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THE TUBERCULOSTATIC ACTION OF STREPTOTHRICIN AND STREPTOMYCIN WITH SPECIAL REFERENCE TO THE ACTION OF STREPTOMYCIN ON THE CHORIOALLANTOIC MEMBRANE OF THE CHICK EMBRYO [1]

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Among the most recent of the tuberculostatic substances to be isolated from certain species of the actinomycetes are streptothricin obtained from *Actinomyces lavendulae* (*1*), and streptomycin produced by *Actinomyces griseus* (*2*). These two closely related substances (*3*) differ both in toxicity to animals (*4*, *5*, *6*) and in their tuberculostatic action on the human tubercle bacillus of the H 37 strain (*7*, *8*).

Using Long's synthetic medium and short periods of incubation, Woodruff and Foster (*9*) obtained inhibition in the growth of *Mycobacterium tuberculosis* (hominis 607) cultures with 1.0 unit per cc. or 100 units percent of streptothricin. In the present report we present the results of experiments (*a*) *in vitro* with streptothricin and streptomycin; [2] (*b*) on toxicity of the two drugs to the developing chick embryo; and (*c*) the tuberculostatic action of streptomycin as determined by the extent of tubercle development after the inoculation of the drug-bacillary suspension on the chorioallantoic membrane.

TUBERCULOSTATIC ACTION IN VITRO

The comparative tuberculostatic activity of streptomycin and streptothricin upon the human tubercle bacillus, A 27 strain, was studied *in vitro* in Kirchner's medium. The effects of various concentrations upon the growth of the pellicle were studied in triplicate and an average obtained for each concentration. Growth was

[1] From the Division of Physiology, National Institute of Health.

[2] The hydrochlorides of streptothricin and streptomycin were received through the courtesy of Merck & Co., Rahway, N. J.

evaluated from 0 to 4; 1 representing approximately three times the area of the original explant; 1.5 representing one-quarter of the surface of the culture medium; 2.0, half the surface of the culture medium; 3.0, three-quarters of the surface, and 4.0, the whole surface of the medium. Weekly observations were made on the comparative amount of growth and the experiments were terminated from 4 to 6 weeks after the beginning of incubation when the growth of the control cultures covered all or nearly all of the surface.

STREPTOTHRICIN

Two lots of streptothricin were used, the first having a potency of 370 units per milligram and the second 400 units per milligram.[3] In all experiments dilutions were expressed in units. Concentrations from 100 units percent to 2,500 units percent were used (table 1). Marked

TABLE 1.—*Tuberculostatic effect of streptothricin and streptomycin in Kirchner's medium*

Drug (units percent)	Average growth of A 27 strain from 3 flasks (evaluated from 0.0 to 4.0)		
	Streptothricin	Streptomycin	
	Lot 1, 370 units per mg. Lot 2, 400 units per mg.	Lot 1, 333 units per mg. Lot 4, 350 units per mg.	Lot 2, 100 units per mg. Lot 3, 120 units per mg.
6		4.0 (4)	3.6 (2, 3).
12		3.8 (4)	3.1 (2, 3).
25		2.1 (1, 4)	3.2 (2, 3).
50		1.2 (1, 4)	2.0 (2, 3).
100	4.0 (1)[1]	0.0 (1, 4)	1.1 (2, 3).
150		0.0 (4)	0.7 (3).
200	3.7 (1)	0.0 (4)	
250	2.1 (2)	0.0 (4)	0.0 (3).
500	1.6 (2)		
1,000	1.3 (2)		
1,500	1.2 (2)		
2,000	0.5 (1, 2)		
2,500	0.0 (2)		
Control	4.0	3.2	3.5.

[1] Figures in parentheses indicate lot number.

inhibition was obtained at 500 units percent with only negligible growth at 2,000 units percent.

STREPTOMYCIN

Four separate lots of streptomycin were used, differing in degree of purity with the following "unitage": Lot 1, 333 units per milligram; lot 2, 100 units per milligram; lot 3, 120 units per milligram; lot 4, 350 units per milligram. In all experiments with the various samples, dilutions (as with streptothricin) were expressed in units percent. The effect of dilutions between 6 and 250 units percent were studied in triplicate and the average recorded for each concentration.

[3] The unit has been defined as the amount of activity which inhibits the growth of *Bacillus coli* in 1 cc. of medium (7).

Under the experimental conditions no detectable differences were obtained between the 2 highly refined lots 1 and 4 having 333 units per milligram and 350.0 units per milligram, and between the 2 cruder preparations, lots 2 and 3 having 100 and 120 units per milligram. The average growth of the tubercle bacillus in these flasks has therefore been given in 2 groups (table 1). No inhibition could be obtained at 6 units percent; marked inhibition was attained at 50 units percent, and there was complete or nearly complete inhibition at 100 to 150 units percent. For detailed comparative analysis the average of all growth rates at the various concentrations of the 4 lots of streptomycin are shown in figure 1. At 50.0 units percent the inhibitory effect of lots 1 and 4 was greater than that of lots 2 and 3 which had a

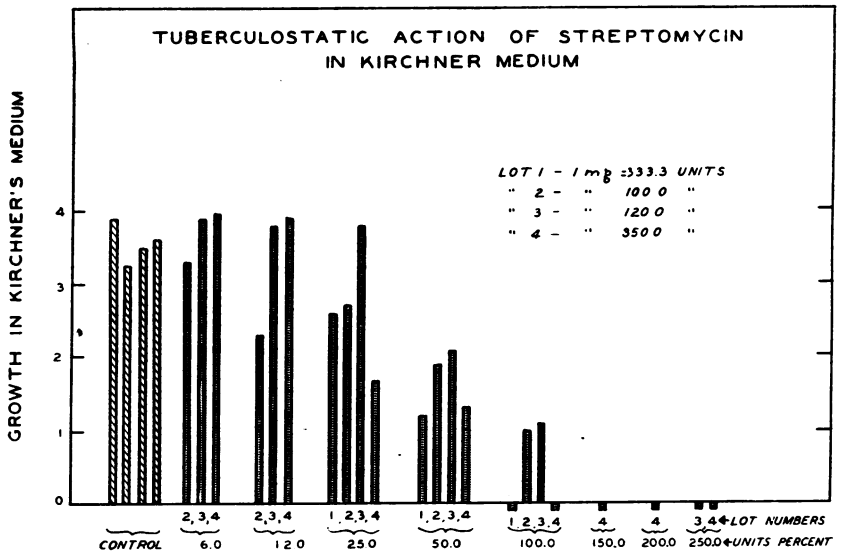

FIGURE 1.—Tuberculostatic action of streptomycin, showing the relative effectiveness of four different lots of streptomycin at various concentrations in Kirchner's medium.

lower "unitage" per milligram. Also, at 100 units percent the more highly refined preparations 1 and 4 gave complete inhibition, while 2 and 3 having only 100 and 120 units per milligram permitted some growth.

Comparing the tuberculostatic activity of streptomycin and streptothricin in Kirchner's medium, the experimental data indicate that under these conditions the more refined products of streptomycin gave complete inhibition at 100 units percent, while 2,500 units percent of streptothricin were required to give the same degree of inhibition. Lots 2 and 3 of streptomycin, of a lower degree of purification, gave complete inhibition at 250 units percent.

From the data given in table 1 it is seen that under the conditions of the experiment streptomycin is approximately 20 times more active

against the tubercle bacillus *in vitro* than streptothricin. The present data on streptomycin and streptothricin agree well with those given by Schatz et al. (*8*); the data for streptothricin are not in agreement with those given by Woodruff and Foster (*9*). The discrepancy is probably due to the fact that the latter worked with a rapidly growing strain of low virulence.

TOXICITY TO THE DEVELOPING CHICK EMBRYO

The toxicity of both streptothricin and streptomycin to the developing chick embryo was tested in various concentrations by dropping ⅛ cc. of the dissolved drug on the surface of the chorioallantoic membrane of the 8-day-old chick embryo. The dosages were measured with a 1-cc. tuberculin syringe and implanted on the surface of the membrane at the large end of the egg on the area of the membrane beneath the air sac. After 6 days the rate of survival was calculated for each concentration used. Table 2 gives the data for the two drugs obtained at the concentrations tested.

TABLE 2.—*Toxicity of streptomycin and streptothricin to the developing chick embryo*

	Streptomycin				Streptothricin			
Amount of drug (units)	Lot No.	Number of membranes inoculated	Number surviving	Percent survival	Lot No.	Number of membranes inoculated	Number surviving	Percent survival
50	1	12	11	91	1	12	9	91
100	1	12	10	83	1	11	10	90
250	1	18	15	83				
278					2	33	7	46
500	1	12	9	75	1	12	11	9
1,000	1, 3	25	17	68				
2,000	2, 3	74	7	9				
4,357	2	27	0	0				

Under the experimental conditions the differences in relative toxicity of the two drugs cannot be determined at dosage levels lower than 250 units. Dosages of 278 units of streptothricin gave 46-percent survival while dosages of 1,000 units of streptomycin gave 68-percent survival. This is approximately a ratio of toxicity of 1 to 3.6. The higher dosage of 500 units of streptothricin gave a mortality of 91 percent and it required 2,000 units of streptomycin to give the same mortality percent (table 2). Since streptothricin was approximately 4 times more toxic than streptomycin and streptomycin the more active drug *in vitro*, the latter was selected for further studies on the chick embryo.

TUBERCULOSTATIC ACTION OF STREPTOMYCIN IN THE CHORIOALLANTOIC MEMBRANE OF THE CHICK EMBRYO

In studying the inhibiting action of streptomycin upon the development of tubercles in the chorioallantois, the suspensions of bacilli

(strain A 27) were mixed with the drug varying in concentration from 1,250 to 7,500 units per cubic centimeter. The exposure of the bacilli to the action of the drug at 37.5° C. was at first limited to 24 hours. In 2 experiments a total of 50 eggs was inoculated in the experimental group and 48 in the control group; in the former group each egg received ⅕ cc., consisting of 250 units of the drug and 1 mg. of bacilli, while the latter received 1 mg. of tubercle bacilli only. In the survivors of the experimental group, the tubercles averaged 2.2 per membrane while in the control group they averaged 12.3. Analysis of the data shown in table 3 by the method of Croxton and Cowden (*10*) indicates a difference of statistical significance between the control and experimental groups.

