primarily, these were cases that exhibited certain or doubtful roentgen changes previously unknown to the Health Center. Moreover, a number of persons were called in again, because the films were unsatisfactory for technical reasons. The greater part of this group was, however, again examined by roentgenograph. Clinical reexamination at the Health Center, usually including a roentgenogram of normal size, generally revealed striking conformity with the photo-roentgenograms. Still, experience showed some inclination to over-read the significance of the pathological findings on the photo-roentgenograms.

RESULTS OF THE SURVEY

Tuberculous infection in the city.—Figure 3 illustrates the tuberculous infection according to age and sex, as revealed by tuberculin tests. It is slightly on the increase up to the age of 12, at which age 12.4 percent of the boys and 15.7 percent of the girls were infected.

Later the increase is more marked. At the age of 13, 19.5 percent of the boys and 18.1 percent of the girls were infected; but at 14, 25.8 percent of the boys and 27.7 percent of the girls were infected.

The great increase apparent after the age of 13 is undoubtedly in part a result of the changed method of testing, i. e., intracutaneous (Mantoux) instead of percutaneous test (Volmer). On the other hand, this is the age at which the greatest changes take place in the daily life of young people. Some leave school and start working where they may be more exposed to infection. It should also be kept in mind that when these young people were babies, tuberculous infection was far more common in the city than it is now. At approximately 19 years of age, 44.2 percent of the males and 45.2 percent of the females were infected. The tuberculin tests covered 5,769 boys and 5,836 girls, 11,605 persons in all. As pointed out

before, nearly all children between 1 and 13 years of age were tested, but after that only young people attending school.

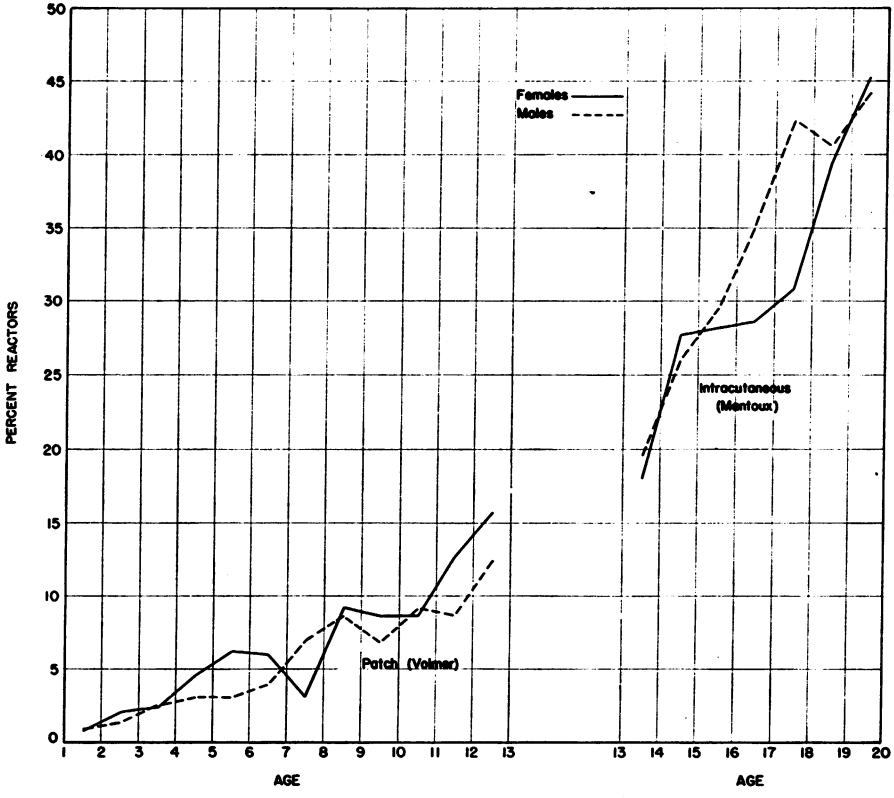

FIGURE 3.—Percent reactors to tuberculin by age and sex.

Tuberculous changes previously unknown to the Health Center.—Major or minor tuberculous changes were found in the lungs of a total of 808 persons previously unknown to the Health Center. They were grouped as follows:

	Number	*Per 1,000 subjects*
Active intrathoracic tuberculosis	71	1. 6
Indeterminate activity	75	1. 7
Fibrotic or calcified changes	662	15. 2

This grouping is based on the clinical examination. It included all the usual methods of examination with particular stress on cultivation from the sputum or gastric lavage. The grouping was not made until the end of 1945, after a minimum period of 6 months' observation.

Active cases.—According to sex, the 71 new active cases, constituting 1.6 per 1,000 of the subjects, are divisible into 44 females and 27 males. Sixty-six were affected with pulmonary tuberculosis, 4 had tuberculosis of the hilar glands, and 1 had pleural effusion. In 30 of these cases the tubercle bacilli were demonstrable at once, and in 10 instances, in the

course of the following months. In other words, 56.3 percent of the 71 active cases were bacillary. In 14 or 35 percent of the 40 bacillary cases the bacilli were found upon cultivation from the sputum or gastric lavage.

Figure 4 shows the number of tuberculous cases notified in Reykjavik toward the end of the survey. The age and rate per 10,000

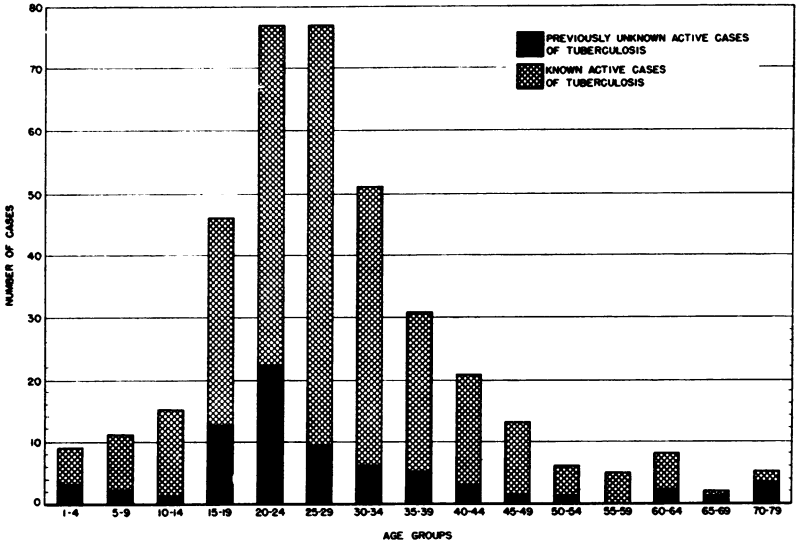

FIGURE 4.—Number of tuberculous cases notified in Reykjavik toward the end of the survey.

population of previously unknown active cases will be found in figure 5.

As was expected, the great majority of active cases, 60.3 percent of the new cases, was found in the age group 15–30 years. It was, however, striking, that quite a large number of cases 8.4 percent, was found in elderly people, above 60 years of age.

Indeterminate cases.—Seventy-five of the unknown cases, or 1.7 per 1,000 of the subjects, are grouped with indeterminate cases. The group is made up of patients who failed to exhibit actual signs of activity in spite of repeated examinations, but who, on the other hand, could not be said with certainty to be affected exclusively with fibrotic or calcified changes. It is more than likely that the overwhelming majority had healed lesions, considering that only two of them have exhibited activity changes after a little more than 1 year's observation.

This group contained 27 males and 48 females: 68 percent were 20 to 40 years of age, and 6.7 percent, 60 or older.

Cases with fibrotic or calcified changes.—A total of 662 or 15.2 per 1,000 of the subjects proved to be affected with fibrotic or calcified changes previously unknown. On inspection of the photo-roentgenograms, it proved difficult to point out with certainty the smallest calcified changes in the lungs and minor pleuritic changes which,

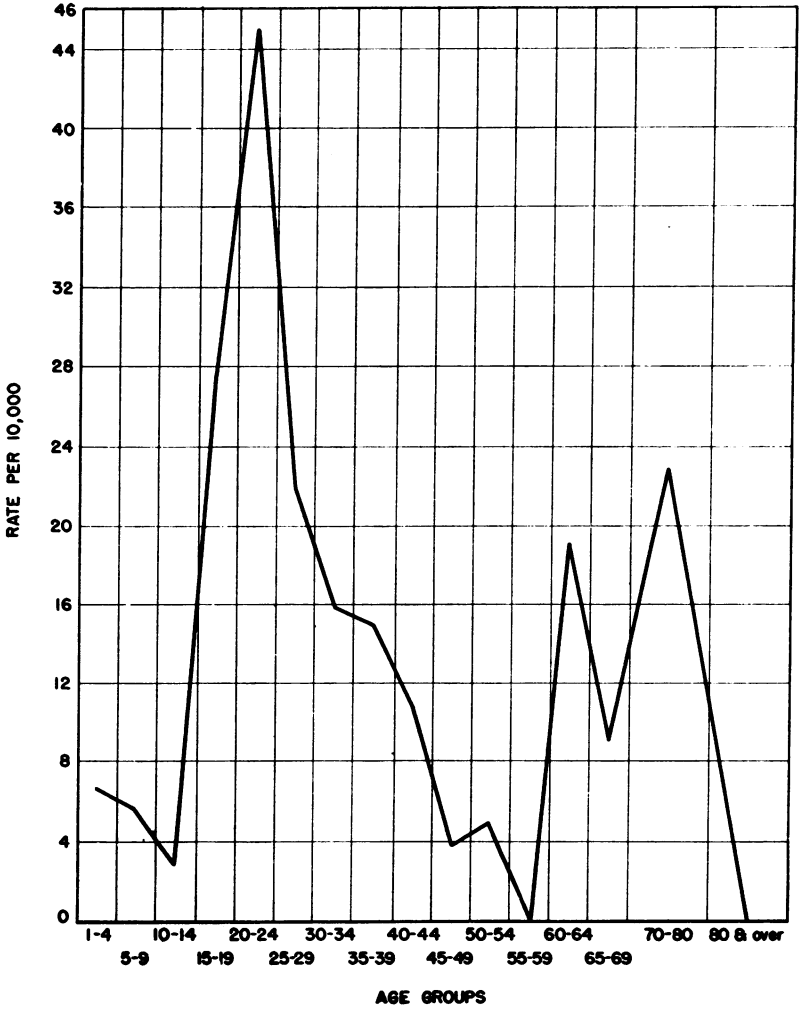

FIGURE 5.—Age and rate per 10,000 of previously unknown, active cases.

therefore, are not included. Moreover, it appeared that it was impossible to distinguish with any certainty from the films alone slight fibrosis or calcifications in the hilus in adults. In children it was, however, attempted to ascertain these changes. This is the explanation of the incongruity apparent from figure 6 where the number of cases in this group appears remarkably small and even decreases at the time of and immediately after puberty. For this reason the curve indicating this group is interrupted at the age of 15. As might be expected, it is apparent from the diagram that these changes increase rapidly with advancing age, reaching their culmination between 60 and 70.

Comparison of the Results of the Photo-Roentgen Examination and Those Obtained Through Previous Health Center Work

A report has been given above of only the cases found at the photoroentgen examination and reexamined because of major or minor tuberculous changes, previously unknown to the Health Center.

