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THE CHEMOTHERAPEUTIC ACTION OF STREPTOMYCIN AND PROMIN¹ IN EXPERIMENTAL TUBERCULOSIS²

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INTRODUCTION

Probably the first recorded antibiotic against the tubercle bacillus was the report by Vaudremer in 1912 (1) to the effect that cultures and mycelium of *Aspergillus fumigatus* contained a thermostable substance capable of inactivating tuberculin. In 1913 the same author reported rendering human tubercle bacilli nonpathogenic for guinea pigs by incubating a bacillary suspension at 37° C. with an extract of the filtrate of *A. fumigatus*. The recent advances in chemotherapy of bacterial infections with penicillin stimulated the search for antibiotics against the tubercle bacillus. In 1944 Smith and Emmart (2) reported a tuberculostatic action in vitro and a slightly favorable effect in infected guinea pigs from preparations obtained by continuous ether extraction of culture filtrates of *Penicillium notatum* grown on Raulin-Thom medium. Later Soltys (3) confirmed and extended Vaudremer's observations concerning an antibiotic against the tubercle bacillus derived from *A. fumigatus*, and in 1945 Asheshov and Strelitz (4) reported some progress on the isolation of the active component. In like manner active substances have been obtained recently from *Aspergillus flavus* (5) and *Aspergillus ustus* (6).

The systematic researches by Waksman and associates led to the isolation from *Actinomyces griseus* of an active substance designated streptomycin (7) with antibiotic properties against the tubercle bacillus (8). The pharmacologic properties of this substance have been studied by Robinson and associates (9) who showed that it was well tolerated by mice and rats in doses of 50,000 units per kg. of body weight daily when given parenterally over a period of 1 month.

¹ Sodium p-p' diaminodiphenylsulfone N-N' didextrose sulfonate.

² From the Division of Physiology, National Institute of Health.

A sample of this material obtained in October 1944 through the courtesy of Dr. E. F. Robertson, Merck & Co., was tested for tuberculostatic action *in vitro* with good results, the minimal effective concentration being 100 units percent or approximately 0.3 mg. percent. Subsequent experiments to determine the effect of streptomycin on the incidence and extent of tubercle formation on the chorioallantois also gave results of sufficient promise to warrant an investigation of its action in experimental tuberculosis in animals.³

The first of the chemotherapeutic tests was made in February 1945. This was limited in scope since the material available at that time was barely sufficient to treat four guinea pigs for a period of about 30 days. In the meantime a favorable preliminary report appeared by Feldman and Hinshaw (10) in which they concluded that streptomycin is capable of exerting "a striking suppressive effect on the pathogenic proclivities in guinea pigs of the human variety of *Mycobacterium tuberculosis*." As additional supplies of the material became available through the cooperative efforts of the Subcommittee on Chemotherapy of the National Research Council and Merck & Co., more comprehensive studies were undertaken to ascertain the chemotherapeutic possibilities of streptomycin in experimental tuberculosis.

EXPERIMENTAL

Two series of experiments were made in guinea pigs infected with tuberculosis: the first to determine if streptomycin had any ameliorating effect; the second to ascertain its value as compared with promin, a sulfone derivative which has received considerable attention in recent years (11, 12, 13); and further to explore the possibilities of potentiation by combined treatment with two chemotherapeutic agents of diverse chemical constitution and with probably different mechanisms of action.

In the first series there were eight male guinea pigs weighing about 250 to 300 gm. They were inoculated intraperitoneally on February 9, 1945, with 1 cc. of a suspension containing 1 mg. moist weight of a human strain tubercle bacilli (A27, Henry Phipps Institute). Four of the animals served as controls and four were treated daily with 5,000 units streptomycin injected intramuscularly, beginning February 12 and extending to March 16. Little was known at the time regarding tolerance of guinea pigs for streptomycin or about absorption, retention, and elimination. This technique of treatment was adopted because it appeared to give satisfactory results, and has been used throughout. Ten days after the last treatment, or 45 days subsequent to infection, the animals were killed with chloroform, autopsied,

³ The details of this work will be published in a separate communication by E. W. Emmart: The tuberculostatic action of streptothricin and streptomycin with special reference to the action of streptomycin on the chorioallantoic membrane of the chick embryo.

and the extent of tuberculous involvement noted and recorded according to procedures previously described (14).