Subsequent experiments were carried out with suspensions exposed for 48 hours' incubation to 250 and 500 units, respectively. The increase from 24 to 48 hours in time of exposure of the bacilli to the action of the drug did not greatly decrease the number of tubercles per membrane; nevertheless, in all experiments the average number of tubercles per membrane was consistently less in the experimental group than in the control group (fig. 2 and table 3). Four experi-

TABLE 3.—*Tuberculostatic action of streptomycin in the chick embryo*

Units of drug	Lot No. of drug	Number of membranes inoculated	Number surviving	Percent survival	Average number of tubercles per membrane	P value [1]
(a) (After 24 hours exposure of bacilli to drug)						
250	1	50	32	64	2.2	<0.001
Control		48	28	58	12.3	
(b) (After 48 hours exposure of bacilli to drug)						
250	1	24	12	50	.8	<.01
Control		24	15	62	9.4	
500	1	30	17	56	1.4	<.001
Control		30	13	43	8.0	
1,500	2,3	75	19	25	1.2	<.001
Control		75	30	40	29.7	

[1] Croxton, F. E. and Cowden, D. J. (*10*).

$$\sigma'_{\bar{x}_1-\bar{x}_2}=\sqrt{\frac{(N_1+N_2)(\Sigma x'^2_1+\Sigma x'^2_2)}{N_1N_2[(N_1-1)+(N_2-1)]}}$$

ments were then carried out with 48-hour exposure of the bacilli to the action of 1,500 units of streptomycin per 0.2 cc. When all the data for the latter experiments were averaged, the mean tubercles per membrane for the experimental group was 1.2, while the mean for the control group was 29.7 (table 3). By using the formula referred to, the probability value is less than 1 in 1,000. This indicates that 1,500

units of streptomycin planted with 1 mg. of tubercle bacilli markedly inhibit tubercle development in the chorioallantois.

The differences in the size of tubercles and gross appearance of the membranes of the control and experimental groups are shown in figures 2 and 3. Microscopic examination of the sectioned membranes and analysis of the data by methods previously described (*11*, *12*) verified the gross observations both as to prevalence and size of the tubercles formed.

DISCUSSION

The results of the experiments *in vitro* using Kirchner's medium indicate that streptomycin is approximately 20 times more active than streptothricin. Approximately 0.3 mg. of the more highly purified samples of streptomycin per 100 cc. has been shown to be sufficient to give complete inhibition *in vitro*. Streptomycin is, therefore, much more active than the most active sulfone, 4,4′ diaminodiphenylsulfone, which was found to be inhibitory in a concentration of 2.0 mg. percent (*13*). This, together with the demonstrated tuberculostatic action of streptomycin on the chorioallantoic membrane, suggests that it might be effective against the tubercle bacillus in higher animals. Data on the action of streptomycin in experimental tuberculosis in guinea pigs are reported in a separate communication (*14*).

SUMMARY

1. Tests *in vitro* using Kirchner's medium have been carried out to determine the tuberculostatic effect of streptomycin and streptothricin.

2. The difference in toxicity of the two drugs for the developing chick embryo has been determined.

3. The inhibitory effect of streptomycin on the development of tubercles in the chorioallantoic membrane following incubation of bacilli with the drug at 37.5° C. for 24 and 48 hours has been established.

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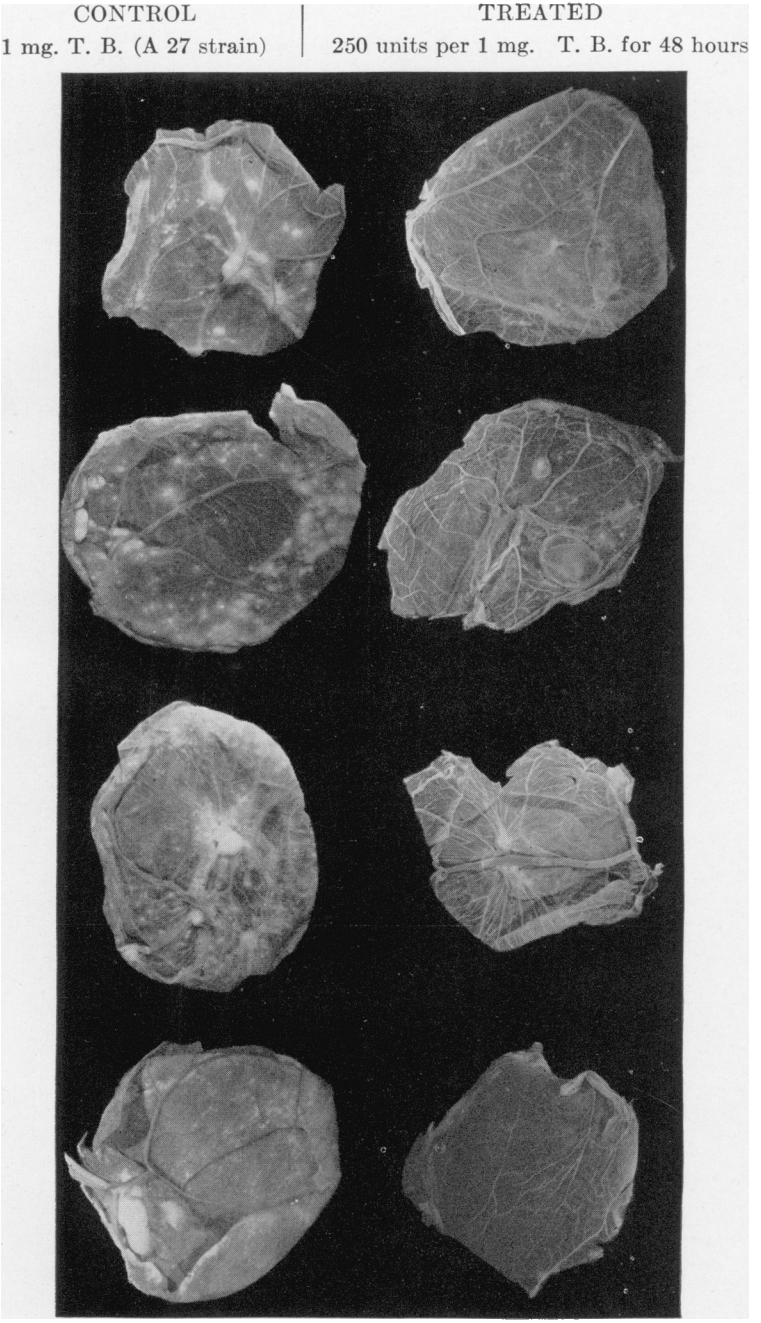

FIGURE 2.—Chorioallantoic membranes of the chick embryo, showing the difference in size and number of tubercles in the membranes of the control and experimental groups. In the experimental group the tubercle bacilli had been exposed to 250 units of streptomycin per milligram of bacilli for 48 hours before implantation.

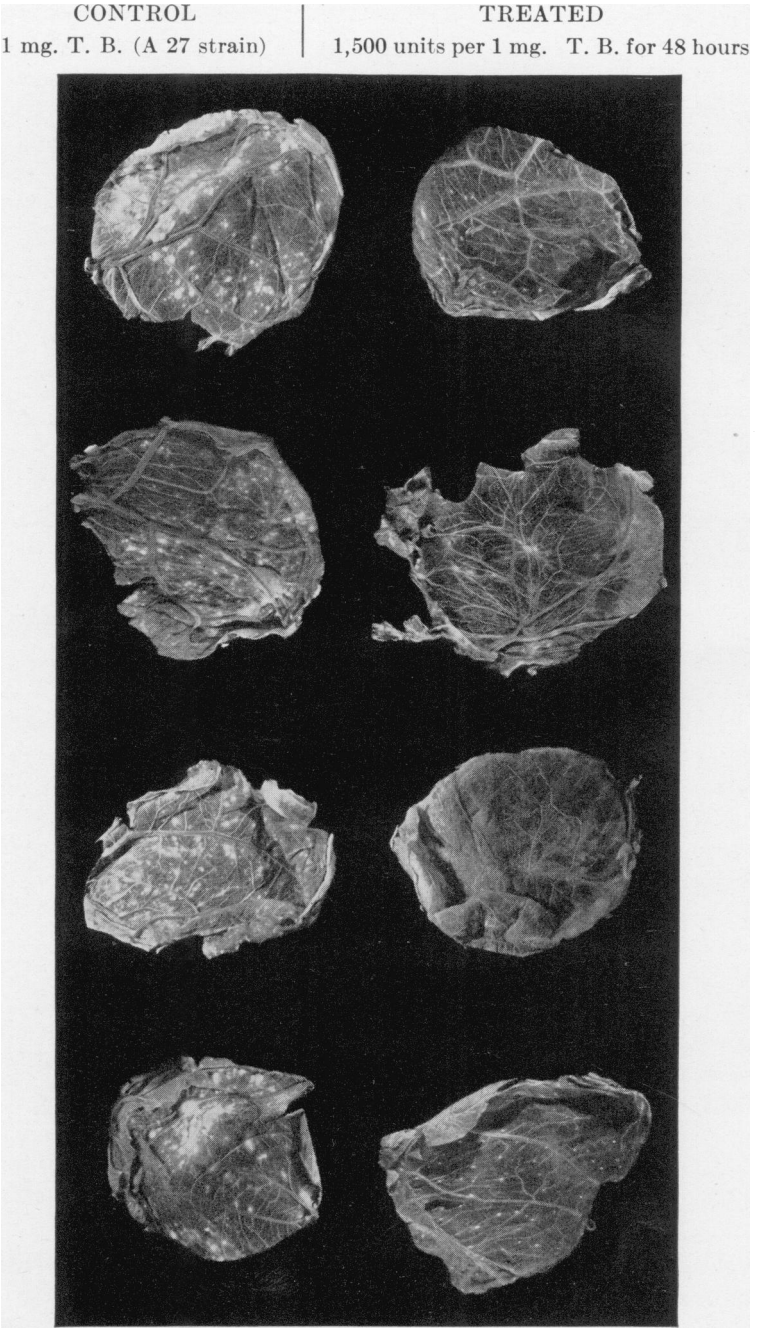

FIGURE 3.—Chorioallantoic membranes of the chick embryo, showing the difference in size and number of tubercles in the membranes of the control and experimental groups. In the experimental group the tubercle bacilli had been exposed to 1,500 units of streptomycin per milligram of bacilli for 48 hours before implantation.

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EPIDEMIOLOGICAL SIGNIFICANCE OF SEASONAL VARIATIONS IN RODENT-ECTOPARASITE DISTRIBUTION [1]

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In a classic study of the epidemiology of endemic typhus fever in the United States there was postulated the existence of a rodent reservoir of the disease with accidental transmission of infection from rats or mice to man by parasitic intermediaries such as fleas, mites, or possibly ticks (*1*). A later epidemiologic study eliminated the tick from consideration in this disease by a separation—on epidemiologic grounds confirmed and augmented by clinical observations—of a formerly undifferentiated disease complex composed of two rickettsial diseases into its components, viz, endemic typhus and Rocky Mountain spotted fever (*2, 3*).

The virus of endemic (murine) typhus was readily recovered from fleas obtained from rats at epidemiologically established typhus foci in several widely separated localities in the United States (*4, 5, 6, 7*). It was later demonstrated experimentally that all fleas, so far tested, found on rats are infectible, and transmission from animal to animal has been effected with several species (*8, 9, 10, 11, 12, 13*). A demonstrated mechanism of transmission is the rubbing of crushed infected fleas into the abraded skin (*14*). Human transmission experiments with fleas have not been successful (*15*). In animal experiments the infection was not transmitted by the mite *Echinolaelaps echidninus* (*16*), but was transmitted by the tropical rat mite *Liponyssus bacoti* (*17*) and by the rat louse *Polyplax spinulosa* (*16*).

[1] From the Division of Public Health Methods.