It is, however, necessary to make a comparison between the result of this case-finding survey on the one hand and the result of the work conducted by the Health Center on the other hand, in order to arrive

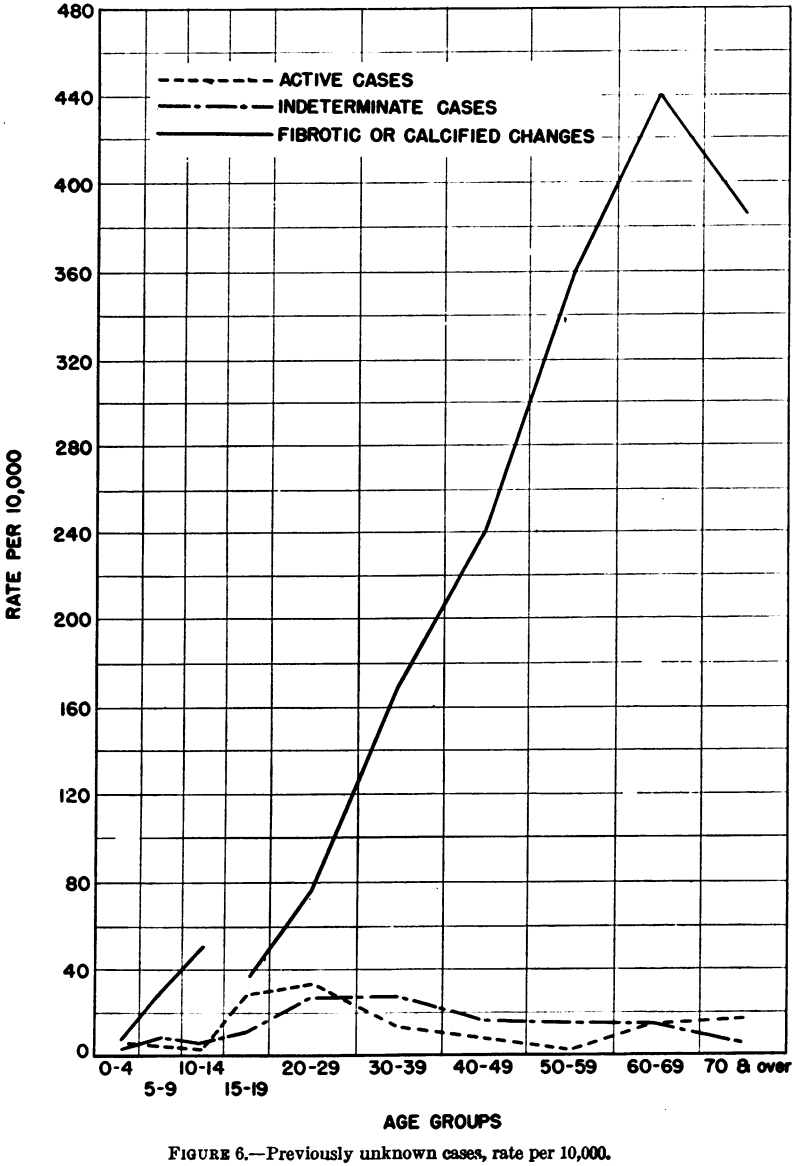

FIGURE 6.—Previously unknown cases, rate per 10,000.

at a reasonable estimation of the value of each procedure separately. It appears from this comparison that 18.8 percent of all active cases notified in Reykjavik in early November 1945 had been found in the course of this survey, as shown in table 3. The active cases found during the survey constituted almost two-thirds or 64.5 percent of the total number notified for the first time by the Center in 1944 as suffering from intrathoracic tuberculosis. As mentioned before, the large number of active cases among persons over 60 years of age was striking when compared with the number of those previously known.

TABLE 3.—*Number and per mil of active tuberculosis cases, discovered and previously known, in Reykjavik, November 1, 1945, calculated per 1,000 of the inhabitants registered on July 1, 1945*

Age	Previously known		Discovered by the survey		Total		Discovered cases as percent of the total number
	Number	*Per mil*	*Number*	*Per mil*	*Number*	*Per mil*	
0–4	6	1.3	3	0.7	9	2.0	33.3
5–9	9	2.4	2	0.6	11	3.0	18.2
10–14	14	3.7	1	0.3	15	4.0	6.7
15–19	34	7.8	12	2.8	46	10.6	26.1
20–24	55	11.2	22	4.5	77	15.7	28.6
25–29	68	16.5	9	2.2	77	18.7	11.7
30–34	45	11.9	6	1.6	51	13.5	11.8
35–39	26	7.6	5	1.5	31	9.1	16.2
40–44	18	6.5	3	1.1	21	7.6	14.3
45–49	12	4.7	1	0.4	13	5.1	7.7
50–59	10	2.8	1	0.3	11	3.1	9.1
60–69	7	3.2	3	1.4	10	4.6	30.0
Over 69	2	1.1	3	1.7	5	2.9	60.0
Total	306	6.7	71	1.6	377	8.3	18.8

A lower figure might have been expected in a city where 11 to 17 percent of the inhabitants have been examined by roentgenograph annually for the last 7 years, where all school children are tuberculin tested every year, where new family contacts are being traced all the time, and where the Health Center works in close cooperation with the general practitioners in the town. On the other hand, the survey lasted for more than 4 months, so that quite a number of the cases so detected would probably have come within the reach of the Health Center shortly after.

Table 3 sets out a corresponding comparison between indeterminate activity cases and those notified as fibrotic or calcified changes.

The Center was not aware of 44.5 percent of the cases exhibiting these lung changes. This table illustrates even better the want of a more extensive control in the case of elderly people. The Center was unaware of 63 percent of all cases of the 50-year and over category, and the percentage increased evenly as far as 85 percent at and after the age of 70.

Total Number of People with Tuberculous Changes in Reykjavik.—In order to obtain a clear picture of the incidence of tuberculosis in the

city it is necessary to group the cases previously known by the Health Center in a category similar to that found at the photo-roentgen examination and then combine both categories into one large group. That gives a general conception of the prevalence of the disease among the population of the city. Figure 7 reveals the rate found to be affected with major or minor tuberculous changes, arranged into the above-mentioned groups according to age per 10,000 inhabitants.

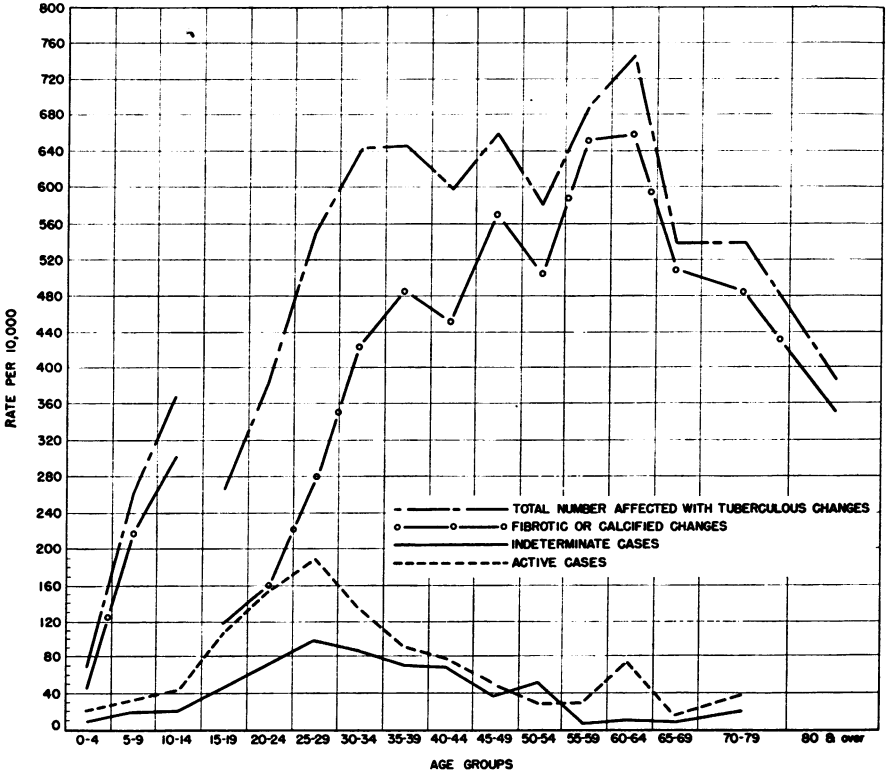

FIGURE 7.—Rate per 10,000 inhabitants found to be affected with tuberculous changes at the survey by age and form of changes.

As was to be expected, the majority of the active cases were in the age group 20–30. The summit of the curve is at 25–30 years, when it reaches 187.4 per 10,000. There is a slight, but perceptible—and certainly interesting—increase after the age of 60.

The summit of indeterminate cases also occurs between 25 and 30 years of age.

For the reasons mentioned above, the curve representing fibrotic or calcified changes is interrupted around puberty. It is difficult to explain why the curve falls after the age of 65. Perhaps it is more difficult to recognize minor fibrotic or calcified changes on the photo-roentgenogram when the lung markings change with advancing age.

Tables 4, 5 and 6 set out the total number of cases found to be affected with tuberculous changes, grouped as mentioned above according to age, sex, and per 1,000 of the population of the city. Of the active cases 8.9 per 1,000 are females and 7.7 per 1,000 males. The group indeterminate cases comprises 5.2 per 1,000 females and 3.7 per 1,000 males. Among fibrotic or calcified changes 34.4 per 1,000 were females and 29.6 per 1,000 males. In all, tuberculous changes were found in 48.5 per 1,000 of the females and in 41.1 per 1,000 of the males.

TABLE 4.—*Number and per mil of cases, discovered and previously known, with indeterminate activity and fibrotic or calcified changes*

Age	Previously known		Discovered by the survey		Total		Discovered cases as percent of the total number
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*	
0–4	18	3.9	4	0.9	22	4.8	18.2
5–9	70	19.3	13	3.6	83	22.9	15.6
10–14	100	26.9	21	5.6	121	32.5	17.3
15–19	47	10.9	22	5.1	69	16.0	31.9
20–29	166	18.4	95	10.5	261	28.9	36.4
30–39	238	33.2	142	19.8	380	53.0	37.4
40–49	159	30.0	138	25.9	297	55.9	46.5
50–59	80	22.2	136	37.8	216	60.0	63.0
60–69	32	14.8	98	45.5	130	60.3	75.4
over 69	12	6.9	68	38.8	80	45.7	85.0
Total	922	20.4	737	16.2	1,659	36.6	44.5

[1] The line marks the age group at which there was change of method in discerning the smallest changes in fibrosis or calcifications.

TABLE 5.—*Number and per mil of male citizens with active tuberculosis, indeterminate activity, and fibrotic or calcified changes*

Age	Active		Indeterminate activity		Fibrotic or calcified changes		Total	
	Number	*Per mil*	*Number*	*Per mil*	*Number*	*Per mil*	*Number*	*Per mil*
0–4	4	1.8	1	0.4	10	4.4	15	6.6
5–9	4	2.2	3	1.7	34	18.7	41	22.6
10–14	6	3.3	4	2.2	50	27.7	60	33.3
15–19	13	6.5	6	3.0	21	10.5	40	20.1
20–24	38	16.7	10	4.4	28	12.3	76	33.4
25–29	37	19.7	16	8.5	47	25.0	100	53.2
30–34	24	13.5	12	6.8	70	39.3	106	59.6
35–39	9	5.5	8	4.9	69	41.8	86	52.1
40–44	8	5.9	8	5.9	55	40.7	71	52.5
45–49	10	8.6	4	3.4	61	52.3	75	64.3
50–54	3	3.1	4	4.2	46	48.2	53	55.5
55–59	2	3.0	1	1.5	46	68.2	49	72.7
60–64	2	5.2	0	0.0	32	82.5	34	87.6
65–69	0	0.0	0	0.0	26	57.5	26	57.5
70–79	3	5.6	2	3.8	27	50.8	32	60.2
Over 79	0	0.0	0	0.0	4	28.8	4	28.2
Total	163	7.7	79	3.7	626	29.6	868	41.1

[1] The line marks the age group at which there was change of method in discerning the smallest changes in fibrosis or calcification.