In the second series there were 81 male guinea pigs of as uniform weight as possible (range 270 to 370 gm.). These were inoculated as in the preceding series, on April 12, 1945, and were divided into 4 groups as follows: 20 controls; 21 for treatment with streptomycin, 5,000 units intramuscularly daily; 20 for treatment with promin, 0.5 gm. per kg. daily per os; 20 for treatment with streptomycin intramuscularly and promin orally as in the preceding series.

The animals were weighed weekly. Treatment was begun the day after inoculation and continued for 3 months, until July 11. Sixty days after infection hemoglobin determinations were made to ascertain the effects of individual and combined treatments, since, as is well known, promin may induce anemia in experimental animals at the dose level administered (12, 15). At 70 days post infection blood levels for promin were determined in groups 3 and 4, using 5 animals in each of the groups at 3, 5, and 21 hours, respectively, following drug administration. Two cubic centimeters of blood was taken by cardiac puncture in each case, and blood levels determined electrophotometrically using the Bratton and Marshall method (16). At 76 to 92 days post infection all the survivors were tuberculin tested using 0.01 mg. PPD in 0.1 cc. intracutaneously, and the relative response in each of the groups evaluated in terms of (a) no discernible reaction, (b) doubtful reaction, (c) moderate, and (d) severe reaction with edema and some central necrosis. Finally at 105 to 110 days post infection, when 65 percent of the controls had died, the experiment was terminated, the animals killed with chloroform, and the incidence and extent of tuberculous involvement noted.

RESULTS

The findings in the first series of experiments in which treatment was continued for a little over 30 days and the experiment terminated 45 days after infection are summarized in figure 1. The average gain in weight for the controls during the experimental period was 86 gm., for the treated 140 gm. The average tuberculosis index for the treated group was 3.5 as against 9.5 for the controls. A breakdown of the extent of tuberculosis in the several organs most commonly involved indicates a high degree of protection of the peritoneum, liver, lungs, and spleen. The liver and lungs of only one of the treated animals showed slight to moderate degree of involvement, while all the controls had a considerable degree of tuberculosis in these organs. The peritoneum⁴ was heavily involved in the controls but entirely free of infection in the treated group. In like manner

⁴ The extent of tuberculous involvement of the kidneys, intestines, mesenteric glands, and testicles was rated with and included in that of the peritoneum.

there was a considerable degree of protection in the spleen, but apparently none in the omentum. It would appear that with treatment instituted 3 days after infection and continued for a period of 30 days, complete protection could not be attained since all the treated animals showed some degree of tuberculous involvement, but it was possible so to retard the progress of the disease as to reduce materially the dissemination of the tuberculous process and leave the peritoneum free of disease in all of the animals, the lungs and liver in three of the animals, and the spleen in two.