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One of the objectives of previously described multilocular field studies of the ectoparasites of rodents and other animals was the procurement of data that might serve as evidence, admissible and acceptable from the epidemiologic standpoint, bearing on the relative importance, under natural conditions, of the several experimentally demonstrated vectors of endemic typhus (*18*).

The purpose of the present report is to assemble some of the significant findings of the first three of these field studies to be tabulated, viz, those made in Jacksonville, Fla., Mobile, Ala., and Honolulu, T. H., with the thought that this brief compilation and analysis may serve to (*a*) test the validity of some accepted concepts, (*b*) demonstrate gaps in our knowledge that need to be bridged, and (*c*) point out anew the interdependence of the epidemiologic and laboratory phases of research in this field.

Identical techniques were used in all three cities in the collection of ectoparasites from live animals. These procedures have been described in the report on Jacksonville (*18*). Identifications were made in the Zoology Laboratory, National Institute of Health, of parasites obtained from the following numbers of rodents of the genus *Rattus:* 4,663 from Jacksonville, 6,123 from Mobile, and 6,382 from Honolulu. The numbers and classification of the parasites are given in table 1.

In the Jacksonville study it was found that only in the cases of two ectoparasites, *Xenopsylla cheopis* and *Laelaps hawaiiensis*, did the

TABLE 1.—*Ectoparasites of commensal rats*

	Jacksonville		Mobile		Honolulu	
	Number	Percent	Number	Percent	Number	Percent
Siphonaptera:						
X. cheopis	17,593	58.0	28,855	64.0	16,169	39.1
N. fasciatus	592	2.0	3,846	8.5	1	[1]
L. segnis	5,728	18.9	4,081	9.0	2	[1]
E. gallinacea	5,989	19.8	7,292	16.2	24,676	59.6
C. felis	405	1.3	992	2.2	539	1.3
All others	11	[1]	31	.1	15	[1]
Total	30,318	100.0	45,097	100.0	41,402	100.0
Acarina:[2]						
L. hawaiiensis	17,888	70.2	17,270	66.6	57,215	91.4
E. echidninus	4,334	17.0	7,330	28.3	5,031	8.1
L. bacoti	3,206	12.6	310	1.2	268	.4
All others	62	.2	1,010	3.9	57	.1
Total	25,490	100.0	25,920	100.0	62,571	100.0
Anoplura:[2]						
P. spinulosa	8,482	63.9	19,960	61.6	18,887	82.8
Hoplopleura	4,796	36.1	12,380	38.2	3,919	17.2
All others			50	.2		
Total	13,278	100.0	32,390	100.0	22,806	100.0

[1] Less than 0.05.
[2] Numbers of Acarina and Anoplura in total host population sample estimated from 10 percent of sample.

biometric constants [2] show significant positive correlation with local temperature, and, in each instance, the prevalence of the parasite corresponded to the incidence of endemic typhus fever locally and in the surrounding region. The relationship between the prevalence of these ectoparasites on their animal hosts as expressed by specific biometric constants and the incidence of typhus fever as measured by reported human cases (tables 3, 4, and 5) is illustrated in figures 1 and 2, and expressed numerically in table 2. In the table comparisons

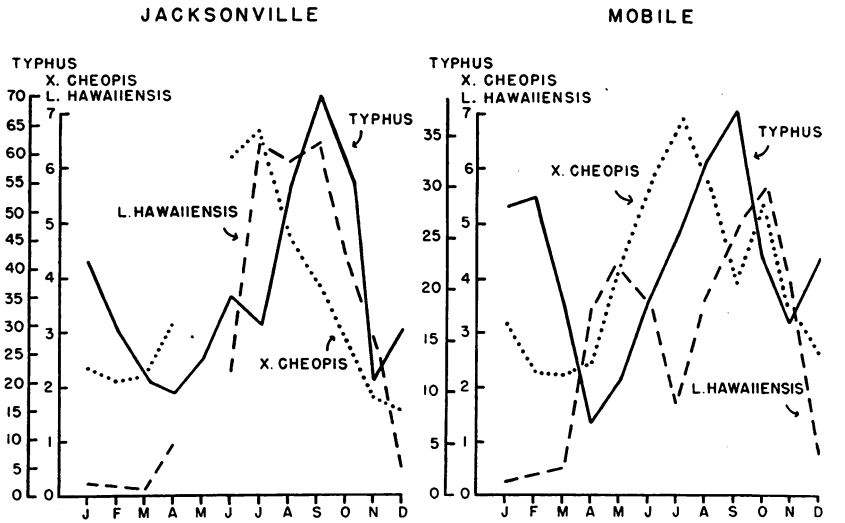

FIGURE 1.—(*a*) *X. cheopis* and *L. hawaiiensis* indices, Jacksonville, and reported typhus cases, Florida and Georgia, 1934. (*b*) *X. cheopis* and *L. hawaiiensis* indices, Mobile, and reported typhus cases, Alabama, 1934.

TABLE 2.—*Correlation coefficients (r), and corresponding probability values (P),*[1] *between monthly biometric constants of principal rodent ectoparasites and typhus fever cases reported in the same and in succeeding months*

	Jacksonville				Mobile				Honolulu			
	No case lag		1-month case lag		No case lag		1-month case lag		No case lag		1-month case lag	
	r	P	r	P	r	P	r	P	r	P	r	P
X. cheopis mean	0.244	0.470	0.614	0.045	0.036	0.912	0.694	0.012	−0.758	0.004	−0.337	0.285
X. cheopis index	.287	.392	.638	.035	.227	.479	.740	.006	−.792	.002	−.460	.133
X. cheopis infestation	.532	.092	.723	.012	.521	.083	.787	.002	−.857	<.001	−.525	.080
L. hawaiiensis mean	.426	.192	.782	.004	−.067	.836	.136	.674	.451	.141	.183	.569
L. hawaiiensis index	.682	.021	.824	.002	−.111	.732	.135	.676	.516	.086	.230	.473
L. hawaiiensis infestation	.667	.025	.708	.015	−.016	.961	.107	.741	.468	.125	.503	.096

[1] P expresses the probability of obtaining by chance an r of the given magnitude (or larger) if the true correlation is zero.

[2] The mean used here is the arithmetic mean or average number of ectoparasites per live animal host. The index is derived by the π limiting function method, described in the Jacksonville report (*18*). The infestation rate is the percentage of live animals parasitized.

are made (*a*) with typhus cases reported in the same month as that for which ectoparasite constants were calculated, and (*b*) with typhus cases reported during the following month. This use of a time lag is an endeavor to take into account the incubation period of endemic typhus fever in man plus the interval elapsing between onset of illness and date of report. Evidence as to the average or the modal length

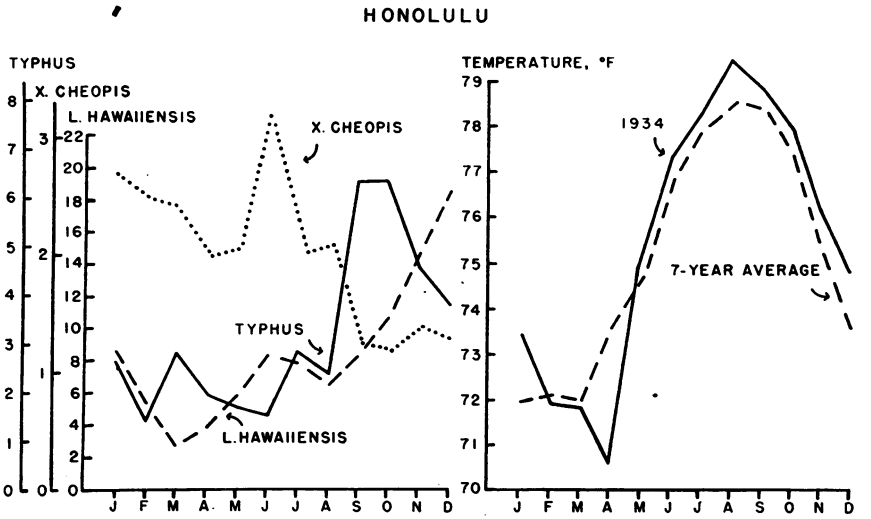

FIGURE 2.—(*a*) *X. cheopis* and *L. hawaiiensis* indices, Honolulu, and average reported typhus cases, Honolulu, 1936–42. (*b*) Temperature, Honolulu, 1934, and 7-year (1936–42) average.

NOTE.—The *X. cheopis* monthly index for June is corroborated by weekly indices of 3.4, 2.2, 3.2, and 4.4. These relatively high values may result partially from excessive trapping on certain premises. A trial mission of the most heavily trapped premises, however, fails to eliminate a definite peak in June.

TABLE 3.—*Means, indices, and infestations for principal rodent ectoparasites in Jacksonville, Fla., and number of reported cases of typhus fever in Florida and Georgia, 1934*

Month	Number of rats	*Xenopsylla cheopis*			*Laelaps hawaiiensis* [1]			Reported typhus cases	
		Mean number per rat	Index [2]	Infestation (percent)	Mean number per rat	Index [2]	Infestation (percent)	Florida	Georgia
January	709	2.75	2.41	59.5	0.21	0.21	8.4	3	38
February	675	2.50	2.11	55.4	.15	.15	10.3	0	29
March	351	2.27	2.24	57.0	.06	.06	5.7	0	20
April	512	3.48	3.01	68.9	.91	.91	24.5	1	17
May								4	20
June	263	7.30	6.20	87.8	2.26	2.26	51.6	3	32
July	484	7.47	6.51	92.2	13.39	6.38	65.6	3	27
August	455	5.32	4.73	85.3	7.48	6.12	77.6	6	48
September	313	4.12	3.89	84.7	6.83	6.42	70.7	3	67
October	320	3.41	3.26	78.4	5.02	4.75	70.0	10	45
November	302	1.98	1.90	61.9	2.31	2.31	46.0	1	19
December	279	1.58	1.56	60.2	.57	.57	32.1	1	28

[1] Biometric constants for *L. hawaiiensis* are based on a 10-percent sample of trapped live rats.

[2] The index is derived as is the mean except that excessively high counts are limited to a value π obtained as described in (*18*). In the case of *X. cheopis* the frequency distribution was reduced to a percentile basis before computing π.

TABLE 4.—*Means, indices, and infestations for principal rodent ectoparasites in Mobile, Ala., and number of reported cases of typhus fever in Alabama, 1934*

Month	Number of rats	*Xenopsylla cheopis*			*Laelaps hawaiiensis* [1]			Reported typhus cases, Alabama
		Mean number per rat	Index [2]	Infestation (percent)	Mean number per rat	Index [2]	Infestation (percent)	
January	288	4.58	3.63	70.8	0.18	0.18	14.3	28
February	1,000	2.68	2.26	52.6	.32	.32	10.0	29
March	875	2.64	2.23	50.3	.47	.47	13.6	19
April	422	4.34	2.36	44.3	3.33	3.33	42.9	7
May	411	6.09	4.11	66.7	4.17	4.17	39.0	11
June	580	7.58	5.84	76.0	3.72	3.40	27.6	19
July	271	9.38	6.86	79.0	1.74	1.74	18.5	25
August	473	6.96	5.49	80.8	4.23	3.45	46.8	33
September	504	4.41	3.87	77.2	5.02	4.80	56.9	37
October	492	6.15	5.28	79.1	7.71	5.49	55.1	23
November	453	3.99	3.56	65.8	4.84	3.71	51.1	17
December	354	2.61	2.53	55.1	.67	.67	22.2	23

[1] See footnote 1, table 3.
[2] See footnote 2, table 3.

of the former is meager, but on the basis of limited data is thought to be about 10 days; the latter is conditioned by the prominent role of the laboratory diagnoses which are not as a rule available until after the first week; in a series of 50 histories of cases in Savannah, Ga., the average interval between onset of the disease and report of the case was 12.9 days.