Nontuberculous cases.—Normal conditions were found in nearly all the cases with doubtful roentgenographic changes. In addition, the clinical examination failed to reveal anything abnormal in a number of

TABLE 6.—*Number and per mil of female citizens with active tuberculosis, indeterminate activity, and fibrotic or calcified changes*

Age	Active		Indeterminate activity		Fibrotic or calcified changes		Total	
	Number	*Per mil*	*Number*	*Per mil*	*Number*	*Per mil*	*Number*	*Per mil*
0–4	5	2.2	2	0.9	9	4.0	16	7.0
5–9	7	3.9	3	1.7	43	23.8	53	29.4
10–14	9	4.7	3	1.6	64	33.4	76	39.6
15–19	33	14.2	13	5.6	29	12.4	75	32.1
20–24	39	14.8	24	9.1	50	19.0	113	42.9
25–29	40	17.9	22	9.9	64	28.7	126	56.5
30–34	27	13.5	19	9.5	91	45.5	137	68.5
35–39	22	12.6	16	9.2	95	54.3	133	76.1
40–44	13	9.2	10	7.1	70	49.4	93	65.7
45–49	3	2.2	5	3.6	84	61.2	92	67.0
50–54	3	2.7	6	5.5	58	52.7	67	60.9
55–59	3	3.4	0	0.0	55	62.9	58	66.3
60–64	6	9.1	1	1.5	37	56.3	44	67.0
65–69	2	3.0	1	1.5	31	47.0	34	51.5
70–79	2	2.5	1	1.3	37	46.7	40	50.5
Over 79	0	0.0	0	0.0	11	38.5	11	38.5
Total	214	8.9	126	5.2	828	34.4	1,168	48.5

[1] The line marks the age group at which there was change of method in discerning the smallest changes in fibrosis or calcification.

instances which were considered to exhibit pathological changes on the photo-roentgenogram. Moreover, the clinical examination showed that in quite a number of cases it was not a question of tuberculous changes. It was discovered, among other things, that 14 patients were suffering from bronchiectasis, and 6 from nonspecific or atypical pneumonia. Eleven were found to be affected with high-seated, mostly calcified, hydatids of the liver with secondary changes in the lungs. Pulmonary carcinoma was diagnosed in four cases and two of them later proved to be primary. Situs inversus thoracis was ascertained in four instances.

VALUE OF THE SURVEY

Accordingly, the survey revealed that in a comparatively small city where an energetic antituberculosis campaign has been carried out during recent years, there are quite a number of previously unknown cases which call for either immediate treatment or Health Center supervision.

The value of the survey should not, however, be estimated exclusively on the basis of the number of cases found, calling for treatment or supervision. The work at a health center is greatly facilitated when it is known in which age groups its control is most deficient. In addition, it is almost invaluable to be in possession of a file of roentgenograms of nearly all the inhabitants above 14 years of age and the knowledge of infection of those below that age. Each new examination may then be compared with a previous one, and each new case found by the Center with an earlier photo-roentgenogram or tuberculin test. In

this manner, the course of the disease may be followed with more precision. This contributes toward making the work at the Health Center more systematic.

CONCLUSIONS

The experience gained from the tuberculosis case-finding survey described above and accumulated knowledge derived from former surveys in 11 districts, as well as information gained from continuing Health Center, work appears to warrant the following conclusions:

1. Efficiently organized health center work may extend far, but hardly embraces the entire population of a medical district. In order to trace all active cases of pulmonary tuberculosis in the district, a combined tuberculin and roentgen examination of the entire population is required.

2. If it is impossible to examine the total population of a district, the main stress should be laid on the age group 15–30 years as well as those older than 60.

3. Tuberculin tests of children and young persons facilitate the survey greatly. In the case of small children the patch test is easy to perform and yields fairly sure results in the hands of experts.

4. In photo-roentgen examination, films of the size 4 by 5 inches have proved practical and have given good results.

5. Apparently it is not difficult to interest the public in such a survey. Of utmost importance is the manner of calling the subjects in. They must have a feeling that their own wishes are being complied with as far as at all possible, and that measures are being taken to reduce the waiting time to a minimum.

SUMMARY

In 1945 a tuberculosis case-finding survey (tuberculin tests and photo-roentgenograms) was conducted in Reykjavik, embracing the total population, nearly 46,000 persons. Of those expected to be able to attend, 99.32 percent were examined. During recent years energetic antituberculosis Health Center work has been carried out in the city. Among the subjects examined, 1.6 per 1,000 were found to suffer from active tuberculosis calling for immediate treatment, moreover, 1.7 per 1,000 were in need of Health Center supervision, and 15.2 per 1,000 exhibited old tuberculous changes. *All these cases were previously unknown to the Health Center.* The writers make a comparison between the result of ordinary Health Center work and the result of this survey and deal with the value of the latter.

GEOGRAPHIC DISTRIBUTION OF HISTOPLASMIN AND TUBERCULIN REACTORS AMONG OHIO STATE UNIVERSITY FRESHMEN AND STUDENT NURSES TRAINING IN COLUMBUS, OHIO HOSPITALS [1]

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In the past decade, a number of reports (*1*, *2*, *3*, *4*, *5*, *6*) have been published, showing that many persons with pulmonary calcification did not react to tuberculin. It became apparent that the widely accepted idea that all pulmonary calcification is of tuberculosis origin was open to question. This doubt led to search for the exact etiology of those calcifications of the lungs which could not be readily attributed to tuberculosis.

In the search to determine the agent or agents responsible for pulmonary calcification, Olson, Wright and Nolan (*7*) investigated ascariasis as an etiological factor, but were unable to establish any relationships between this disease and pulmonary calcification. In 1942, Aronson, Saylor and Parr (*8*), on the basis of tuberculin and coccidioidin tests performed in the southwestern portion of this country, presented evidence that coccidioidomycosis is responsible for a considerable amount of pulmonary calcification among residents of that region in which the disease is endemic. Long and Stearns (*9*), using selective service records, found higher prevalence of pulmonary calcification among inductees who lived in the east central area of the United States, than among inductees from other sections of the country. The same year Smith (*10*) pointed out that the area of high prevalence of pulmonary calcification in tuberculin negative persons in the eastern central States corresponds rather closely to the endemic area of histoplasmosis, an uncommon but generally fatal fungous disease. A recent review (*11*) locates and describes reported cases of this relatively rare disease. Christie, Peterson (*12*) and Palmer (*13*) have since demonstrated that in this eastern-central region most of the tuberculin negative persons with pulmonary calcification are reactors to histoplasmin—an antigen made from the fungus *Histoplasma capsulatum*, which is the etiologic agent in histoplasmosis.

As the result of a study conducted cooperatively by the National Tuberculosis Association and the United States Public Health Service in many schools of nursing, Palmer (*14*) showed that there were marked geographic differences in the distribution of histoplasmin reactors throughout the United States.

The following discussion reports an investigation into the geographic differences in the prevalence of histoplasmin and tuberculin reactors among students in the State of Ohio.

[1] From the Department of Medicine, Ohio State Medical School and Field Studies Section, Tuberculosis Control Division.

MATERIAL AND METHODS

The present study includes students at Ohio State University, who were freshmen in the fall of 1946, and student nurses training in Columbus hospitals from 1943–1946. The survey was made possible by the cooperation of the Student Health Service and College of Medicine, Ohio State University, and the various schools of nursing in Columbus. The freshmen were histoplasmin and tuberculin skin tested at the time of their entrance physical examinations. The student nurses were tested either on entrance to nursing school or soon thereafter. The histoplasmin, a filtrate of broth cultures of *Histoplasma capsulatum*, was provided by Dr. Arden Howell of the United States Public Health Service. The test consisted of the intradermal injection of 0.1 cc. of 1:1000 dilution of histoplasmin (H_{15}) in saline. Those that had an area of induration measuring 5 or more mm. in diameter 48 hours after injection were considered to be reactors. All others were considered nonreactors.

The tuberculin tests were performed with purified protein derivative (PPD–S) furnished by Dr. Florence Siebert of the Phipps Institute, Philadelphia, Pennsylvania. A dose of .0001 mg. in 0.1 cc. injected intradermally was used (Furcolow et al.) (*15*). Reactors were those with 5 or more mm. of induration measured 48 hours after injection. All others were interpreted as nonreactors.

For the college students, the injections were under the close supervision of one person who did all interpretations and measured all the cutaneous reactions. For the nurses this was not true. Because of changes in personnel over a period of years, several persons administered the histoplasmin and tuberculin tests, but it was possible to have all the reading done by two persons.

Since a geographical distribution of histoplasmin reactors by county was desired, some criterion was necessary to determine which students could be considered lifetime residents of a given county. A student was considered a permanent resident of a county if he had not lived outside of the county for more than four years. Of more than 8,000 students tested there were 4,207 University freshmen and 880 nurses,[2] a total of 5,087 persons who could be classed as lifetime residents of a county in Ohio. In the freshman group there were 3,452 males and 755 females. Of the total group studied, approximately ⅛ were females. While ages ranged widely from 16 to 39 years, 94 percent were less than 25 years of age. The average age was 21.0 years for males and 19.4 years for females. One-fifth of the students were from Columbus. Two-thirds of the students had lived their entire lives in some one county.

[2] Many of these nurses were included in Palmer's (*14*) presentation of geographic differences to histoplasmin sensitivity, but the definition of lifetime residence is not the same in the two reports.

RESULTS

Histoplasmin.—The details of the study are given in the appendix table which shows for each of the 88 counties in Ohio the results of histoplasmin and tuberculin tests.