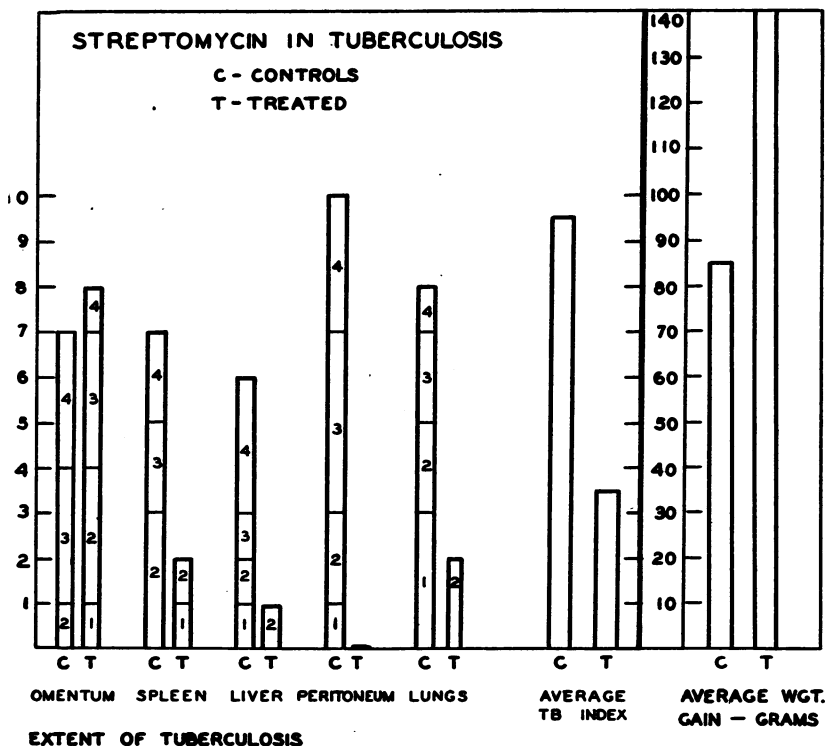


FIGURE 1.—The effect of treatment of experimentally infected guinea pigs with 5,000 units streptomycin injected intramuscularly daily. Treatment continued 32 days and experiment terminated 45 days after infection.

Results of the second series of experiments are presented in the following tables. Hemoglobin determinations made 60 days after infection and continuous treatment (summarized in table 1) indicate no deleterious effect from streptomycin. On the contrary, there was some degree of protection against the low grade of anemia incidental to the disease as well as against the anemia which may result from promin administration. There was an incidence of 24 and 36 percent for the controls and promin groups respectively in the low hemoglobin group, none in the streptomycin, and only 5 percent in the combined

TABLE 1.—*Hemoglobin levels in guinea pigs infected with human strain tubercle bacilli and treated continuously for 60 days*

Hemoglobin	Controls	Streptomycin-treated guinea pigs	Promin-treated guinea pigs	Streptomycin + promin-treated guinea pigs
<i>Grams per 100 c. c.</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
11-13	24	0	36	5
13-15	40	40	52	58
15-17	36	60	12	37

treatment group. All of the streptomycin-treated animals and 95 percent of the combined-treatment group had adequate hemoglobin levels.

Blood level determinations for promin after 70 days of continuous treatment showed no untoward effects from the combined treatment. Actually, the promin levels determined at different times following the last dose were somewhat higher in the combined-treatment group than in the group receiving promin alone. This is summarized in table 2.

TABLE 2.—*Blood levels of promin after 70 days of continuous treatment in guinea pigs infected with human strain tubercle bacilli*¹

Hours after last dose	Promin (mg. per 100 cc.)	
	Promin-treated guinea pigs	Promin + streptomycin-treated guinea pigs
3	12.0	15.2
5	12.8	15.2
21	0.5	2.0

¹ Each figure represents the average of 5 animals.

The incidence of intracutaneous tuberculin reactions in the several groups is summarized in table 3. All the surviving animals of the four groups were subjected to the test. Two of the controls died within 48 hours and both showed extensive tuberculosis. All of the remaining

TABLE 3.—*Percentage incidence of tuberculin reactions in the several groups of guinea pigs tested at 76 to 92 days post infection with human strain tubercle bacilli*¹

	Controls	Streptomycin-treated guinea pigs	Promin-treated guinea pigs	Streptomycin + promin-treated guinea pigs
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Number tested.....	12	21	17	20
Percent mortality.....	16	0	0	0
Percent showing:				
No reaction.....	0	0	30	25
Doubtful reaction.....	0	0	58	25
Positive reaction.....	42	57	6	35
Severe reaction.....	42	43	6	15