Because of the small number of typhus cases recognized and reported in the State of Florida in 1934, the cases reported in that year in the State of Georgia have been added to the former and the totals utilized for comparative purposes. For the same reason, in the case of Mobile the typhus cases reported in Alabama, and concentrated in the southern part of the State, have been used. In Honolulu, typhus was not reported prior to the summer of 1935; hence, an average has been taken of the cases reported for that city during the 7-year period

TABLE 5.—*Means, indices, and infestations for selected rodent ectoparasites in Honolulu, T. H., 1934, and average number of reported cases of typhus fever in Honolulu, 1936–42*

Month	Number of rats	*Xenopsylla cheopis*			*Laelaps hawaiiensis* [1]			Reported typhus cases, Honolulu, 7-year average
		Mean number per rat	Index [2]	Infestation (percent)	Mean number per rat	Index [2]	Infestation (percent)	
January	638	3.23	2.77	57.8	10.34	8.08	75.0	2.71
February	611	3.03	2.58	59.6	4.80	4.80	67.2	1.57
March	639	3.21	2.49	60.9	2.80	2.80	42.2	2.86
April	540	2.76	2.04	56.3	3.72	3.72	57.4	2.00
May	607	2.43	2.08	58.5	5.64	5.64	75.4	1.71
June	498	4.33	3.27	69.9	11.24	8.18	92.0	1.57
July	416	2.19	2.07	63.9	7.83	7.83	88.1	2.86
August	407	2.92	2.13	55.5	6.76	6.76	84.8	2.43
September	266	1.68	1.31	42.5	9.67	8.90	89.6	6.43
October	586	1.40	1.25	41.3	10.47	10.47	94.9	6.43
November	601	1.56	1.41	43.9	15.52	14.63	90.0	4.71
December	573	1.35	1.30	44.5	18.89	17.98	93.0	3.86

[1] See footnote 1, table 3.
[2] See footnote 2, table 3.

1936–42 (table 6), 1936 having been the first complete year of reporting, and 1942 the last year in which reports were issued consistently by months. It is known that in Florida during 1934 there occurred cases of unrecognized typhus fever,[3] and, in the absence of evidence to the contrary, it would seem reasonable to assume that an analogous situation obtained in Hawaii. As it is virtually axiomatic that the incidence of insect-borne diseases is directly related to the prevalance of vectors, and that vector prevalence is in turn related to climatic conditions, a graphic comparison has been made of the temperature in

TABLE 6.—*Reported typhus fever in Honolulu, 1936–42* [1]

Month	1936	1937	1938	1939	1940	1941	1942
January	0	5	2	1	1	2	8
February	0	0	1	1	3	0	6
March	7	1	1	1	3	1	6
April	0	1	0	0	5	7	1
May	1	0	3	1	1	3	3
June	0	0	2	1	3	3	2
July	3	4	3	3	1	1	5
August	3	1	3	2	2	3	3
September	7	2	4	12	2	14	4
October	12	4	5	6	1	13	4
November	7	1	8	2	4	9	2
December	2	1	7	6	2	4	5
Total	42	20	39	36	28	60	49

[1] For 1940-42, reports are designated as for Territory of Hawaii.

Honolulu in 1934 with that of the 7-year period during which typhus was systematically reported. This comparison, illustrated in figure 2, indicates a fairly close correspondence between the temperatures in the two periods. This impression is corroborated by a correlation coefficient of 0.931 ± 0.042 ($P = < 0.001$) between the two sets of temperature data.

It will be noted that statistically significant positive correlation obtains between biometric constants for *X. cheopis* in Jacksonville and reported typhus fever cases in Florida and Georgia, but only when a 1-month typhus case lag is used. The *L. hawaiiensis* index and infestation correlate significantly with typhus cases without case lag, but with a 1-month case lag this statistical significance is enhanced, and extends to the mean. Numerically the populations of the two parasites are nearly equal.

Significant correspondence between *X. cheopis* prevalence in Mobile and typhus fever in Alabama is demonstrable only with the use of the 1-month typhus case lag period. The *L. hawaiiensis* correlation is practically nil. The numerical ratio between *X. cheopis* and *L. hawaiiensis* is 1.7:1.

The findings in Honolulu are completely at variance with the foregoing. *X. cheopis* prevalence does not correspond with average typhus

[3] Personal observation of senior author.

incidence; in fact, the correlation between the two is consistently negative. Correlations of *L. hawaiiensis* with typhus are positive but do not attain statistical significance. *L. hawaiiensis* outnumbers *X. cheopis* by 3.5:1.

DISCUSSION

It is a generally accepted epidemiologic concept that variations in the size and composition of the ectoparasite population infesting the rodent population play a major role in determining the geographic and seasonal distribution of endemic typhus. Consequently, an ectoparasite may be experimentally infectible, or capable of transmitting infection, or found to be infected in nature, and yet be excluded from consideration as an important vector of the disease either because of numerical paucity or of seasonal or geographic distribution at variance from that of the disease. For example, *L. bacoti* is an experimentally proven vector, but was found in too small numbers in Mobile and in Honolulu, and in too erratic and contraseasonal a distribution in Jacksonville, to have served as an important vector in those cities during the period of the study.

Such conclusions as may be derived from the data presented above must be assessed with cognizance of certain inescapable imperfections in the materials available for analytic study. The difficult circumstances attending the execution of the large-scale study, of which this report represents a small part, were mentioned in the report on the Jacksonville study. The necessity for extrapolations, such as the utilization of morbidity reports from an area surpassing in extent that surveyed for parasites, or from a noncontemporaneous period, was largely occasioned by the fact that the clinical recognition and laboratory diagnosis of typhus were not as general at that time as they now are. With this reservation, the following statements are made.

In the light of the known infectibility of *X. cheopis*, together with the field survey findings here reported, this common ectoparasite of the commensal rats may be accepted as at least an important vector in Jacksonville and as the principal vector in Mobile. The available evidence is not adequate, however, to support any assumption that this rat flea plays an equivalent role in Honolulu. On the other hand, the suggestive correspondence to statistically significant correlation of the parasitid mite *L. hawaiiensis* with typhus fever cannot be considered as evidence of any role in transmission, since the only known observations on this mite have been limited to taxonomic studies of killed specimens. Incrimination of this mite as a vector in some localities or during certain periods would be contingent upon demonstration of its infectibility either in nature or under experimental conditions.

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FIVE-POINT NATIONAL HEALTH PROGRAM PROPOSED BY PRESIDENT TRUMAN [1]

On November 19 the President sent to the Congress a special message proposing a 5-point national health program.

The President points out that millions of our citizens do not have a full opportunity to achieve or enjoy good health; millions do not

[1] Official White House press release. The complete text of the President's message may be found in H. Doc 380, dated Nov. 19, 1945, obtainable from the Superintendent of Documents, Washington 25, D. C.

have protection against the economic effects of sickness. Even prewar, there were 31 counties in the United States each with more than 1,000 inhabitants in which there were no practicing physicians. About 1,200 counties, with some 15,000,000 inhabitants have either no local hospital or none that meets even the minimum standards of national professional associations.

Selective Service had to reject 5,000,000 young men, or one-third of those examined. An additional 3,000,000 had to be discharged or rehabilitated.

In his message, the President reviews the main problems and needs, and he submits a 5-point program for legislative action:

Recommendation 1. Construction of hospitals and related facilities.—Federal aid should be provided for construction of hospitals, health centers, and other facilities where they are needed. These are essential if doctors are to be able to furnish modern services.

Recommendation 2. Expansion of public health, maternal, and child-health services.—The existing cooperative health programs between the Federal and State Governments should be expanded with the help of increased Federal funds. All parts of the country and all groups in the population should be able to benefit from them. Expansion is especially important to prevent disease and to provide services for mothers and children. Approximately 40,000,000 persons in the United States live in communities which still lack full-time public health services.

Recommendation 3. Medical education and research.—We cannot remain satisfied with what we already know about health or disease. The opportunities for further health progress are very large. Research pays large dividends. Professional education should keep pace with progress. Federal grants in aid should assist and encourage research, so that we shall learn more about how to prevent and cure disease. Federal aid should also support more adequate professional education. Special emphasis should be paid to research on the cause, prevention, and cure of cancer and mental illnesses.

Recommendation 4. Prepayment of medical costs.—Everyone should have ready access to all necessary medical, hospital, and related services. The costs of essential medical services should not stand in the way of the patient who needs care.

A compulsory national health insurance system is proposed toward attaining this goal. It would be a system for prepayment of the costs through premiums which people could afford, and which are paid while they are well and working.

This is *not* socialized medicine.

Prepayment would relieve families of worry about medical costs and would encourage them to receive care as soon as it is needed. Thus, it would also work toward preventing serious disease.

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Patients would remain free to choose their doctors. Doctors would remain free to accept or reject patients. Hospitals would continue to manage their own services. Voluntary organizations could participate in the insurance system, either to provide services and be paid therefor, or to assist in administration, depending on their functions.

Decentralized administration would provide for needed local adjustments in fees, methods of payment, and arrangements for services.

Doctors and hospitals could expect improvement and stability of income, at the same time that patients are relieved of unexpected and burdensome costs.

Recommendation 5. Protection against loss of wages from sickness and disability.—Disability insurance would protect America's families by guaranteeing some income when they are sick or permanently disabled.

The President urged the Congress to consider such health legislation now. This 5-point program would strengthen the Nation to meet future problems. It would contribute greatly to freedom from want.

PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES

October 7–November 3, 1945

The accompanying table summarizes the prevalence of nine important communicable diseases, based on weekly telegraphic reports from State health departments. The reports from each State for each week are published in the Public Health Reports under the section "Prevalence of disease." The table gives the number of cases of these diseases for the 4 weeks ended November 3, 1945, the number reported for the corresponding period in 1944, and the median number for the years 1940–44.

DISEASES ABOVE MEDIAN PREVALENCE

Diphtheria.—For the 4 weeks ended November 3 there were 2,809 cases of diphtheria reported as compared with 1,937 for the corresponding period in 1944. The 1940–44 median is represented by the 1944 figure. Each section of the country except the Middle Atlantic contributed to the relatively high incidence of this disease. The largest increases over the preceding 5-year medians were reported from the South Atlantic and East South Central sections. For the country as a whole the current incidence is the highest during this period since 1939 when 3,219 cases were reported.