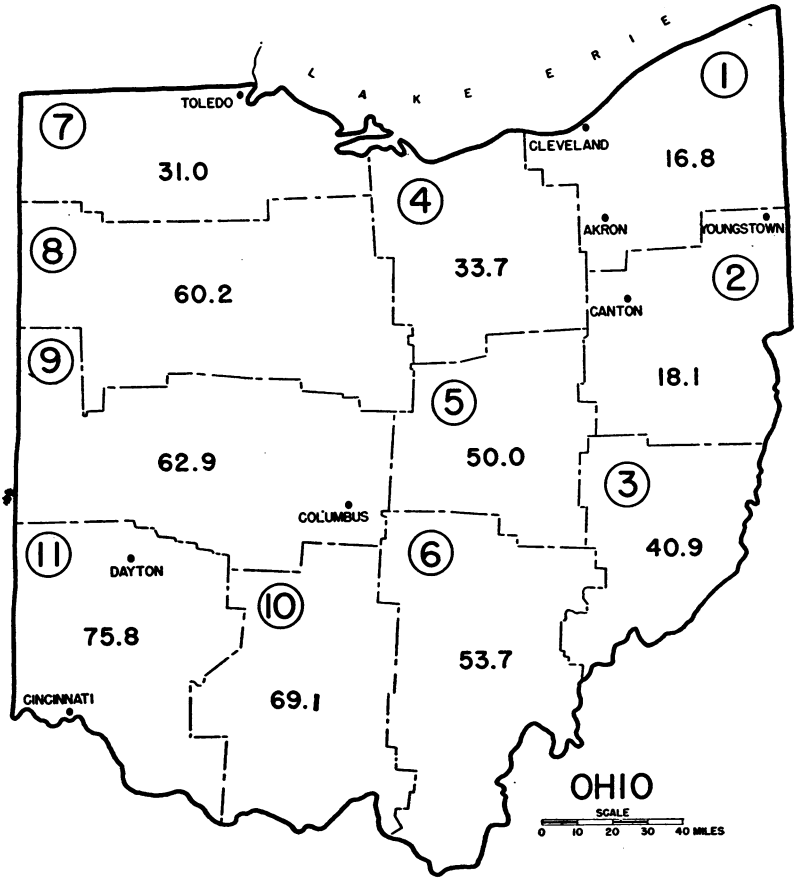
TABLE 1.—*Number of students tested with histoplasmin and tuberculin and percent of reactors for lifetime [1] residents of Ohio counties by sex and geographic area [2] (Ohio State University freshmen and student nurses training in Columbus, Ohio [3])*

Area number	Areas and large cities	Students tested			Percent reactors					
					Histoplasmin			Tuberculin		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
	Total	5,087	3,452	1,635	47.0	46.5	48.1	16.0	18.7	10.3
1	Total	781	658	123	16.8	17.3	13.8	20.1	21.1	14.6
	Akron	69	58	11	21.7	22.7	27.3	17.4	17.2	18.2
	Cleveland	312	270	42	11.9	12.2	9.5	23.7	25.6	11.9
	Rest of area	400	330	70	19.8	20.9	14.3	17.8	18.2	15.7
2	Total	574	427	147	18.1	18.5	17.0	21.4	25.3	10.2
	Canton	77	66	11	18.2	18.2	18.2	20.8	22.7	9.1
	Youngstown	105	95	10	26.7	28.4	10.0	38.1	41.1	10.0
	Rest of area	392	266	126	15.8	15.0	17.5	17.1	20.3	10.3
3	Total	215	131	84	40.9	45.0	34.5	12.1	15.3	7.1
4	Total	270	206	64	33.7	35.0	29.7	16.3	18.9	7.8
5	Total	236	127	109	50.0	48.8	51.4	12.7	15.0	10.1
6	Total	255	122	133	53.7	59.0	48.9	12.9	13.9	12.0
7	Total	200	159	41	31.0	31.4	29.3	12.0	12.6	9.8
	Toledo	81	55	26	18.5	18.2	19.2	8.6	10.9	3.8
	Rest of area	119	104	15	39.5	38.5	46.7	14.3	13.5	20.0
8	Total	334	198	136	60.2	64.1	54.4	10.8	11.1	10.3
9	Total	1,617	988	629	62.9	65.1	59.5	15.5	19.0	10.0
	Columbus	1,032	622	410	56.9	60.8	51.0	17.2	20.4	12.2
	Rest of area	585	366	219	73.5	72.4	75.3	12.6	16.7	5.9
10	Total	217	120	97	69.1	65.8	73.2	16.1	21.7	9.3
11	Total	388	316	72	75.8	78.8	62.5	14.2	14.9	11.1
	Cincinnati	66	52	14	72.7	76.9	57.1	12.1	11.5	14.3
	Dayton	101	81	20	80.2	82.7	70.0	12.9	11.1	20.0
	Rest of area	221	183	38	74.7	77.6	60.5	15.4	17.5	5.3

[1] Lifetime residents are those who have spent no more than 4 years outside a given Ohio county.
[2] See appendix table for counties included in specific areas.
[3] University students tested fall 1946; student nurses tested 1943-46.

The percent of histoplasmin reactors varied from county to county and was appreciably greater among students who came from the southwestern part of the State. Because the rates for each of the 88 counties differed according to a geographic pattern and because the number of students from any one county was often too small to provide a reliable rate for the county, contiguous counties with similar histoplasmin reactor rates were combined into 11 areas.

The residents in area 1, of the northeastern corner of the State, show the lowest percentage (16.8) of reaction to histoplasmin. To the west or south the percent of reactors becomes progressively higher, and even within area 1 quite marked variation occurs. This is illustrated by a comparison of the reactor rates for two cities, Cleveland on Lake Erie in the north and Akron 35 miles to the south. The lake city has 11.9 percent reactors, whereas the rate for Akron is 21.7—almost double (see table 1 and map 1).



MAP 1.—*Percent of reactors to histoplasmin among students who were lifetime* [1] *residents of Ohio counties by geographic area* [2] *(Ohio State University freshmen and student nurses training in Columbus, Ohio* [3])

[1] Lifetime residents are those who have spent no more than 4 years outside a given Ohio county.
[2] See appendix table for counties included in specified areas.
[3] University students tested fall 1946; student nurses tested 1943–46.

To the south, area 2, also on the eastern border of the State, has a slightly higher reactor rate than area 1; the percent for area 2 is 18.1. Youngstown with 26.7 percent reactors has a rate higher than this average, while the rate for Canton is the same.

The southeastern counties make up a third area in which 40.9 percent of students are reactors. Area 4, bounded on the north by Lake Erie, has 33.7 percent reactors to histoplasmin; area 5, in almost the center of the State, has 50.0 percent reactors; while farther south area 6 has 53.7 percent.

Area 7, in the northwest corner of the State, has 31.0 percent reactors to histoplasmin. In this area is the city of Toledo with the

much lower reactor rate of 18.5. This disparity between the rate for an area and the rate for a city on its lake side duplicates the findings for Cleveland, which also is on Lake Erie, and has a much lower rate than its hinterland. If Toledo is omitted, the rate for area 7 is 39.5.

The southern areas of this western part of Ohio show the highest rates. Students who are residents of areas 8 and 9 show rates of 60.2 and 62.9 respectively. Moreover, if Columbus in the eastern part of area 9 with 56.9 percent reactors is omitted, the rate for this area becomes 73.5 percent rather than 62.9. The rate in area 10 increases to 69.1 and finally in area 11 rises to 75.8 percent reactors to histoplasmin. Thus, from areas 1 to 11, the rates have increased progressively to the south and west to such an extent that in area 11 the rate is more than four times that of area 1.

Since other reports (16 and 17) have shown that there is a sex difference in reaction to histoplasmin, the data for the Ohio students were examined for this factor. The results are given in table 1. In the total group, 46.5 percent of the males reacted and 48.1 percent of the females, but these percentages do not give a true picture of the reactor rates by sex, since there are substantial differences in the proportion of males and females from the different areas. For example, 31 percent of the males, but only 17 percent of the females, were residents of areas 1 and 2 which, it will be remembered, are areas with low reactor rates. A correct evaluation can be obtained by comparing the rates for males and females within an area. In all areas except 5 and 10, the percent of reactors to histoplasmin is greater

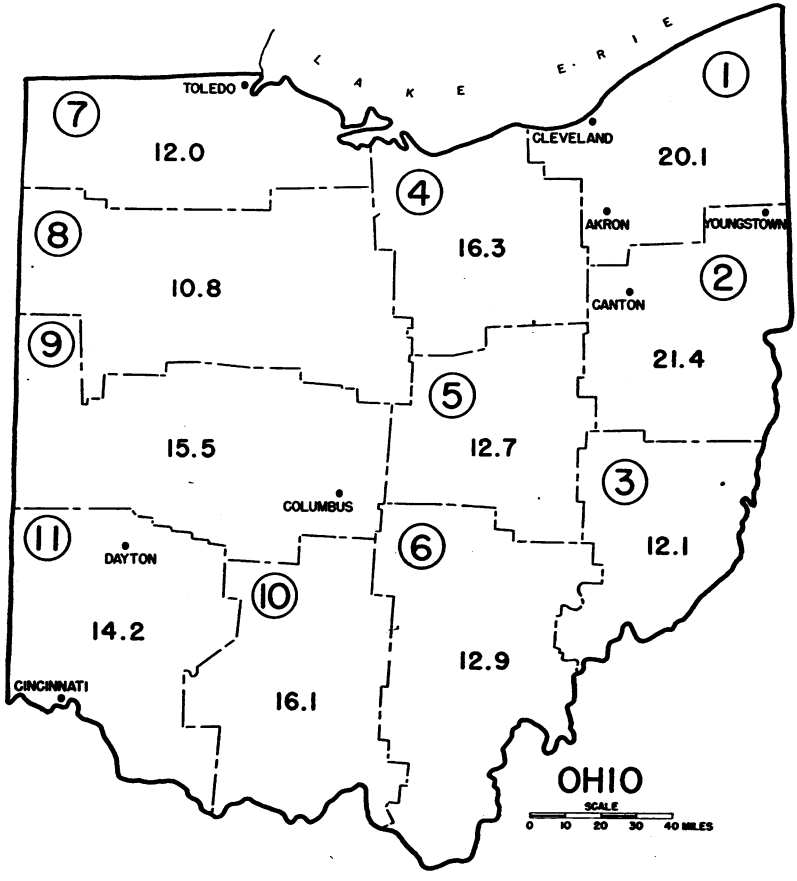
TABLE 2.—*Number of students tested with histoplasmin and tuberculin and percent of reactors for farm and nonfarm lifetime [1] residents of Ohio counties by sex and geographic area [2] (Ohio State University freshmen and student nurses training in Columbus, Ohio [3])*

Area number	Students tested		Percent reactors			
			Histoplasmin		Tuberculin	
	Farm	Nonfarm	Farm	Nonfarm	Farm	Nonfarm
Total	680	4,407	58.5	45.3	11.9	16.6
1	55	726	25.5	16.1	10.9	20.8
2	44	530	22.7	17.7	11.4	22.3
3	40	175	55.0	37.7	5.0	13.7
4	51	219	43.1	31.5	15.7	16.4
5	62	174	53.2	48.9	12.9	12.6
6	57	198	59.6	52.0	8.8	14.1
7	41	159	43.9	27.7	14.6	11.3
8	81	253	70.4	56.9	4.9	12.6
9	146	1,471	76.0	61.6	15.1	15.6
10	51	166	74.5	67.5	15.7	16.3
11	52	336	75.0	75.9	13.5	14.3

[1] Lifetime residents are those who have spent no more than 4 years outside a given Ohio county.
[2] See appendix table for counties included in specified areas.
[3] University students tested fall 1946; student nurses tested 1943–1946.

for males than females. The reactor rates for males are from 1 to 16 percent greater than those for females, with a 5 percent higher average. Although there is variation between the sexes in reaction to histoplasmin, the over-all results for each sex fall into the geographic pattern already described; for either sex, the rate increases from east to west and from north to south in the State. Examination of the data indicates that there is insufficient difference in age to influence the variations in sensitivity between the sexes.

It is interesting to observe that in this group of Ohio students there are higher rates of reaction to histoplasmin among lifetime farm residents than among the other students. The differences range from



MAP 2.—*Percent of reactors to tuberculin among students who were lifetime* [1] *residents of Ohio counties by geographic area* [2] *(Ohio State University freshmen and student nurses training in Columbus, Ohio* [3])

[1] Lifetime residents are those who have spent no more than 4 years outside a given Ohio county.
[2] See appendix table for counties included in specified areas.
[3] University students tested fall 1946; student nurses tested 1943–46.

4 to 17 percent and average 9.5 percent. With the single exception of area 11, this is true for all students who were lifetime farm residents—15 percent of the total number tested.