¹ 0.01 mg. PPD injected intracutaneously.

controls gave moderate to severe reactions, as did all of the streptomycin group. Eighty-eight percent of the promin group and 50 percent of the combined-treatment group failed to react or at best gave a doubtful reaction. Attempts to correlate these findings with post-mortem findings 20 to 30 days later, when the experiment was terminated, failed to show a definite relationship between the extent of tuberculous involvement and the severity of the tuberculin reaction. Thirteen animals in the combined-treatment group showed no gross evidence of tuberculous involvement and 8 of them gave a positive tuberculin reaction, while in the promin group 15 of the animals that failed to react to tuberculin showed gross evidence of tuberculosis, the tuberculosis index range in this group being from 1 to 9. The evidence strongly suggests the possibility that treatment with promin suppresses the tuberculin reaction. The chemotherapeutic significance of this remains to be determined.

Tables 4 and 5 summarize the status and autopsy findings at the time the experiment was terminated, from 105 to 110 days post infection. Sixty-five percent of the controls and 15 percent in the promin group

TABLE 4.—*Summary of findings at termination of experiment, 105 to 110 days after infection with human strain tubercle bacilli*

	Controls	Streptomycin	Promin	Streptomycin + promin
Mortality percent	65	0	15	0
Number losing weight	14/7	1 1/21	12/17	10/20
Average gain in weight, gm.	99	298	183	252
Weight of spleens, gm:				
Range	1.5-28.8	0.6-1.7	0.9-2.7	0.6-1.3
Average	5.0	1.0	2.0	1.0
Tuberculosis index:				
Range	5-15	0-4	1-11	0-2
Average	10.0	1.9	4.1	0.5
Percent of animals with doubtful lesions or none.	0	15	5	65

¹ Numerator=number losing weight; denominator=number surviving.

TABLE 5.—*Extent and distribution of lesions (tuberculosis index) in the several tissues and organs*

Tissue	Controls	Streptomycin	Promin	Streptomycin +promin
Omentum and lymph nodes:				
Range	0-3	0-1	0-2	0-1
Average	1.0	0.7	0.6	0.1
Spleen:				
Range	0-4	0-1	0-3	0
Average	1.8	0.1	0.6	0
Liver:				
Range	1-4	0-1	0-3	0-1
Average	2.2	0.3	0.6	0.1
Peritoneum (including kidneys, intestine and testicles):				
Range	0-4	0-2	0-3	0-1
Average	2.6	0.7	1.1	0.1
Lungs:				
Range	1-4	0	0-3	0
Average	2.6	0	1.1	0

were dead, all the animals in the streptomycin and streptomycin + promin groups were alive and well. Four of the seven surviving controls were losing weight and were definitely on the decline; no serious losses of weight were seen in any of the surviving animals in the three treated groups. The average gain in weight since the time of infection was 99 gm. for the controls, 183 gm. for the promin group, 298 gm. for the streptomycin, and 252 gm. for the combined-treatment group. The average weight of the spleens of all the controls was 5.0 gm; for the promin group 2.0 gm.; and only 1.0 gm. for each of the streptomycin and the streptomycin + promin groups. The average tuberculosis index rated by procedures previously described (14) was 10.0 for the controls; 4.1 for the promin group; 1.9 for the streptomycin group; and only 0.5 for the combined-treatment group. All but one of the controls surviving 30 days or longer had moderate to extensive tuberculous involvement,⁵ one of the animals in the promin group showed no gross evidence of infection, 3 in the streptomycin group were free of macroscopic lesions, and 13 or 65 percent of the combined-treatment group appeared free from all discernible lesions. The remaining 7 animals in this last group had a minimal amount of tuberculous with a rating of 1 in 5 animals and 2 in 2 of the animals. The lesions in these 7 animals usually consisted of a small localized tuberculous abscess of the small intestine or of a few miliary nodules in the testicles. In only 1 of the animals were the lymph nodes in the omentum enlarged and caseating. The spleens, livers, and lungs were free of grossly visible lesions in all the animals, and there was no involvement in the kidneys or peritoneum in any of them.