Meningococcus meningitis.—An increase of this disease is normally expected at this season of the year, but there were only 331 cases reported during the 4 weeks ended November 3 as compared with 359 cases during the preceding 4 weeks. The number of cases was about 50 percent of the incidence for the corresponding period in 1944 (627 cases); the 1940–44 median was 237 cases. The disease was still relatively high in the East North Central, West North Central, West South Central, and Pacific sections, low in the New England and South Atlantic sections, and about normal in the Middle Atlantic, East South Central, and Mountain sections.

Influenza.—A total of 8,390 cases of influenza was reported for the current 4-week period. The number was 1.6 times the 1940–44 median for this period. Of the total cases Texas reported 4,525; South Carolina, 1,766; and Virginia, 683 cases; more than 80 percent

Number of reported cases of 9 communicable diseases in the United States during the 4-week period October 7–November 3, 1945, the number for the corresponding period in 1944, and the median number of cases reported for the corresponding period, 1940–44

Division	Current period	1944	5-year median	Current period	1944	5-year median	Current period	1944	5-year median
	Diphtheria			Influenza [1]			Measles [2]		
United States	2,809	1,937	1,937	8,390	5,629	5,404	4,682	2,188	5,283
New England	32	27	25	48	70	17	698	349	851
Middle Atlantic	101	94	132	29	31	42	698	255	926
East North Central	274	165	230	162	97	187	867	224	702
West North Central	137	154	128	25	23	39	137	86	297
South Atlantic	998	418	610	2,610	1,638	1,612	235	114	191
East South Central	553	334	334	236	118	136	153	28	158
West South Central	471	482	432	4,918	3,294	2,482	188	170	170
Mountain	65	75	57	305	264	396	485	101	413
Pacific	178	188	128	57	94	157	1,221	861	632
	Meningococcus meningitis			Poliomyelitis			Scarlet fever		
United States	331	627	237	2,045	2,464	1,555	9,009	8,492	8,492
New England	18	44	31	164	136	70	540	715	715
Middle Atlantic	83	168	85	436	1,097	155	1,264	1,281	1,281
East North Central	74	154	27	520	429	319	2,133	1,966	2,347
West North Central	33	57	11	255	218	165	815	899	963
South Atlantic	27	68	39	146	341	197	1,602	1,293	1,293
East South Central	20	33	19	111	71	58	670	555	663
West South Central	29	37	8	125	38	50	683	450	350
Mountain	10	9	7	90	17	19	345	467	257
Pacific	37	57	26	198	117	103	957	866	528
	Smallpox			Typhoid and paratyphoid fever			Whooping cough [2]		
United States	16	19	36	423	407	598	7,536	6,019	10,795
New England	0	0	0	23	23	25	929	666	926
Middle Atlantic	0	0	0	71	65	76	2,288	1,335	2,856
East North Central	1	7	7	43	35	95	1,627	1,202	2,782
West North Central	5	0	7	22	18	22	191	416	679
South Atlantic	0	0	0	83	76	120	913	966	1,194
East South Central	7	1	3	66	42	63	257	149	396
West South Central	2	0	7	71	90	99	426	621	529
Mountain	0	11	2	26	27	42	259	255	292
Pacific	1	0	0	18	31	30	646	409	892

[1] Mississippi and New York excluded; New York City included.
[2] Mississippi excluded.

of the cases were reported from those three States. In other sections of the country the situation was favorable, slight or no increases over the median being reported.

Poliomyelitis.—The number of cases of poliomyelitis dropped from 3,198 during the preceding 4 weeks to 2,045 during the 4 weeks ended November 3. The number of cases was about 80 percent of the number reported for the corresponding weeks in 1944; but it was 30 percent above the 1940–44 median. The decline from the 1944 figure was due to a decrease of about 60 percent in the cases in the Middle Atlantic and South Atlantic sections; in every other region the incidence was higher than in 1944. The incidence was above the 5-year median in all sections except the South Atlantic. While the decline of this disease has been slow in some parts of the country, weekly reports indicate that a decline is in progress in all sections and may continue, since the lowest incidence of poliomyelitis is reached during the winter months.

Scarlet fever.—The number of cases of scarlet fever was slightly above the normal seasonal expectancy, 9,009 cases being reported for the current 4 weeks as compared with a 1940–44 median of 8,492 cases. The increase was largely due to an excess of cases in the South Atlantic, West South Central, Mountain, and Pacific regions. In the other 5 sections of the country the incidence either closely approximated the median or fell below it.

DISEASES BELOW MEDIAN PREVALENCE

Measles.—For the 4 weeks ended November 3 there were 4,682 cases of measles. The number was 2.1 times that reported for the corresponding period in 1944, but it was less than 90 percent of the 1940–44 median. Each geographic section of the country reported an increase over the 1944 incidence, but the most significant increase over the preceding 5-year median was reported from the Pacific section. In that section the number of cases (1,221) was almost twice the median, while in other sections the incidence either closely approximated the median or fell below it.

Smallpox.—The number of cases (16) of smallpox was the lowest on record for this period of the year. In the East South Central section, where 7 of the cases occurred, the incidence was above the seasonal expectancy, but in all other sections the incidence was either about normal or relatively low.

Typhoid and paratyphoid fever.—The number of cases (423) of typhoid fever was slightly above the incidence for the corresponding period in 1944, but it was only about 70 percent of the 1940–44 median. Several sections of the country reported slight increases over the 1944 figures, but only one section, the East South Central, reported an increase over the preceding 5-year median. The most significant decline

was reported from the East North Central section where the incidence was about 50 percent below the normal seasonal expectancy.

Whooping cough.—For the current 4-week period, 7,536 cases of whooping cough were reported, as compared with 6,017 for the corresponding period in 1944 and a 5-year median of 10,795 cases. The Middle Atlantic and East North Central sections reported the largest increases over the 1944 figures, but minor increases were reported in the New England, East South Central, and Pacific sections. The incidence in the New England section stood at the normal seasonal level, but in all other sections it was below the normal seasonal expectancy.

MORTALITY, ALL CAUSES

For the 4 weeks ended November 3 there were 35,648 deaths from all causes reported by 93 large cities to the Bureau of the Census. The average number reported for the corresponding weeks in 1942–44 was 34,893 deaths. During the second and fourth weeks of the 4-week period the numbers of deaths were 7.7 percent and 3.1 percent, respectively, above the averages for the corresponding weeks in the 3 preceding years. In the first week the increase was less, and during the third week the number of deaths was below the average. The number of deaths for the 4 weeks was only 2.2 percent more than the 3-year average.

DEATHS DURING WEEK ENDED NOVEMBER 3, 1945

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

	Week ended Nov. 3, 1945	Corresponding week, 1944
Data for 93 large cities of the United States:		
Total deaths	9,023	8,968
Average for 3 prior years	8,752	
Total deaths, first 44 weeks of year	393,890	395,193
Deaths under 1 year of age	598	671
Average for 3 prior years	644	
Deaths under 1 year of age, first 44 weeks of year	26,696	27,340
Data from industrial insurance companies:		
Policies in force	67,291,994	66,865,613
Number of death claims	12,254	12,864
Death claims per 1,000 policies in force, annual rate	9.5	10.1
Death claims per 1,000 policies, first 44 weeks of year, annual rate	10.1	10.0

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 NOVEMBER 10, 1945

Summary

A total of 330 cases of poliomyelitis was reported as compared with 390 last week, 314 for the corresponding week last year, and a 5-year (1940–44) median of 243. Decreases occurred in all of the 9 geographic areas except the East North Central and the Pacific, but slight increases occurred in 6 of the 9 States reporting 10 or more cases each, as follows (last week's figures in parentheses): *Increases*—Pennsylvania 19 (13), Illinois 31 (30), Wisconsin 53 (43), Minnesota 10 (8), Washington 13 (4), California 44 (36); *decreases*—Massachusetts 14 (20), New York 34 (41), Iowa 12 (18). The total to date is 12,672 cases, as compared with 18,202 last year and 11,622 in 1943 for the corresponding period, in which years approximately 94 percent of the yearly total had been reported.

A total of 104 cases of meningococcus meningitis was reported as compared with 88 last week, and a 5-year median of 69. Only 4 States reported more than 4 cases, as follows (last week's figures in parentheses): New York 16 (15), Pennsylvania 11 (4), Illinois 12 (7), California 12 (7). The total to date is 7,207, as compared with 14,781 and 15,796 for the corresponding periods of 1944 and 1943, respectively, and a 5-year median of 3,039.

Following the usual seasonal trend, the incidence of diphtheria declined for the second consecutive week. A total of 645 cases was reported, a larger number than reported for a corresponding week since 1939. The median for the corresponding weeks of the past 5 years is 442. The total to date is 14,751, as compared with 11,217 for the corresponding week last year and a 5-year median of 12,959.

Of the total of 2,837 cases of influenza reported for the week, 2,115 occurred in two States, Texas (1,609), and South Carolina (506). For the corresponding week last year these States reported 793 cases, or approximately 61 percent of the total of 1,309 cases reported for that week. The total to date is 88,432 as compared with 350,488 for the same period last year and a 5-year median of 176,684.