Tuberculin.—Although the tuberculin-reactor rates for the geographical areas contrast sharply with histoplasmin-reactor rates, they are consistent with the known responses to tuberculin as conditioned by urban-rural social and economic factors. Table 1 and map 2 give the geographical distribution of tuberculin reactors. Sixteen percent of the 5,087 students tested reacted to tuberculin. The highest reaction rates were found in areas 1 and 2. In these two areas are located four large industrial cities—Akron, Canton, Cleveland, and Youngstown. In all the other areas there is about 5 percent variation in the tuberculin reaction rates, the lowest, 11 percent; the highest, 16 percent. The lowest tuberculin rate occurs in area 8 which is largely an agricultural region with no large cities. More students, 38.1 percent, from Youngstown are tuberculin reactors than students from any other area or city. Cleveland with 23.7 percent reactors has the next highest rate while students from Toledo have the lowest frequency of reactions, 8.6 percent.

In all areas, there is on the average a 7 percent greater frequency of male than female reactors to tuberculin. Youngstown has the highest rate for males, 41.1 percent, while Dayton has the highest rate for females, 20.0 percent.

In table 2 it will be seen that lower rates of reaction to tuberculin are found among students with lifetime farm residence than among those without such residence history. For histoplasmin, the contrary is observed; as was pointed out above, the rate is higher among the farm residents.

SUMMARY

Study of the histoplasmin and tuberculin reactions in 5,087 University freshmen and student nurses, from all counties of Ohio, all of whom were lifetime residents of some one county, leads to the following conclusions:

1. In Ohio, there is a geographic pattern of distribution of histoplasmin reactors; the rate of reaction which is low in the northeastern part of the State, 16.8 percent, increases to the west and south, progressing to the highest level, 75.8 percent, in the southwestern corner of the State.
2. No similar geographic distribution is seen for the rates of tuberculin reactors.
3. There are more reactors to histoplasmin among males than among females.
4. More reactors to histoplasmin are found among lifetime residents of farms than among students without such residence.
5. Fewer reactors to tuberculin were found among lifetime residents of farms than among students without such residence.

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APPENDIX TABLE.—*Frequency of reactions to histoplasmin and tuberculin by sex for lifetime [1] residents of a county in Ohio (Ohio State University freshmen and student nurses training in Columbus, Ohio [2])*

Area No.	County in Ohio	Students tested			H+ T+		H+ To		H? T+		H? To		Ho T+		Ho To	
		Total	M	F	M	F	M	F	M	F	M	F	M	F	M	F
	Total	5,087	3,452	1,635	277	78	1,329	709	37	13	148	77	331	78	1,330	680
10	Adams	6	2	4	---	---	2	1	---	---	---	3	---	---	---	---
8	Allen	39	31	8	4	---	14	5	---	---	2	---	1	1	10	2
4	Ashland	25	17	8	1	---	6	3	---	---	1	1	1	1	8	3
1	Ashtabula	50	42	8	1	---	5	1	---	---	---	---	7	---	29	7
6	Athens	24	8	16	---	---	4	4	---	---	---	---	---	2	4	10
8	Auglaize	29	21	8	---	---	14	4	---	---	1	1	1	---	5	3
3	Belmont	122	76	46	4	1	30	11	---	---	---	3	8	1	34	30
11	Brown	9	8	1	---	---	8	---	---	---	---	---	---	---	---	1
11	Butler	39	33	6	8	---	20	2	---	2	1	---	---	---	4	2
2	Carroll	17	12	5	---	---	1	1	---	---	2	---	1	---	8	4
9	Champaign	27	15	12	1	---	10	9	---	---	---	2	---	---	4	1
9	Clark	83	60	23	6	1	39	19	---	---	4	2	---	---	11	1
11	Clermont	11	9	2	---	---	7	2	---	---	1	---	---	---	1	---
11	Clinton	11	7	4	2	---	4	4	---	---	---	---	---	---	1	---
2	Columbiana	65	54	11	2	---	4	---	---	---	1	---	9	4	38	7
5	Coshocton	42	20	22	2	1	6	2	---	---	---	---	1	1	11	18
8	Crawford	45	21	24	5	3	8	9	---	---	4	---	---	---	4	12
1	Cuyahoga—Cleveland	312	270	42	8	---	25	4	3	---	4	1	58	5	172	32
	Rest of county	195	153	42	4	1	35	5	1	---	3	4	17	5	93	27
9	Darke	36	31	5	8	---	15	3	1	---	1	1	1	---	5	1
7	Defiance	12	8	4	2	---	2	3	---	---	---	---	---	---	4	1
9	Delaware	39	19	20	2	3	13	13	1	---	1	1	---	---	2	3
4	Erie	37	34	3	1	---	8	---	---	---	3	---	4	---	18	3
6	Fairfield	73	36	37	3	5	22	20	---	1	2	1	4	1	5	9
10	Fayette	30	14	16	---	3	11	11	---	---	---	1	1	---	2	1
9	Franklin—Columbus	1,032	622	410	72	23	306	186	10	5	46	19	45	22	143	155
	Rest of county	216	122	94	12	3	69	64	2	---	15	5	4	---	20	22
7	Fulton	13	9	4	---	---	4	2	---	---	---	---	1	---	4	2
6	Gallia	17	13	4	6	1	5	1	---	---	---	1	---	---	2	1
1	Geauga	10	8	2	1	---	1	---	---	---	---	---	---	1	6	1
11	Green	21	18	3	1	---	12	2	---	---	---	1	1	---	4	---
3	Guernsey	41	26	15	2	---	10	8	2	1	1	1	---	1	11	4
11	Hamilton—Cincinnati	66	52	14	3	2	37	6	---	---	1	2	3	---	8	4
	Rest of county	46	34	12	7	---	17	6	2	---	1	1	1	---	6	5
8	Hancock	28	20	8	1	---	11	2	---	---	1	---	---	---	7	6
8	Hardin	21	15	6	---	1	10	3	1	---	---	---	---	---	4	2
2	Harrison	9	6	3	---	---	3	2	---	---	---	---	1	---	2	1
7	Henry	17	15	2	2	1	7	---	---	---	---	---	---	---	6	1
10	Highland	22	13	9	1	---	5	6	---	---	1	3	1	---	5	---
6	Hocking	29	11	18	1	---	5	8	---	1	---	---	---	1	5	8
5	Holmes	13	10	3	---	---	5	1	---	---	---	---	1	---	4	2
4	Huron	27	21	6	---	---	7	2	---	---	1	---	2	---	11	4
6	Jackson	22	11	11	---	---	4	4	---	---	---	---	1	---	6	7
2	Jefferson	106	66	40	2	---	4	9	---	---	1	---	14	2	45	29
5	Knox	46	19	27	1	2	11	16	---	---	4	1	2	2	1	6
1	Lake	29	25	4	---	---	2	1	---	---	1	---	---	2	22	1
6	Lawrence	14	8	6	---	---	3	1	---	---	---	---	---	1	5	4
5	Licking	79	40	39	3	3	23	25	---	---	2	1	2	1	10	9
9	Logan	30	18	12	2	---	11	10	---	---	---	---	1	1	4	1
4	Lorain	79	64	15	5	---	18	2	2	---	---	---	9	---	30	13
7	Lucas—Toledo	81	55	26	1	---	9	5	---	---	2	1	5	1	38	19
	Rest of county	15	13	2	1	1	1	---	---	---	2	---	1	---	8	1
9	Madison	34	14	20	3	---	9	15	---	1	---	1	1	---	1	3
2	Mahoning—Youngstown	105	95	10	12	---	15	1	1	---	1	---	26	1	40	8
	Rest of county	36	31	5	1	---	8	1	---	---	---	1	6	2	16	1
8	Marion	75	35	40	2	2	20	21	---	---	2	2	3	2	8	13
4	Medina	17	14	3	1	---	3	---	---	---	---	---	---	---	10	3
6	Meigs	8	5	3	---	---	4	1	---	---	---	---	---	1	1	1
9	Mercer	17	15	2	3	---	8	2	---	---	---	---	1	---	3	---
9	Miami	39	35	4	4	---	23	4	---	---	2	---	---	---	6	---
3	Monroe	11	6	5	---	1	2	---	---	---	1	1	---	---	3	3
11	Montgomery—Dayton	101	81	20	8	4	59	10	---	---	3	3	1	---	10	3
	Rest of county	47	42	5	4	---	31	3	---	---	3	---	1	---	3	2
6	Morgan	11	3	8	---	---	3	3	---	---	---	---	---	---	---	5
8	Morrow	13	7	6	---	2	6	2	---	---	---	---	---	---	1	2
5	Muskingum	56	38	18	5	---	6	6	---	---	---	2	2	1	25	9
3	Noble	5	4	1	1	---	2	1	---	---	---	---	---	---	1	---
7	Ottawa	17	17	---	---	---	3	---	---	---	2	---	1	---	11	---
8	Paulding	1	1	---	---	---	---	---	---	---	---	---	---	---	1	---
6	Perry	52	25	27	---	1	12	14	---	---	1	---	2	1	10	11
10	Pickaway	51	25	26	5	2	16	19	1	---	2	2	---	1	1	2
10	Pike	10	5	5	---	---	4	4	---	---	---	---	---	---	1	1
1	Portage	7	6	1	---	---	1	---	---	---	1	---	1	---	3	1

See footnotes at end of table.

APPENDIX TABLE.—*Frequency of reactions to histoplasmin and tuberculin by sex for lifetime*[1] *residents of a country in Ohio (Ohio State University freshmen and student nurses training in Columbus, Ohio*[2]—Continued

Area No.	County in Ohio	Students tested			H+[3]T+		H+ To		H? T+		H? To		Ho T+		Ho To	
		Total	M	F	M	F	M	F	M	F	M	F	M	F	M	F
11	Preble	21	18	3	1		14	3							3	
8	Putnam	18	12	6	1		9	2							2	4
4	Richland	68	45	23	1	3	16	7	2		1		8	1	17	12
10	Ross	39	21	18	2		14	15	1		1				3	3
7	Sandusky	16	13	3	3		2				1			1	7	2
10	Scioto	59	40	19	7	1	12	9	1		2	1	6	2	12	6
8	Seneca	29	19	10	1		10	4		1	1		1	1	6	4
9	Shelby	21	15	6	3	1	6	2	1		1				4	3
2	Stark—Canton	77	66	11	4		8	2	1		2	1	10	1	41	7
	Rest of county	60	46	14	1	1	6				1		10		28	13
1	Summit—Akron	69	58	11	2	1	10	2	1				7	1	38	7
	Rest of county	48	40	8	4		3	2	1		2		9		21	6
1	Trumbull	61	56	5	1		11		1		1		12	2	30	3
2	Tuscarawas	99	51	48	1	1	7	7			2	2	6	3	35	35
9	Union	43	22	21	3	2	15	14		1	1	1	1		2	3
8	Van Wert	13	9	4	1		5	2							3	2
6	Vinton	5	2	3				2							2	1
11	Warren	16	14	2	2		4	1			2		2		4	1
3	Washington	36	19	17	1		7	7			1	1	2	1	8	8
4	Wayne	17	11	6			5	2			1	2	2		3	2
7	Williams	10	10				4		1						5	
7	Wood	19	19		1		8						1		9	
8	Wyandot	23	7	16		1	5	11							2	4

[1] Lifetime residents are those who have spent no more than 4 years outside a given Ohio county.
[2] University students tested fall 1946; student nurses tested 1943–46.
[3] H+ Histoplasmin reaction of 5 or more mm. of induration.
T+ Tuberculin reaction of 5 or more mm. of induration.
To Tuberculin reaction of less than 5 mm. of induration.
H? Histoplasmin reaction of less than 5 mm. of induration or erythema only.
Ho No reaction to histoplasmin.