The essential data are presented in graphic form in figure 2, in which the tuberculosis index for the experimental groups is expressed on the basis of 100 for the controls.

COMMENT

The data presented in this report leave no doubt that streptomycin is a highly effective chemotherapeutic agent in checking and retarding the normal course of tuberculosis infection in guinea pigs. Under the experimental conditions of treatment 5,000 units streptomycin (approximately 10,000 to 15,000 units per kg.) injected intramuscularly daily for a period of 90 days produced a definitely greater chemotherapeutic effect than promin given in doses of 0.5 gm. per kg. daily for an equal length of time. Since the dose of promin used is about one-half the maximum tolerated dose of this drug (12) while the dose of streptomycin used is less than 1/20 its maximum tolerated dose ⁶ it follows

⁵ One of the controls had a rating of 1, with a moderate degree of tuberculosis in the testicles and few miliary tubercles in the liver.

⁶ Ten guinea pigs receiving a single intramuscular injection of 300,000 units per kg. survived, of 10 guinea pigs receiving 400,000 units per kg. 5 died. Three groups of guinea pigs, 3 each, receiving daily doses of 50,000, 75,000, and 100,000 units per kg. over a period of 10 days failed to show evidence of toxicity other than some depression of normal growth.

that streptomycin has a chemotherapeutic index better than 10 times that of promin, which heretofore has been probably the most effective chemotherapeutic agent in experimental tuberculosis when viewed in the light of relative safety, effectiveness, ease of administration, and freedom from toxic side actions. Neither of these chemotherapeutic agents when used individually has so far completely eradicated the disease process. Streptomycin is still too new and inadequately studied a drug to rule out the possibility of better chemotherapeutic effects (even to the point of completely eradicating the disease) with

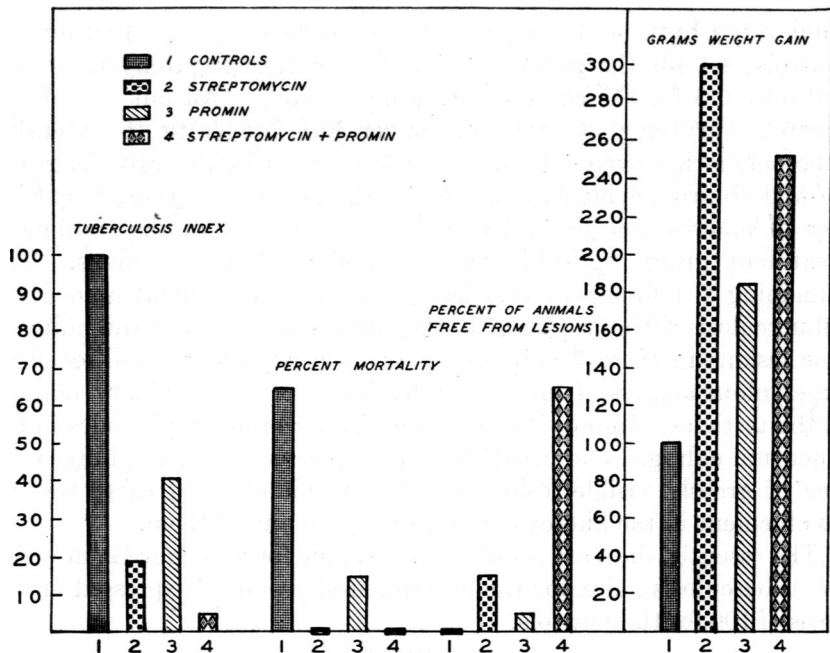


FIGURE 2.—Chemotherapeutic effect of streptomycin, promin, and a combination of the two drugs in experimental tuberculosis in guinea pigs.

the application of larger doses and better methods of administration. Enough is known about promin to enable us to state definitely that under our rigorous experimental conditions little more can be attained with this drug alone. It is significant that by the application of a suitable combination of the two chemotherapeutic agents, streptomycin and promin, we have not only been able to get better results than with either alone, but we have been able to obtain results unlike anything we have obtained heretofore in the treatment of experimental tuberculosis infections.