Deaths during the week in 91 large cities of the United States aggregated 8,888 as compared with 8,952 last week, 8,531 for the corresponding week last year, and a 3-year (1942–44) average of 8,563. The total to date is 399,302 as compared with 400,404 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended November 10, 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
	Nov. 10, 1945	Nov. 11, 1944		Nov. 10, 1945	Nov. 11, 1944		Nov. 10, 1945	Nov. 11, 1944		Nov. 10, 1945	Nov. 11, 1944	
NEW ENGLAND												
Maine	[2] 2	0	0	-------	-------	-------	0	0	54	1	0	0
New Hampshire	[3] 3	0	0	-------	-------	-------	0	50	12	0	0	0
Vermont	0	0	0	-------	-------	-------	0	3	3	0	0	0
Massachusetts	7	6	3	-------	-------	-------	198	105	166	3	4	2
Rhode Island	1	0	0	-------	31	-------	0	[1] 1	1	0	1	1
Connecticut	0	0	0	-------	2	2	9	12	12	1	3	3
MIDDLE ATLANTIC												
New York	10	9	16	[1] 2	[1] 2	[1] 3	80	25	127	16	21	17
New Jersey	2	6	5	5	2	2	9	12	26	3	4	3
Pennsylvania	7	9	9	3	1	1	374	25	207	11	13	8
E. NORTH CENTRAL												
Ohio	27	11	11	6	8	8	8	7	30	3	8	2
Indiana	16	4	7	21	12	12	5	6	7	2	7	1
Illinois	9	3	24	1	1	9	150	12	36	12	13	2
Michigan [2]	11	21	10	-------	2	2	112	8	93	4	11	2
Wisconsin	2	0	1	32	14	18	20	14	95	6	2	1
W. NORTH CENTRAL												
Minnesota	9	9	9	-------	-------	1	4	5	5	1	3	1
Iowa	20	7	3	4	-------	-------	2	18	20	0	1	0
Missouri	11	4	4	1	1	2	10	0	5	0	2	0
North Dakota	8	3	3	-------	-------	1	0	2	2	1	0	0
South Dakota	3	2	3	7	-------	-------	2	1	2	1	0	0
Nebraska	9	1	4	4	15	5	4	6	5	1	0	0
Kansas	1	6	2	1	-------	-------	15	5	8	0	0	0
SOUTH ATLANTIC												
Delaware	0	0	0	-------	-------	-------	0	2	1	1	1	0
Maryland [2]	14	8	11	1	4	1	3	3	9	0	3	3
District of Columbia	1	0	0	2	1	2	3	1	1	1	2	0
Virginia	31	19	25	159	175	157	5	6	23	1	2	2
West Virginia	7	4	12	64	6	6	0	24	16	0	3	1
North Carolina	68	39	58	-------	3	2	3	7	7	0	0	1
South Carolina	23	10	12	506	231	231	38	3	9	0	0	0
Georgia	36	18	24	7	22	22	8	3	4	1	0	0
Florida	2	6	5	3	2	2	1	1	1	1	5	0
E. SOUTH CENTRAL												
Kentucky	28	12	10	1	8	4	74	1	13	4	4	3
Tennessee	19	19	14	26	24	22	0	3	12	2	7	4
Alabama	18	35	28	21	16	27	1	2	12	3	5	1
Mississippi [2]	50	33	16	-------	-------	-------	-------	-------	-------	3	3	2
W. SOUTH CENTRAL												
Arkansas	22	10	15	116	21	26	15	1	5	0	0	0
Louisiana	16	18	12	37	3	3	1	1	1	0	1	1
Oklahoma	5	11	11	44	21	35	1	3	3	0	0	0
Texas	80	55	56	1,609	562	562	42	15	27	2	6	3
MOUNTAIN												
Montana	13	1	2	13	-------	1	30	2	4	0	0	0
Idaho	4	1	1	18	-------	-------	99	0	3	1	1	0
Wyoming	1	1	1	1	23	7	0	0	3	0	0	0
Colorado	5	4	16	37	19	19	82	5	20	1	0	0
New Mexico	5	5	1	6	1	1	5	0	0	0	0	0
Arizona	4	0	3	62	54	76	2	1	2	1	1	0
Utah [2]	0	0	0	4	-------	1	32	11	9	0	0	0
Nevada	0	0	0	-------	-------	-------	0	0	0	0	0	0
PACIFIC												
Washington	11	5	3	-------	-------	1	229	22	22	4	1	1
Oregon	0	4	4	1	8	7	11	25	25	0	4	0
California	24	23	23	12	14	22	223	135	41	12	11	4
Total	645	442	442	2,837	1,309	1,555	1,910	594	2,003	104	153	69
45 weeks	[3] 14,751	11,217	12,959	88,432	350,488	176,684	112,066	597,152	557,876	7,207	14,781	3,039

[1] New York City only.
[2] Period ended earlier than Saturday.
[3] Delayed reports: New Hampshire—week ended October 27, 3 cases; week ended November 3, 1 case (included in cumulative total only).

Telegraphic morbidity reports from State health officers for the week ended November 10, 1945, and comparison with corresponding week of 1944 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [4]		
	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44
	Nov. 10, 1945	Nov. 11, 1944		Nov. 10, 1945	Nov. 11, 1944		Nov. 10, 1945	Nov. 11, 1944		Nov. 10, 1945	Nov. 11, 1944	
NEW ENGLAND												
Maine	0	0	0	11	21	10	0	0	0	2	0	1
New Hampshire	1	0	0	0	2	9	0	0	0	0	0	0
Vermont	1	0	0	10	6	6	0	0	0	0	0	0
Massachusetts	14	9	4	121	145	145	0	0	0	3	1	1
Rhode Island	0	0	0	4	12	8	0	0	0	0	0	0
Connecticut	5	5	1	21	38	23	0	0	0	2	0	0
MIDDLE ATLANTIC												
New York	34	106	17	228	163	173	0	0	0	14	3	7
New Jersey	9	14	8	49	53	65	0	0	0	0	1	1
Pennsylvania	19	27	6	175	186	152	0	0	0	6	6	6
EAST NORTH CENTRAL												
Ohio	7	19	15	227	407	219	0	0	0	4	3	4
Indiana	2	0	1	63	47	53	0	0	0	0	2	1
Illinois	31	12	15	139	159	159	0	0	1	2	0	3
Michigan [3]	8	16	6	124	128	105	0	0	0	3	1	2
Wisconsin	53	2	7	68	50	115	0	0	1	0	0	0
WEST NORTH CENTRAL												
Minnesota	10	16	10	44	37	54	0	0	0	1	1	0
Iowa	12	2	2	46	43	45	0	1	0	0	0	1
Missouri	5	9	3	37	39	48	0	0	0	1	2	2
North Dakota	0	0	0	7	7	7	0	0	0	0	0	0
South Dakota	0	0	1	4	9	12	0	0	0	0	1	1
Nebraska	6	0	3	14	40	15	0	1	0	0	0	0
Kansas	1	2	2	72	79	71	0	0	0	1	1	1
SOUTH ATLANTIC												
Delaware	0	3	0	5	7	4	0	0	0	2	0	0
Maryland [3]	0	7	0	48	96	40	0	0	0	2	1	1
District of Columbia	1	0	0	16	14	14	0	0	0	0	0	0
Virginia	3	12	8	124	76	70	0	0	0	1	1	2
West Virginia	0	3	1	84	98	62	0	1	0	0	2	1
North Carolina	2	4	1	80	92	116	0	0	0	2	2	2
South Carolina	0	0	0	13	11	16	1	0	0	3	1	2
Georgia	2	0	1	22	33	32	0	0	0	1	4	4
Florida	6	1	1	0	5	5	0	0	0	1	2	2
EAST SOUTH CENTRAL												
Kentucky	1	9	6	76	49	53	0	0	0	0	2	6
Tennessee	7	2	1	51	89	89	0	0	0	1	2	3
Alabama	1	2	2	32	45	24	0	0	0	4	2	2
Mississippi [3]	2	2	2	41	20	12	0	0	0	1	5	1
WEST SOUTH CENTRAL												
Arkansas	2	0	1	18	13	9	0	0	0	6	2	5
Louisiana	4	1	0	12	14	11	0	0	0	4	2	5
Oklahoma	3	2	2	11	30	23	0	0	0	1	2	1
Texas	9	3	4	116	67	47	0	0	0	19	10	10
MOUNTAIN												
Montana	0	1	1	14	17	26	1	0	0	2	0	0
Idaho	2	1	1	7	35	11	0	0	0	0	0	1
Wyoming	0	0	0	0	10	7	0	0	0	0	0	0
Colorado	5	0	0	28	47	33	0	1	0	1	0	1
New Mexico	1	1	0	10	18	7	0	0	0	4	2	2
Arizona	1	0	0	6	11	10	0	0	0	0	5	1
Utah [3]	2	1	3	24	12	12	0	0	0	0	0	0
Nevada	0	0	0	0	3	3	0	0	0	0	0	0
PACIFIC												
Washington	13	6	6	58	41	41	0	0	1	1	1	0
Oregon	1	10	0	18	30	22	0	0	0	1	1	0
California	44	4	5	248	191	109	0	0	0	5	3	3
Total	330	314	243	2,626	2,845	2,518	2	4	8	101	74	98
45 weeks	12,672	18,202	8,995	153,872	165,835	118,943	304	344	698	4,466	4,955	6,209

[3] Period ended earlier than Saturday.

[4] Including paratyphoid fever reported separately, as follows: Massachusetts 2; Connecticut 1; New York 9; Georgia 1; Florida 1; Texas 2; Oregon 1; California 2.

Telegraphic morbidity reports from State health officers for the week ended November 10,1945, and comparison with corresponding week of 1944 and 5-year median—Con.

Division and State	Whooping cough			Week ended November 10, 1945							
	Week ended—		Median 1940–44	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	Nov. 10, 1945	Nov. 11, 1944		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	15	25	25	0	0	0	0	0	0	0	1
New Hampshire	9	0	3	0	0	0	0	0	0	0	1
Vermont	27	31	31	0	0	0	0	0	0	0	2
Massachusetts	168	95	172	1	0	0	0	0	0	0	1
Rhode Island	19	2	18	0	0	0	0	0	0	0	0
Connecticut	74	54	66	0	5	0	0	0	0	0	1
MIDDLE ATLANTIC											
New York	357	166	450	5	77	0	2	0	0	3	3
New Jersey	177	69	137	5	1	1	1	0	0	0	1
Pennsylvania	254	139	250	0	0	0	0	0	0	0	3
EAST NORTH CENTRAL											
Ohio	168	189	189	0	0	1	0	0	0	0	3
Indiana	26	21	13	0	0	0	0	0	0	0	1
Illinois	151	76	152	3	2	0	3	0	1	0	8
Michigan [2]	106	47	232	0	2	0	0	0	0	0	6
Wisconsin	61	62	191	0	0	0	0	0	1	0	6
WEST NORTH CENTRAL											
Minnesota	16	32	45	2	0	0	0	0	0	0	7
Iowa	11	0	24	0	0	0	0	0	0	0	0
Missouri	4	14	12	0	0	0	0	0	0	0	1
North Dakota	0	8	9	0	0	0	0	0	0	0	0
South Dakota	0	3	5	0	0	1	0	0	0	0	0
Nebraska	3	6	8	0	0	0	0	0	0	0	0
Kansas	17	14	17	1	0	0	0	0	0	0	8
SOUTH ATLANTIC											
Delaware	3	0	1	0	0	0	0	0	0	0	0
Maryland [2]	45	55	55	0	0	2	0	0	0	0	0
District of Columbia	6	1	12	0	0	0	0	0	0	0	0
Virginia	35	26	50	0	0	32	0	0	0	0	0
West Virginia	17	7	16	0	0	0	0	0	0	0	0
North Carolina	49	37	113	1	2	0	0	1	0	6	0
South Carolina	72	25	25	1	11	0	0	0	0	0	0
Georgia	11	18	18	0	0	0	0	0	0	48	3
Florida	2	17	16	1	1	0	0	0	0	6	0
EAST SOUTH CENTRAL											
Kentucky	113	47	59	0	0	0	0	3	0	0	1
Tennessee	14	40	27	1	0	1	0	0	0	3	1
Alabama	11	5	8	1	0	0	0	0	2	15	0
Mississippi [2]	---	---	---	0	0	0	0	0	2	7	3
WEST SOUTH CENTRAL											
Arkansas	12	26	22	1	1	0	0	0	2	2	0
Louisiana	1	3	6	1	0	0	0	0	0	15	2
Oklahoma	0	3	4	0	0	0	0	0	0	0	0
Texas	113	134	89	24	209	9	0	0	0	82	12
MOUNTAIN											
Montana	2	2	2	0	0	0	0	0	0	0	0
Idaho	12	3	4	1	0	2	0	0	0	0	1
Wyoming	3	12	3	0	0	0	0	0	0	0	0
Colorado	16	14	17	0	0	0	0	0	0	0	0
New Mexico	2	1	7	0	1	1	0	0	0	0	0
Arizona	6	14	14	0	0	45	0	0	0	0	0
Utah [2]	13	11	26	0	0	0	0	0	0	0	0
Nevada	4	0	0	0	0	0	0	0	0	0	0
PACIFIC											
Washington	26	7	37	0	0	0	0	0	0	0	0
Oregon	10	7	12	0	0	0	0	0	0	0	0
California	98	93	142	2	7	0	4	0	0	9	4
Total	2,359	1,661	2,998	51	319	95	10	4	8	196	80
Same week, 1944	1,661	---	---	28	503	122	7	3	11	102	65
Average, 1942–44	2,342	---	---	31	361	118	11	[1] 1	8	[1] 87	---
45 weeks: 1945	109,086	---	---	1,714	22,298	9,755	574	460	640	4,481	4,138
1944	82,789	---	---	1,612	21,043	7,883	577	450	489	4,528	3,467
Average, 1942–44	133,297	---	[1]155,529	1,511	15,623	6,965	566	[1] 450	652	[1] 3,201	---

[2] Period ended earlier than Saturday.
[1] 5-year median, 1940–44.