INCIDENCE 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 OCTOBER 18, 1947

Summary

A total of 415 cases of poliomyelitis was reported for the current week, as compared with 540 last week, 976 for the corresponding week last year, and a 5-year (1942–46) median of 618. The decline during the week is 23 percent, as compared with 12 percent last week. Only 12 States reported more than 8 cases currently, 3 of which showed increases—South Dakota from 1 to 10, West Virginia from 10 to 11, and Florida from 8 to 13. Since March 15, the approximate average date of seasonal low incidence in past years, a total of 8,251 cases has been reported, as compared with 21,195 for the same period last year, an average of 14,827 for the corresponding periods of the four epidemic years 1943–46, and 3,113 for the same period in 1942. The total for the year to date is 8,863, as compared with 21,662 for the same period last year and a 5-year median of 11,463.

The incidence of influenza declined from 1,956 last week to 1,688 for the current week, as compared with a 5-year median of 1,447. Of the week's total, 1,422 cases occurred in 3 States—Virginia, 298 (last week 619), South Carolina 349 (last week 332), and Texas 775 (last week 705). No other State reported more than 55 cases. The total since seasonal low incidence (week ended July 26) is 10,219, as compared with 9,851 for the same 12-week period last year and a 5-year median of 9,735.

One case of smallpox was reported (in Kansas) and 2 cases of anthrax (1 each in New York and California). Of 105 cases of undulant fever (same week last year 162). Illinois and Iowa each reported 13, Colorado 10, and Kansas 9. The total to date is 5,075, and for the same period last year, 4,235.

Current totals above the respective corresponding 5-year medians were reported for amebic and undefined dysentery, infectious encephalitis, Rocky Mountain spotted fever, tularemia and whooping cough.

Deaths recorded during the week in 93 large cities of the United States totaled 8,780, as compared with 9,175 last week, 8,743 and 9,431, respectively, for the same weeks of 1946 and 1945, and a 3-year (1944–46) median of 9,021. The cumulative figure is 385,797, as compared with 379,850 for the same period last year. Infant deaths in the same cities totaled 703, as compared with 702 last week and a 3-year median of 652. The total to date is 31,084, as compared with 27,392 for the same period last year.

Telegraphic morbidity reports from State health officers for the week ended Oct. 18, 1947, and comparison with corresponding week of 1946 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 1942–46	Week ended—		Median 1942–46	Week ended—		Median 1942–46	Week ended—		Median 1942–46
	Oct. 18, 1947	Oct. 19, 1946		Oct. 18, 1947	Oct. 19, 1946		Oct. 18, 1947	Oct. 19, 1946		Oct. 18, 1947	Oct. 19, 1946	
NEW ENGLAND												
Maine	1	7	1	-------	-------	0	2	57	7	0	1	1
New Hampshire	0	0	0	-------	-------	0	-------	-------	1	0	0	0
Vermont	0	0	0	-------	-------	0	1	83	20	0	0	0
Massachusetts	5	21	6	-------	-------	0	20	81	96	2	2	3
Rhode Island	1	0	2	-------	-------	0	-------	8	0	1	0	1
Connecticut	0	1	0	2	-------	1	5	11	11	0	0	2
MIDDLE ATLANTIC												
New York	19	22	16	[1] 4	[1] 3	[1] 3	63	111	93	4	2	16
New Jersey	1	1	1	2	2	3	58	16	16	2	1	4
Pennsylvania	6	15	9	(2)	[2] 1	[2] 1	27	134	105	4	4	9
EAST NORTH CENTRAL												
Ohio	7	24	17	-------	-------	6	17	40	22	2	5	5
Indiana	17	9	9	7	2	2	8	3	5	0	1	1
Illinois	4	6	6	4	5	6	78	12	16	3	3	5
Michigan [3]	2	5	11	3	-------	0	128	23	35	1	2	4
Wisconsin	0	8	2	14	7	7	26	47	34	0	3	2
WEST NORTH CENTRAL												
Minnesota	3	6	10	-------	-------	0	53	-------	8	0	2	2
Iowa	1	4	4	1	-------	0	5	2	4	2	3	0
Missouri	2	16	5	4	3	1	-------	1	3	2	3	3
North Dakota	0	0	1	1	1	2	4	1	1	0	0	0
South Dakota	0	2	4	-------	-------	0	21	-------	2	0	0	0
Nebraska	0	5	0	4	6	1	18	4	4	0	0	0
Kansas	5	10	4	1	-------	2	3	4	4	0	1	0
SOUTH ATLANTIC												
Delaware	0	0	0	-------	-------	0	2	3	1	1	0	0
Maryland [3]	3	5	5	1	-------	2	-------	7	5	0	1	2
District of Columbia	0	0	0	-------	-------	0	-------	1	1	0	1	1
Virginia	5	23	23	298	242	155	5	8	4	3	2	2
West Virginia	12	5	7	-------	1	3	39	-------	1	0	2	1
North Carolina	27	13	39	-------	-------	0	1	12	6	2	0	1
South Carolina	32	1	30	349	38	272	6	-------	9	0	0	2
Georgia	24	11	30	2	9	20	5	7	2	1	0	1
Florida	3	17	10	1	9	9	4	1	2	1	2	0
EAST SOUTH CENTRAL												
Kentucky	12	23	16	-------	-------	0	3	2	12	2	1	1
Tennessee	16	14	14	16	18	9	17	10	6	1	1	3
Alabama	18	15	29	10	24	24	1	4	3	1	2	2
Mississippi [3]	19	12	18	10	-------	0	1	-------	0	0	0	1
WEST SOUTH CENTRAL												
Arkansas	11	4	15	38	16	20	4	10	4	0	0	0
Louisiana	4	5	15	-------	29	0	8	3	1	0	0	0
Oklahoma	4	1	9	22	27	27	2	3	3	0	0	0
Texas	22	32	56	775	918	734	82	24	24	4	4	3
MOUNTAIN												
Montana	0	2	2	11	-------	0	68	5	5	0	0	0
Idaho	0	0	0	18	3	3	-------	-------	3	1	0	0
Wyoming	0	1	0	-------	-------	2	1	1	4	0	0	0
Colorado	7	6	6	25	25	10	7	5	8	0	1	0
New Mexico	0	0	0	1	1	1	1	27	3	0	1	0
Arizona	6	3	1	55	106	50	3	27	3	0	1	1
Utah [3]	2	1	0	-------	6	2	6	7	7	0	1	0
Nevada	0	0	0	-------	-------	0	-------	1	1	0	0	0
PACIFIC												
Washington	0	9	9	-------	-------	0	4	11	22	0	0	2
Oregon	0	1	1	2	2	7	13	18	18	0	1	1
California	14	19	21	7	6	13	62	87	87	7	8	8
Total	315	385	452	1,688	1,510	1,447	882	922	1,076	47	62	73
42 weeks	9,119	12,513	11,193	311,732	200,048	89,808	190,069	644,732	548,387	2,870	5,002	6,918
Seasonal low week [4]	(27th) July 5–11			(30th) July 26–Aug. 1			(35th) Aug. 30–Sept. 5			(37th) Sept. 13–19		
Total since low	2,822	3,885	4,039	10,219	9,851	9,735	4,567	4,647	4,828	229	336	423

[1] New York City only. [2] Philadelphia only. [3] Period ended earlier than Saturday.
[4] Dates between which the approximate low week ends. The specific date will vary from year to year.

Telegraphic morbidity reports from State health officers for the week ended Oct. 18, 1947, and comparison with corresponding week of 1946 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever		
	Week ended—		Median 1942–46	Week ended—		Median 1942–46	Week ended—		Median 1942–46	Week ended—		Median 1942–46
	Oct. 18, 1947	Oct. 19, 1946		Oct. 18, 1947	Oct. 19, 1946		Oct. 18, 1947	Oct. 19, 1946		Oct. 18, 1947 [3]	Oct. 19, 1946	
NEW ENGLAND												
Maine	0	5	1	6	15	19	0	0	0	0	0	0
New Hampshire	0	1	1	1	6	6	0	0	0	[6] 0	0	0
Vermont	0	15	3	5	8	6	0	0	0	0	0	0
Massachusetts	24	29	27	69	40	119	0	0	0	5	4	4
Rhode Island	1	6	1	3	6	6	0	0	0	0	0	0
Connecticut	2	14	12	8	27	26	0	0	0	0	1	1
MIDDLE ATLANTIC												
New York	56	63	63	79	127	131	0	0	0	2	5	9
New Jersey	7	12	12	27	29	34	0	0	0	5	1	2
Pennsylvania	28	5	7	65	106	114	0	0	0	4	6	6
EAST NORTH CENTRAL												
Ohio	78	32	23	71	143	156	0	0	0	0	4	4
Indiana	6	29	7	25	52	52	0	0	0	0	5	1
Illinois	25	99	42	44	86	97	0	0	0	2	2	2
Michigan [5]	23	71	14	50	112	108	0	1	0	2	4	3
Wisconsin	7	61	16	29	46	70	0	0	0	0	1	1
WEST NORTH CENTRAL												
Minnesota	5	64	14	39	25	39	0	0	0	1	1	0
Iowa	6	25	13	17	15	31	0	0	0	2	3	1
Missouri	3	57	13	17	17	39	0	1	0	2	8	3
North Dakota	0	24	1	5	2	9	0	0	0	0	0	0
South Dakota	10	11	0	3	5	5	0	0	0	1	1	0
Nebraska	6	37	5	2	16	13	0	0	0	0	0	0
Kansas	2	70	14	22	23	41	1	0	0	1	0	1
SOUTH ATLANTIC												
Delaware	1	2	2	0	2	4	0	0	0	0	0	1
Maryland [5]	7	5	5	13	11	37	0	0	0	1	1	1
District of Columbia	1	1	1	18	4	9	0	0	0	0	0	0
Virginia	6	5	5	20	39	63	0	0	0	8	3	4
West Virginia	11	3	3	33	86	86	0	0	0	4	2	2
North Carolina	[6] 12	13	11	18	17	95	0	0	0	0	1	1
South Carolina	3	1	1	6	1	10	0	0	0	1	1	1
Georgia	4	11	6	15	14	31	0	0	0	3	0	3
Florida	13	9	1	5	7	7	0	0	0	0	4	2
EAST SOUTH CENTRAL												
Kentucky	5	1	3	32	15	47	0	0	0	2	2	4
Tennessee	8	8	3	36	31	57	0	0	0	2	1	4
Alabama	0	7	2	14	19	24	0	0	0	0	3	2
Mississippi [3]	2	8	3	5	12	15	0	1	0	0	6	2
WEST SOUTH CENTRAL												
Arkansas	1	13	2	2	5	12	0	0	0	0	2	2
Louisiana	1	7	3	4	3	9	0	0	0	6	4	3
Oklahoma	[6] 2	16	9	17	6	15	0	0	0	[6] 4	1	1
Texas	4	18	16	38	29	47	0	0	0	2	9	13
MOUNTAIN												
Montana	0	2	1	30	2	8	0	0	0	1	0	0
Idaho	[6] 13	1	1	9	9	9	0	0	0	2	0	0
Wyoming	0	0	0	5	3	3	0	0	0	1	0	0
Colorado	2	15	3	15	14	21	0	0	0	1	1	2
New Mexico	0	4	3	4	9	9	0	0	0	1	2	3
Arizona	1	1	1	2	4	6	0	0	0	1	1	1
Utah [3]	1	5	5	1	15	10	0	0	0	0	0	0
Nevada	0	0	0	0	1	1	0	0	0	0	0	0
PACIFIC												
Washington	7	33	15	21	16	37	0	0	0	0	0	1
Oregon	4	6	6	26	13	18	0	0	0	1	0	0
California	17	51	46	52	93	116	0	0	0	1	10	5
Total	415	976	618	1,028	1,386	2,089	1	3	5	69	100	108
42 weeks	[6] 8,863	21,662	11,463	67,801	94,441	111,119	152	300	329	[6] 3,259	3,464	4,683
Seasonal low week [4]	(11th)	Mar. 15-21		(32nd)	Aug. 9-15		(35th)	Aug. 30-Sept. 5		(11th)	Mar. 15-21	
Total since low	[6] 8,251	21,195	11,066	5,698	8,146	12,035	5	21	22	[6] 2,774	2,989	3,867

[3] Period ended earlier than Saturday.

[4] Dates between which the approximate low week ends. The specific date will vary from year to year.

[5] Including paratyphoid fever reported separately, as follows: Massachusetts 2 (salmonella infection); New Jersey 2; Minnesota 1; Virginia 1; South Carolina 1; Georgia 2; Colorado 1; Oklahoma 25 (delayed reports).

[6] Corrections (deducted from cumulative totals): Poliomyelitis, North Carolina week ended August 16, 6 cases (instead of 7); Idaho week ended September 27, 16 cases (instead of 26); typhoid fever, New Hampshire week ended September 6, 0 cases (instead of 1). Delayed reports (included in cumulative totals only): Oklahoma, poliomyelitis 5 cases, paratyphoid fever 25 cases.

Telegraphic morbidity reports from State health officers for the week ended Oct. 18, 1947, and comparison with corresponding week of 1946 and 5-year median—Con.

Division and State	Whooping cough			Week ended October 18, 1947							
	Week ended—		Median, 1942–46	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	Oct. 18, 1947	Oct. 19, 1946		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	17	---	12	---	---	---	---	---	---	---	---
New Hampshire	1	1	1	---	---	---	---	---	---	---	---
Vermont	45	6	19	---	---	---	---	---	---	---	2
Massachusetts	83	118	118	---	3	---	---	---	---	---	---
Rhode Island	27	18	18	---	---	---	---	---	---	---	---
Connecticut	64	25	46	1	---	---	---	---	---	---	1
MIDDLE ATLANTIC											
New York	134	126	234	10	3	---	1	1	---	---	5
New Jersey	117	99	104	---	---	---	---	---	---	---	---
Pennsylvania	178	118	126	---	---	---	---	---	---	---	3
EAST NORTH CENTRAL											
Ohio	174	60	92	---	---	---	---	---	1	---	3
Indiana	35	9	17	1	1	1	3	---	---	---	3
Illinois	73	78	83	2	---	---	3	---	---	---	13
Michigan [8]	115	217	212	---	2	---	---	---	---	---	3
Wisconsin	113	164	161	---	---	---	1	---	---	---	7
WEST NORTH CENTRAL											
Minnesota	65	7	38	5	1	---	---	---	---	---	1
Iowa	19	3	6	---	---	---	---	---	---	---	13
Missouri	10	7	12	---	---	---	---	---	---	---	---
North Dakota	23	---	3	---	---	---	---	---	---	---	---
South Dakota	---	---	1	---	---	---	---	---	---	---	2
Nebraska	5	1	4	---	---	---	---	---	---	---	2
Kansas	35	14	14	---	---	---	1	---	1	---	9
SOUTH ATLANTIC											
Delaware	---	6	3	---	---	---	---	---	---	---	---
Maryland [8]	88	24	48	---	---	1	---	---	---	---	---
District of Columbia	24	7	4	---	---	---	---	---	---	---	---
Virginia	20	71	33	---	---	189	---	1	---	---	---
West Virginia	1	22	14	---	---	---	---	---	---	---	---
North Carolina	46	34	48	---	1	---	---	---	---	2	1
South Carolina	52	1	26	---	10	---	1	---	---	1	1
Georgia	6	6	11	1	8	---	---	1	1	5	3
Florida	29	9	6	---	---	---	---	1	---	4	2
EAST SOUTH CENTRAL											
Kentucky	74	15	22	1	---	---	---	---	---	2	---
Tennessee	40	9	24	2	---	6	1	---	---	2	6
Alabama	25	2	10	---	---	---	---	---	---	4	---
Mississippi [8]	11	---	0	2	1	---	---	---	---	---	---
WEST SOUTH CENTRAL											
Arkansas	22	9	10	1	15	---	---	1	8	---	1
Louisiana	7	7	2	2	---	---	1	---	---	5	2
Oklahoma	67	---	4	5	---	---	---	1	2	1	2
Texas	153	93	97	14	230	29	---	---	2	6	3
MOUNTAIN											
Montana	11	4	14	---	---	---	---	---	---	---	---
Idaho	2	---	1	---	---	---	---	---	---	---	1
Wyoming	14	1	4	1	---	---	---	---	---	---	---
Colorado	68	9	15	---	---	---	1	---	2	---	10
New Mexico	10	5	5	---	5	6	---	---	---	---	---
Arizona	9	41	11	---	---	22	---	---	---	---	---
Utah [8]	4	6	7	---	---	---	---	---	---	---	---
Nevada	---	---	0	---	---	---	---	---	1	---	---
PACIFIC											
Washington	13	12	14	3	---	---	---	---	---	---	3
Oregon	13	8	8	1	---	---	---	---	---	---	---
California	77	67	110	1	6	---	3	---	---	---	3
Total	2,219	1,539	1,893	53	286	254	16	6	18	32	105
Same week: 1946	1,539	---	---	34	164	111	14	2	10	64	162
Median, 1942–46	1,893	---	---	39	291	124	14	1	4	110	[7] 126
42 weeks: 1947	128,972	---	---	2,381	12,948	8,355	522	532	1,187	1,668	5,075
1946	80,438	---	---	1,958	13,503	5,469	529	546	761	2,888	4,235
Median, 1942–46	102,802	---	---	1,570	13,705	6,591	542	441	681	3,479	[7] 4,052

[8] Period ended earlier than Saturday.
[7] 2-year average, 1945–46.

Anthrax: New York 1, California 1. Delayed reports: Arkansas week ended Sept. 20, 1 case.
Psittacosis: California 2 cases (laboratory infection).
Territory of Hawaii, week ended Oct. 18, 1947: Bacillary dysentery 3, measles 1, typhoid fever 1, paratyphoid fever 1, scarlet fever 1, undulant fever 1, endemic typhus fever 1, whooping cough 11.

WEEKLY REPORTS FROM CITIES [1]

City reports for week ended Oct. 11, 1947

This table lists the reports from 86 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.

Division, State, and City	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	0	----	0	----	0	1	0	2	0	0	6
New Hampshire:												
Concord	0	0	----	0	----	0	0	0	0	0	0	----
Vermont:												
Barre	0	0	----	0	----	0	0	0	0	0	0	----
Massachusetts:												
Boston	2	0	----	0	21	2	10	12	9	0	0	13
Fall River	0	0	----	0	----	0	0	0	0	0	0	4
Springfield	0	0	----	0	----	0	2	0	1	0	0	4
Worcester	1	0	----	0	----	0	9	1	4	0	0	11
Connecticut:												
Bridgeport	0	0	----	0	----	0	0	0	1	0	0	----
Hartford	0	0	1	0	3	0	0	1	2	0	0	4
New Haven	0	0	----	0	----	0	0	0	2	0	0	24
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	----	0	----	0	4	3	2	0	0	10
New York	4	0	2	1	22	1	49	14	27	0	1	64
Rochester	0	0	----	0	----	0	5	8	6	0	0	5
Syracuse	0	0	----	0	----	0	2	1	2	0	0	17
New Jersey:												
Camden	0	0	----	0	----	0	3	0	1	0	0	----
Newark	0	0	----	0	1	0	4	0	2	0	0	29
Trenton	0	0	----	0	----	0	3	1	0	0	0	1
Pennsylvania:												
Philadelphia	4	1	----	0	6	3	15	2	10	0	0	51
Pittsburgh	1	0	1	1	1	2	3	4	8	0	0	53
Reading	0	0	----	0	1	0	3	0	1	0	1	3
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	0	0	----	1	----	1	2	4	4	0	0	7
Cleveland	1	0	----	0	1	2	2	19	10	0	0	53
Columbus	2	0	----	0	5	0	1	3	4	0	0	19
Indiana:												
Fort Wayne	0	0	----	0	----	0	3	2	2	0	0	----
Indianapolis	2	0	1	0	----	1	4	3	8	0	2	13
South Bend	0	0	----	0	----	0	0	0	0	0	0	----
Terre Haute	0	0	----	0	2	0	1	0	0	0	0	----
Illinois:												
Chicago	0	0	----	0	21	0	17	10	10	0	0	31
Michigan:												
Detroit	0	0	----	0	3	0	10	4	23	0	0	66
Flint	0	0	----	0	----	0	4	2	1	0	0	----
Grand Rapids	0	0	----	0	2	0	1	2	0	0	1	10
Wisconsin:												
Kenosha	0	0	----	0	----	0	0	0	1	0	0	1
Milwaukee	0	0	----	0	3	1	1	1	0	0	0	25
Racine	0	0	----	0	1	0	1	0	2	0	0	1
Superior	0	0	----	0	----	0	0	0	0	0	0	----
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	----	0	6	0	2	0	4	0	0	42
Minneapolis	1	0	----	0	24	0	4	0	9	0	0	16
St. Paul	0	0	----	0	2	0	3	0	1	0	0	25
Missouri:												
Kansas City	0	0	----	0	----	0	4	2	2	0	0	3
St. Joseph	0	0	----	0	----	0	0	0	0	0	0	----
St. Louis	0	1	1	0	----	0	5	1	2	0	0	3

[1] In some instances the figures include nonresident cases.