Anthrax: Ohio, 1 case.

WEEKLY REPORTS FROM CITIES

City reports for week ended November 3, 1945

This table lists the reports from 88 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	1	0	1	0	1	1	1	0	4	0	0	10
New Hampshire:												
Concord	0	0	----	0	0	0	0	0	0	0	0	0
Vermont:												
Barre	0	0	----	0	0	0	0	0	0	0	0	1
Massachusetts:												
Boston	2	0	----	0	5	0	14	12	26	0	0	26
Fall River	0	0	----	0	0	1	0	0	1	0	0	3
Springfield	0	0	----	0	1	0	0	0	8	0	0	1
Worcester	0	0	----	0	31	0	5	0	7	0	0	8
Rhode Island:												
Providence	0	0	----	0	0	0	1	0	1	0	0	14
Connecticut:												
Bridgeport	0	0	----	0	0	0	1	0	1	0	0	2
Hartford	0	0	----	0	0	0	1	2	1	0	0	5
New Haven	0	0	----	0	0	0	1	0	0	0	0	11
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	----	0	0	0	1	0	6	0	0	13
New York	12	1	2	2	33	10	37	12	60	0	2	87
Rochester	0	0	----	0	0	1	0	2	9	0	0	13
Syracuse	0	0	----	0	1	0	1	1	17	0	0	7
New Jersey:												
Camden	0	0	----	0	0	0	2	0	0	0	0	9
Newark	0	0	2	0	3	0	5	1	7	0	0	24
Trenton	0	0	----	0	0	0	0	1	0	0	0	0
Pennsylvania:												
Philadelphia	3	0	1	0	7	2	19	3	32	0	0	74
Pittsburgh	0	0	1	1	2	2	12	3	18	0	0	15
Reading	0	0	----	0	1	0	2	0	1	0	0	1
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	1	0	----	0	1	2	13	0	14	0	0	8
Cleveland	0	0	2	0	1	1	7	4	28	0	0	62
Columbus	3	0	----	0	3	0	0	0	12	0	0	1
Indiana:												
Fort Wayne	0	0	----	0	0	0	0	0	1	0	0	0
Indianapolis	4	0	----	0	1	2	4	0	21	0	0	14
South Bend	0	0	----	0	0	0	0	0	2	0	0	4
Terre Haute	0	0	----	0	0	0	5	0	1	0	0	0
Illinois:												
Chicago	0	0	----	0	119	8	22	2	38	0	0	60
Springfield	0	0	----	0	4	0	2	0	3	0	0	4
Michigan:												
Detroit	5	0	----	0	25	1	6	1	30	0	0	58
Flint	0	0	----	0	9	1	1	0	3	0	0	7
Grand Rapids	1	0	----	0	0	0	1	1	3	0	0	3
Wisconsin:												
Kenosha	0	0	----	0	0	0	0	0	2	0	0	0
Milwaukee	0	0	----	0	3	0	0	4	13	0	0	14
Racine	0	0	----	0	0	0	0	0	0	0	0	0
Superior	0	0	----	0	1	0	0	0	0	0	0	5
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	----	0	0	0	0	0	3	0	0	3
Minneapolis	2	0	----	0	2	0	4	0	3	0	0	3
St. Paul	1	0	----	0	0	2	4	0	7	0	1	10
Missouri:												
Kansas City	1	0	----	0	1	0	6	0	11	0	1	2
St. Joseph	1	0	----	0	10	0	0	0	1	0	0	0
St. Louis	6	0	2	0	1	2	12	19	12	0	1	3

See footnotes at end of table.

City reports for week ended November 3, 1945—Continued

	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	1	0	0	1	11	0	0	0
Kansas:												
Topeka	0	0	------	0	0	0	1	0	1	0	0	4
Wichita	0	0	------	0	0	0	4	2	16	0	0	2
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	0	0	0	0	0	0	0	1
Maryland:												
Baltimore	18	0	1	0	2	1	13	0	7	0	0	25
Cumberland	0	0	------	0	0	0	1	0	1	0	0	0
Frederick	0	0	------	0	0	0	0	0	0	0	0	0
District of Columbia:												
Washington	0	1	------	0	2	0	10	4	19	0	3	7
Virginia:												
Lynchburg	0	0	------	0	0	0	0	0	2	0	1	3
Richmond	1	0	------	0	1	0	2	1	6	0	0	2
Roanoke	0	0	------	0	0	0	0	0	3	0	0	0
West Virginia:												
Charleston	0	0	------	0	0	0	0	0	2	0	0	0
Wheeling	0	0	------	0	0	0	0	0	1	0	0	0
North Carolina:												
Raleigh	0	0	------	0	0	0	0	0	0	0	0	2
Wilmington	2	0	------	0	0	0	0	0	4	0	0	0
Winston-Salem	0	0	------	0	0	0	0	0	4	0	0	6
South Carolina:												
Charleston	2	0	23	0	0	0	2	0	3	0	0	0
Georgia:												
Atlanta	1	0	2	0	0	0	3	0	2	0	0	1
Brunswick	0	0	------	0	0	0	0	0	1	0	0	0
Savannah	0	0	------	0	0	0	1	0	4	0	1	0
Florida:												
Tampa	0	0	------	0	0	0	1	0	1	0	1	0
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	2	0	3	1	2	0	6	1	9	0	0	6
Nashville	1	0	------	0	1	0	3	1	2	0	0	2
Alabama:												
Birmingham	0	0	6	0	0	0	0	7	10	0	0	
Mobile	3	0	------	0	0	0	2	0	2	0	0	
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	------	0	0	0	0	0	2	0	0	
Louisiana:												
New Orleans	6	0	1	1	1	0	5	1	7	0	1	0
Shreveport	0	0	------	0	0	0	0	2	6	0	0	0
Texas:												
Dallas	3	0	------	0	0	0	4	0	16	0	0	0
Galveston	0	0	------	0	0	0	1	0	2	0	0	3
Houston	1	0	------	0	0	1	4	2	3	0	1	0
San Antonio	1	0	------	0	0	1	5	0	2	0	0	1
MOUNTAIN												
Montana:												
Billings	0	0	------	0	0	0	0	1	1	0	0	0
Great Falls	0	0	------	0	0	0	0	0	0	0	0	0
Helena	0	0	------	0	0	0	0	0	1	0	0	0
Missoula	0	0	------	0	2	0	0	0	0	0	0	0
Idaho:												
Boise	0	0	------	0	0	1	1	1	1	0	0	0
Colorado:												
Denver	6	0	4	0	7	0	7	1	5	0	2	14
Utah:												
Salt Lake City	0	0	0	0	5	0	0	2	5	0	0	4

City reports for week ended November 3, 1945—Continued

	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	-----	1	41	0	4	0	6	0	1	6
Spokane	0	0	------	0	0	0	2	0	5	0	0	2
Tacoma	0	0	-----	0	28	0	0	0	1	0	0	2
California:												
Los Angeles	8	0	4	1	5	0	2	3	42	0	0	14
Sacramento	0	0	----	0	2	0	2	1	3	0	0	2
San Francisco	0	0	------	0	43	0	9	6	14	0	1	8
Total	99	2	55	7	409	40	285	105	640	0	17	703
Corresponding week, 1944	111	------	51	15	168	------	353	-----	642	0	21	469
Average, 1940–44	90	------	74	[1] 23	[2] 474	-----	[1] 351	------	644	1	21	903

[1] 3-year average, 1942–44. [2] 5-year median, 1940–44.

Dysentery, amebic.—Cases: New York, 4; Chicago, 1: Denver, 1.
Dysentery, bacillary.—Cases: Providence, 2; New Haven, 1; New York, 7; Syracuse, 1; Chicago, 1; Detroit, 1; Tampa, 1; Nashville, 1; Los Angeles, 1; San Francisco, 1.
Dysentery, unspecified.—Cases: Bridgeport, 4; San Antonio, 9.
Typhus fever, endemic.—Cases: New York, 1, Atlanta, 13; Savannah, 4; Tampa, 1; Birmingham, 1; New Orleans, 2; Shreveport, 3; San Antonio, 1; Los Angeles, 2.

Rates (annual basis) per 100,000 population, by geographic groups, for the 88 cities in the preceding table (estimated population, 1943, 34,311,200)

	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	7.8	0.0	2.6	0.0	99	5.2	62.7	36.6	128	0.0	0.0	212
Middle Atlantic	6.9	0.5	2.8	1.4	22	6.9	36.6	10.6	69	0.0	0.9	112
East North Central	8.5	0.0	1.2	0.0	102	9.1	37.1	7.3	104	0.0	0.0	146
West North Central	22.1	0.0	4.0	0.0	30	8.0	62.3	44.2	131	0.0	6.0	54
South Atlantic	39.2	1.6	42.5	0.0	8	1.6	53.9	8.2	98	0.0	9.8	77
East South Central	35.4	0.0	53.1	5.9	18	0.0	64.9	53.1	136	0.0	0.0	53
West South Central	31.6	0.0	2.9	2.9	3	5.7	54.5	14.3	109	0.0	5.7	11
Mountain	52.0	0.0	34.7	0.0	121	8.7	69.4	43.3	113	0.0	17.3	156
Pacific	14.2	0.0	6.3	3.2	188	0.0	30.0	15.8	112	0.0	3.2	54
Total	15.1	0.3	8.4	1.1	62	6.1	43.4	16.0	98	0.0	2.6	107

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended October 20, 1945.—During the week ended October 20, 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		6		78	138	40	31	47	106	446
Diphtheria		3	5	41	11	1		5		66
Dysentery:										
Bacillary				4						4
Unspecified					1					1
Encephalitis, infectious		1						1		2
German measles				4	6		1	4	3	18
Influenza		5			5				5	15
Measles		4	1	117	178	2	6		159	467
Meningitis, meningococcus				2	2					4
Mumps			2	72	95	7	7	110	30	323
Poliomyelitis		1		1	[1] 9	1	1			[1] 13
Scarlet fever		4	29	83	62	20	7	22	12	239
Tuberculosis (all forms)		7	2	115	25	17	14	70	24	274
Typhoid and paratyphoid fever		1		17	1					19
Undulant fever				5						5
Venereal diseases:										
Gonorrhea		17	44	79	193	55	38	63	70	559
Syphilis		27	21	177	113	17	5	17	22	399
Whooping cough			19	220	69	10	2	2		322

[1] Includes 1 case, delayed reports.