City reports for week ended Oct. 11, 1947—Continued

Division, State, and City	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								
WEST NORTH CENTRAL—continued												
Nebraska:												
Omaha	0	0	---	0	---	0	1	2	2	0	0	---
Kansas:												
Topeka	0	0	---	0	---	0	0	0	2	0	0	6
Wichita	0	0	---	0	1	0	6	1	0	0	0	4
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	---	0	1	0	0	0	2	0	0	3
Maryland:												
Baltimore	0	0	2	2	1	0	6	0	3	0	0	75
Cumberland	0	0	---	0	---	0	0	0	1	0	0	1
Frederick	0	0	---	0	---	0	0	0	0	0	0	---
District of Columbia:												
Washington	0	0	---	0	4	0	8	4	12	0	0	24
Virginia:												
Lynchburg	0	0	---	0	---	0	3	2	0	0	0	1
Richmond	0	0	---	0	---	0	1	1	0	0	0	1
Roanoke	0	0	---	0	---	0	0	0	1	0	0	---
West Virginia:												
Charleston	0	0	---	0	---	0	0	0	0	0	0	---
Wheeling	0	0	---	0	---	0	2	0	0	0	0	---
North Carolina:												
Raleigh	0	0	---	0	---	0	0	0	0	0	0	1
Wilmington	1	0	---	0	---	0	0	0	0	0	0	1
Winston-Salem	0	0	---	0	1	0	1	2	2	0	0	---
South Carolina:												
Charleston	0	0	1	0	---	0	0	0	0	0	0	1
Georgia:												
Atlanta	0	0	---	0	---	0	0	0	5	0	1	---
Brunswick	0	0	---	0	---	0	0	0	0	0	0	---
Savannah	0	0	1	0	---	0	1	0	1	0	0	6
Florida:												
Tampa	1	0	---	0	---	1	2	0	0	0	2	1
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	---	0	1	0	1	1	2	0	0	2
Nashville	0	0	---	1	---	0	5	0	0	0	0	2
Alabama:												
Birmingham	0	0	2	0	1	0	0	0	0	0	0	1
Mobile	0	0	---	0	---	0	1	0	0	0	0	---
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	---	0	1	0	2	0	0	0	0	---
Louisiana:												
New Orleans	0	0	---	0	---	1	3	0	0	0	1	1
Shreveport	0	0	---	0	---	0	4	0	1	0	1	---
Oklahoma:												
Oklahoma City	0	0	---	0	---	0	1	0	0	0	0	2
Texas:												
Dallas	3	0	1	1	---	0	2	0	1	0	1	6
Galveston	0	0	---	0	---	0	0	0	0	0	0	---
Houston	1	0	---	0	---	0	7	0	0	0	1	1
San Antonio	1	0	---	0	---	0	4	0	1	0	0	---
MOUNTAIN												
Montana:												
Billings	0	0	---	0	---	0	0	0	0	0	0	---
Great Falls	0	0	---	0	---	0	1	0	0	0	0	---
Helena	0	0	---	0	---	0	0	0	0	0	0	---
Missoula	0	0	---	0	---	0	0	0	0	0	0	---
Idaho:												
Boise	0	0	---	0	---	0	0	5	5	0	0	---
Colorado:												
Denver	0	0	2	0	1	0	2	1	10	0	0	10
Pueblo	0	0	---	0	---	0	0	1	0	0	0	2

City reports for week ended Oct. 11, 1947—Continued

Division, State, and City	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								
PACIFIC												
Washington:												
Seattle	1	0	-----	0	2	0	2	3	1	0	0	1
Spokane	0	0	-----	0	2	0	0	3	0	0	0	3
Tacoma	0	0	-----	0	-----	0	0	0	1	0	0	9
California:												
Los Angeles	3	0	1	0	8	1	1	6	13	0	0	26
Sacramento	0	0	-----	0	3	0	1	0	0	0	0	2
Total	29	2	16	7	152	16	246	132	229	0	12	807
Corresponding week, 1946[1]	71	-----	32	10	126	-----	245	-----	269	0	7	449
Average, 1942–46[1]	78	-----	45	[2] 11	[3] 230	-----	[2] 258	-----	421	0	21	617

[1] Exclusive of Oklahoma City.
[2] 3-year average, 1944–46.
[3] 5-year median, 1942–46.

Dysentery, amebic.—Cases: Boston 1; New York 2; New Orleans 2; Los Angeles 1.
Dysentery, bacillary.—Cases: Worcester 2; New Orleans 1.
Dysentery, unspecified.—Cases: Baltimore 3.
Rocky Mountain spotted fever.—Cases: New York 1; Baltimore 1.
Tularemia.—Cases: Atlanta 1.
Typhus fever, endemic.—Cases: Atlanta 1; New Orleans 2; Shreveport 1; Houston 1; San Antonio 1; Los Angeles 1.

Rates (annual basis) per 100,000 population, by geographic groups, for the 86 cities in the preceding table (latest available estimated population, 33,328,700)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis 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	8.9	0.0	3.6	0.0	71	6.0	65.5	41.7	63	0.0	0.0	197
Middle Atlantic	4.2	0.5	1.4	0.9	14	2.8	42.1	15.3	27	0.0	0.9	108
East North Central	3.1	0.0	0.6	0.6	23	3.1	28.8	30.7	40	0.0	1.8	139
West North Central	2.0	2.0	2.0	0.0	66	0.0	50.3	12.1	44	0.0	0.0	199
South Atlantic	3.3	0.0	6.5	3.3	11	1.6	39.2	14.7	44	0.0	4.9	188
East South Central	0.0	0.0	11.8	5.9	12	0.0	41.3	5.9	12	0.0	0.0	30
West South Central	12.7	0.0	2.5	2.5	3	2.5	58.4	0.0	8	0.0	10.2	25
Mountain	0.0	0.0	21.1	0.0	11	0.0	31.6	73.8	158	0.0	0.0	126
Pacific	8.3	0.0	2.1	0.0	31	2.1	8.3	25.0	31	0.0	0.0	85
Total	4.5	0.3	2.5	1.1	24	2.5	38.6	20.7	36	0.0	1.9	127

FOREIGN REPORTS

CANADA

Provinces.—Communicable diseases—Week ended September 27, 1947.—During the week ended September 27, 1947, 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		3		16	33	3	8	37	31	131
Diphtheria		1		15	2			2		20
Dysentery:										
Amebic						2				2
Bacillary				5						5
Encephalitis, infectious						5	1			6
German measles					5			5	2	12
Influenza		25			8	2			2	37
Measles		1	1	16	20	3	11	21	19	92
Meningitis, meningococcus						1	2			3
Mumps		14		11	149	7	5	3	29	218
Poliomyelitis		8		4	75	17	11	3	14	132
Scarlet fever		2	2	30	22	2	1	1	4	64
Tuberculosis (all forms)		5	8	79	17	61	10	39	33	252
Typhoid and paratyphoid fever		1	2	5				1		9
Undulant fever				1				1		2
Venereal diseases:										
Gonorrhea	9	12	12	131	98	33	28	58	94	475
Syphilis	1	4	3	86	59	10	10	10	53	236
Other forms									5	5
Whooping cough				40	45	21		20	26	152

CUBA

Habana—Communicable diseases—4 weeks ended September 27, 1947.—During the 4 weeks ended September 27, 1947, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths
Diphtheria	16	1
Malaria	4	
Measles	5	
Tuberculosis	7	2
Typhoid fever	6	

Provinces—Notifiable diseases—4 weeks ended September 27, 1947.—During the 4 weeks ended September 27, 1947, cases of certain notifiable diseases were reported in the provinces of Cuba, as follows:

Disease	Pinar del Rio	Habana [1]	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cancer	5	15	6	25	3	9	63
Chickenpox		1					1
Diphtheria		23	3		3	1	30
Hookworm disease		7			1		8
Leprosy		4					4
Malaria	10	5	1	9	5	7	37
Measles	1	6			1		8
Poliomyelitis		1			2	1	4
Tuberculosis	11	26	19	32	28	27	143
Typhoid fever	8	12	9	19	11	29	88
Typhus fever (murine)						1	1
Whooping cough		27			3		30
Yaws						1	1

[1] Includes the city of Habana.

FINLAND

Notifiable diseases—August 1947.—During the month of August 1947, cases of certain notifiable diseases were reported in Finland, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	12	Paratyphoid fever	300
Diphtheria	441	Poliomyelitis	31
Dysentery	13	Scarlet fever	87
Gonorrhea	1,677	Syphilis	342
Malaria	2	Typhoid fever	42

JAMAICA

Notifiable diseases—4 weeks ended September 27, 1947.—During the 4 weeks ended September 27, 1947, cases of certain notifiable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingstons	Other localities	Disease	Kingston	Other localities
Chickenpox	1	5	Scarlet fever	1	
Diphtheria		2	Tuberculosis	62	64
Dysentery	1	2	Typhoid fever	23	107
Leprosy		1	Typhus fever (murine)	2	
Poliomyelitis		1			

JAPAN

Notifiable diseases—4 weeks ended September 27, 1947, and accumulated totals for the year to date.—For the 4 weeks ended September 27, 1947, and for the year to date, certain notifiable diseases were reported in Japan as follows:

Disease	4 weeks ended Sept. 27, 1947		Total reported for the year to date	
	Cases	Deaths	Cases	Deaths
Diphtheria	1,433	67	21,581	1,817
Dysentery	7,344	1,393	34,594	6,174
Encephalitis, Japanese B	[1] 125	[1] 65	[2] 198	[1] 94
Gonorrhea	18,215	----	159,031	----
Influenza	112	----	[3] 2,490	----
Malaria	1,231	3	10,276	20
Measles	3,234	----	457,542	----
Meningitis, epidemic	186	57	3,036	973
Paratyphoid fever	685	41	3,836	209
Pneumonia	4,350	----	[3] 95,438	----
Scarlet fever	155	3	2,012	47
Smallpox	6	0	382	38
Syphilis	12,681	----	107,836	----
Tuberculosis	33,236	----	212,958	----
Typhoid fever	2,767	294	14,442	1,669
Typhus fever	12	1	1,006	82
Whooping cough	10,028	----	[3] 117,667	----

[1] Suspected.
[2] Suspected; diagnosis confirmed in 7 cases.
[3] For the period Mar. 30 to Sept. 27, 1947.

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 recent months. 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.

Cholera

China—Shanghai.—For the week ended October 4, 1947, 13 cases of cholera were reported in Shanghai, China.

Egypt.—Cholera has been reported in Egypt as follows: September 23–29, 1947, 523 cases, 156 deaths, including 6 cases with 1 death in Suez; September 30–October 6, 889 cases, 378 deaths, including 43 cases with 11 deaths in Cairo, 45 cases with 36 deaths in Ismailiya, 2 cases in Port Said, and 4 cases in Suez; October 7, 54 cases, 49 deaths, including 2 fatal cases in Ismailiya; October 8, 68 cases, 38 deaths, including 1 case and 2 deaths in Ismailiya; October 9, 141 cases, 72 deaths, including 1 death in Ismailiya; October 10, 176 cases, 67 deaths; October 11, 221 cases, 105 deaths, including 6 cases in Cairo, 1 case with 1 death in Ismailiya, and 1 case in Port Said.

India (Portuguese).—For the week ended September 20, 1947, 28 cases of cholera with 3 deaths were reported in Portuguese India.

Smallpox

Angola.—For the month of August 1947, 41 cases of smallpox (including alastrim) were reported in Angola.

Ecuador.—For the month of September 1947, 432 cases of smallpox were reported in Ecuador. For the week ended October 11, 1947, 5 cases of smallpox were reported in Bahia and 29 cases of smallpox (including alastrim) with 2 deaths were reported in Guayaquil.

Paraguay.—For the month of September 1947, 114 cases of smallpox were reported in Paraguay.

Portugal—Lisbon.—Smallpox has been reported in Lisbon, Portugal, as follows: Weeks ended—September 20, 1947, 13 cases; September 27, 8 cases.

Yellow Fever

Sierra Leone—Freetown.—On October 12, 1947, 1 case of suspected yellow fever with 1 death was reported in Freetown, Sierra Leone.

DEATHS DURING WEEK ENDED OCT. 11, 1947

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

	Week ended Oct. 11, 1947	Corresponding week, 1946
Data for 93 large cities of the United States:		
Total deaths	9,175	8,585
Median for 3 prior years	8,390	
Total deaths, first 41 weeks of year	377,017	371,107
Deaths under 1 year of age	702	743
Median for 3 prior years	655	
Deaths under 1 year of age, first 41 weeks of year	30,381	26,643
Data from industrial insurance companies:		
Policies in force	67,094,946	67,300,227
Number of death claims	10,557	11,206
Death claims per 1,000 policies in force, annual rate	8.2	8.7
Death claims per 1,000 policies, first 41 weeks of year, annual rate	9.3	9.6