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER AND YELLOW FEVER

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

CHOLERA

[C indicates cases; P, present,]

NOTE.—Since many of the figures in the following tables are from weekly reports, the accumulated totals are for approximate dates.

Place		January–August 1945	September 1945	October 1945—week ended—			
				6	13	20	27
ASIA							
Ceylon: Trincomelee District	C				13	1	2
China: [1]							
Hupeh Province	C	14					
Kweichow Province—Kweijang	C	12					
Szechwan Province—							
Chengtu	C	9					
Chungking	C	8,000					
Hsin Chiaco	C	1					
Hsin Kai Shih	C	1					
Kiang Pei	C	1					
Kweyang	C	26					
Nei Kiang	C	200					
Pi Shan	C	40					
Yunnan Province	C	P					
India	C	199,985					
Bombay	C	76	19		2		
Calcutta	C	4,859	141	28	31		
Cawnpore	C	187	12				
Chittagong	C	19					
Delhi	C	249	65	3	1		
Madras	C	52					
Vizagapatam	C	29					
Indochina: Cochinchina	C	P					

[1] Cholera was also reported present during August in the following Provinces of China: Chekiang, Honan, Hunan, Kansu, Kwangsi, Kwangtung, Shensi, and Sikong.

PLAGUE

[C indicates cases: D, deaths]

Place		January–August 1945	September 1945	October 1945—week ended— 6	13	20	27
AFRICA							
Algeria	C	[1] 13					
Basutoland	C	4					
Bechuanaland	C	7					
Belgian Congo	C	17					[2] 7
British East Africa:							
Kenya	C	[3] 48	23	1	1		
Uganda	C	6					
Egypt	C	213		1	3		
Ismailiya	C	83					
Port Said	C	80	2		1		
Suez	C	19		1	2		
French West Africa	C	5					
Dakar	C	1					
Madagascar	C	118	5			[4] 3	
Morocco (French)	C	787	13			[4] 27	
Senegal	C	54					
Tunisia	C	3					
Union of South Africa	C	7			1		
ASIA							
China:							
Foochow	C	30					
Yunnan Province [5]	C	25					
India	C	19,457					
Iraq	C	34					
Palestine	C	17	1		1	2	2
Plague-infected rats		20	1				
EUROPE							
France: Corsica—Ajaccio	C	8					
Great Britain: Malta	C	[6] 25	25	5		6	
Italy	C		23			1	1
Portugal: Azores	C	12	12	2			
Spain: Canary Islands	C	1					
NORTH AMERICA							
Canada: Alberta Province: [7]							
Plague-infected squirrels		2					
SOUTH AMERICA							
Argentina:							
Buenos Aires Province—Plague-infected rats		2					
Santiago del Estero Province	C	1					
Bolivia: Santa Cruz Department	C	[8] 75					
Brazil: Pernambuco State	C	30					
Ecuador:							
Canar Province	C	[9] 7					
Chimborazo Province	C	6					
Loja Province	C	[9] 19					
Peru:							
Ancash Department	C	3			•		
Ica Department	C	[9] 4					
Lambayeque Department	C	[9] 13					
Libertad Department	C	[9] 11					
Lima Department	C	[9] 13					
Otuzco Department	C	3					
Piura Department	C	4	1				
OCEANIA							
Hawaii Territory	D	[10] 1					
Plague-infected rats [11]		12	1				

[1] Includes 4 cases of pneumonic plague.
[2] Suspected.
[3] Includes 5 suspected cases.
[4] For the period Oct. 1–20, 1945.
[5] Information dated July 5, 1945, stated that from April 1944 to May 1945, 85 deaths from plague had occurred in the mountainous region south of Kunming, China.
[6] Includes 4 suspected cases.
[7] During the month of June 1945, plague infection in fleas was reported in Alberta Province. For the week ended July 28, 1945, plague infection was also reported in 6 pools of fleas in Alberta Province. For the week ended Aug. 11, 1945, 2 pools of plague-infected fleas were reported in Alberta Province, Canada.
[8] Includes 6 suspected cases.
[9] Includes 1 suspected case.
[10] Previously reported as a case, death occurring on June 2, 1945.
[11] Plague infection was also proved positive in a pool of 5 mice on Jan. 4, in a pool of fleas on Feb. 14, and in a pool of 40 fleas on Mar. 14, 1945.

SMALLPOX

[C indicates cases; P, present]

Place		January–August 1945	September 1945	October 1945—week ended— 6	13	20	27
AFRICA							
Algeria	C	189	20				
Angola	C	106					
Basutoland	C	345	1				
Belgian Congo	C	5,587	532	[1] 58			
British East Africa:							
Kenya	C	184	183	25	6		
Nyasaland	C	9	80	17	1	13	
Tanganyika	C	3,395	1,172				
Uganda	C	879	55				
Cameroon (French)	C	766	43				
Dahomey	C	151	55		[2] 48		
Egypt	C	1,058	7				
French Equatorial Africa	C	1,541	13				
French Guinea	C	1,515	53		[2] 19		
French West Africa: Dakar District	C	392	5		[2] 4		
Gambia	C	82					
Gold Coast	C	200	224	16			16
Ivory Coast	C	492	22		[2] 1		
Libya	C	8					
Mauritania	C	83					
Morocco (French)	C	1,265	167		[2] 166		
Mozambique	C		1				
Nigeria	C	3,687	137				
Niger Territory	C	478	33				
Rhodesia:							
Northern	C	2,081	2,104				
Southern	C		10				
Senegal	C	491	7				
Sierra Leone	C	31	P				
Sudan (Anglo-Egyptian)	C	[3] 3					
Sudan (French)	C	2,055	59		[2] 45		
Togo (British)	C	25	11				
Togo (French)	C	496					
Tunisia	C	2	13				
Union of South Africa [4]	C	1,499	27	P	P	P	
ASIA							
Arabia	C	29					
Ceylon	C	[5] 527	63	10	13	11	30
China	C	1,136					
India	C	222,435					
Iran	C	390					
Iraq	C	38	1	[2] 2			
Syria and Lebanon	C	10	2				
Trans-Jordan	C	2					
Turkey (see Turkey in Europe.)							
EUROPE							
Belgium	C	1					
France	C	26					
Great Britain: Scotland	C	[3] 2					
Italy	C	1,930					
Sicily	C	9					
Portugal	C	25	1				
Spain	C	30	1				
Canary Islands	C	1					
Turkey	C	291	3		1		
NORTH AMERICA							
Canada	C	6					
Guatemala	C	4					
Honduras	C	8					
Mexico	C	1,309					
Nicaragua	C	[1] 141					
SOUTH AMERICA							
Bolivia	C	990					
Brazil	C	[6] 613					
Colombia	C	418		4			
Ecuador	C	36	2				
Paraguay	C	1					
Peru	C	50					
Uruguay	C	79					
Venezuela	C	[1] 560	[1] 104			[1] 12	

[1] Alastrim.
[2] For the period Oct. 1–10, 1945.
[3] Imported.
[4] For the week ended June 30, 1945, cases of virulent smallpox were reported in the Union of South Africa.
[5] Includes some cases of chickenpox.
[6] Includes cases of alastrim.

TYPHUS FEVER*

[C indicates cases; P, present]

Place		January-August 1945	September 1945	October 1945—week ended— 6	13	20	27
AFRICA							
Algeria	C	1,013	8				
Basutoland	C	230					
Belgian Congo [1]	C	209	45	6			
British East Africa: Kenya	C	30	1				
Egypt	C	15,271	145				
French West Africa: Dakar [1]	C	18					
Gold Coast	C	1					
Libya: Tripolitania	C	18					
Madagascar	C	1					
Morocco (French)	C	6,892	292			[2] 268	
Morocco (Spanish)	C	6					
Nigeria	C	64	14				
Rhodesia, Northern	C	31					
Sierra Leone [1]	C	3	3				
Tunisia	C	380	5				
Union of South Africa	C	582	12		P	P	
ASIA							
China	C	1,352					
India	C	23					
Iran	C	824					
Iraq	C	228	12		4	1	2
Palestine [1]	C	104		1	2		
Syria and Lebanon	C	12					
Trans-Jordan	C	43			2		
Turkey (see Turkey in Europe).							
EUROPE							
Albania	C	100					
Austria	C	46					
Belgium	C	158					
Bulgaria	C	928	4				
Czechoslovakia	C	290	10				
Denmark	C	146					
Finland	C	26					
France	C	267					
Germany	C	7,888					
Gibraltar	C	5					
Great Britain	C	[3] 21					
Malta and Gozo [1]	C	15					
Greece	C	154	57				
Italy	C	183	2				
Netherlands	C	51					
Portugal	C	49					
Rumania	C	[4] 7,831					
Spain	C	24	1				
Sweden	C	225	1				
Switzerland	C	2					
Turkey	C	2,391	57	15	14	24	10
Yugoslavia	C	1,194					
NORTH AMERICA							
Canada [1]	C	1					
Costa Rica [1]	C	7					
Cuba [1]	C	10					
Guatemala	C	1,928					
Jamaica [1]	C	35	2				
Martinique [1]	C	1					
Mexico	C	1,279					
Panama (Republic)	C	3					
Puerto Rico [1]	C	144	10	8	2	4	4
Virgin Islands [1]	C	8					
SOUTH AMERICA							
Argentina	C	6					
Bolivia	C	562					
Brazil	C	3					
Chile [1]	C	419					
Colombia	C	127				70	
Curacao	C	1	1				
Ecuador	C	405	57				
Peru	C	372					
Venezuela [1]	C	88	10				
OCEAN							
Australia [1]	C	91					
Hawaii Territory [1]	C	72	10				

*Reports from some areas are probably murine type, while others probably include both murine and louse-borne types.

[1] Reports cases as murine type.
[2] For the period Oct. 1-20, 1945.
[3] Includes imported cases.
[4] For the period Jan. 1-20, 1945.

YELLOW FEVER

[C indicates cases; D, deaths]

Place		January–August 1945	September 1945	October 1945—week ended—			
				6	13	20	27
AFRICA							
Gold Coast:							
Nsawam	C	[1] 3					
Takoradi	C	1					
Tamale	C		[2] 1				
Winneba	C	[3] 4					
Ivory coast:							
Gaoua	C	1					
Guiglo	C	1					
Sierra Leone: Moyamba	C	2					
SOUTH AMERICA							
Bolivia:							
Beni Department	C	1					
La Paz Department	C	2					
Brazil:							
Goiaz State	D	76					
Minas Geraes State	D	25					
Para State	D	1					
Colombia:							
Magdalena Department	D	2					
Santander de Norte Department	D	18					
Peru:							
Cuzco Department	C	3					
Junin Department	C				3		
Loreto Department	C	1					
Venezuela:							
Bolivar State	C	1					
Merida State	C	2					1
Tachira State	D	20					
Zulia State	C	6	1		1		

[1] Includes 2 suspected cases.
[2] Suspected.
[3] Includes 1 suspected case.

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