The results of treatment with the combination of streptomycin and promin appear to indicate a synergistic action rather than simple summation of effects. Taking into consideration the tuberculosis index data given in table 4 the chemotherapeutic efficacy of streptomycin

may be expressed numerically as 5.2 (10.0/1.9). In like manner the chemotherapeutic efficacy of promin may be expressed as 2.4 (10.0/4.1). Simple summation of effects should give a chemotherapeutic efficacy of 7.6 for the combined treatment group. Actually the chemotherapeutic efficacy for this group was 20 (10.0/0.5), nearly three times as much as would be anticipated from simple summation. Comparison of effects by other criteria listed in table 4 points in the same direction of potentiation rather than summation.

If the experimental approach we have used is any criterion of chemotherapeutic effectiveness in man we believe our experimental results warrant the cautious application of the combined treatment in suitable clinical cases, while the search for more effective sulfones and for better methods of streptomycin administration continues.

SUMMARY

The daily intramuscular injection of 5,000 units of streptomycin for a period of 90 days in guinea pigs infected with a human strain of tubercle bacilli has produced a chemotherapeutic effect superior to that obtained with 0.5 gm. per kg. promin given orally for the same length of time. Since the dose of promin used is about half the maximum tolerated dose while streptomycin is less than one-twentieth it appears that streptomycin has a chemotherapeutic index better than 10 times that of promin. It also seems possible that by increasing the dose of streptomycin and with better methods of administration its chemotherapeutic effectiveness may be enhanced. Using a suitable combination of streptomycin and promin it was possible to obtain results which, under our experimental conditions, have not been obtained previously.

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AN OUTBREAK OF FOOD POISONING DUE TO A NEW ETIOLOGICAL AGENT—*SALMONELLA BERTA*¹

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In recent years several new strains of *Salmonella* have been described. In 1936, Hormaeche and Salsamendi (1) in Montevideo, Uruguay, studying the bacterial flora of various organs of the normal hog, isolated from the mesenteric glands a new strain which they named *Salmonella berta*. These workers found the organism to be pathogenic for certain animals. However, review of the literature has failed to disclose any report of the organism having produced disease in humans.

This is an account of an outbreak of food poisoning in which pork sausage was found to be the contaminated food and *S. berta* the causative organism. The sausage was shipped by a small manufacturer in Texas to Mr. B. in New Iberia, La. It was delivered at 10 a. m. on March 21, 1942, packed in a shirt box lined with wax paper and wrapped with heavy brown paper. It was not refrigerated after receipt and not opened until 7 p. m. of the same day. At that time a portion, consisting of about 2 pounds, was given to a friend, Mr. H., and the remainder was taken to a nearby restaurant where a portion was fried and served to five people. The proprietor broiled a small portion for himself. A helper ate some pieces left over from that eaten by the party of five.

Mr. H. took his portion to the home of a relative, Mr. D., where

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some was fried and eaten by him and his wife. Mr. and Mrs. H. then went to their home in another city, leaving the balance of the sausage with the D. family who refrigerated it overnight and served it to their family of six on the next day, March 22, 1942.

Of the 15 who ate of the sausage, only 1, the restaurant proprietor, did not become ill. At the time of investigation, only 9 of the 14 were located and questioned (table 1). The remaining 5 known to have eaten of the sausage had left the city and were not traced.

These nine became ill in from 5 to 48 hours after eating the sausage, six of them in 10 hours or less. Three of the cases, members of the family group who ate of the sausage on Sunday, March 22, 1942, became ill 18, 27, and 48 hours afterward.

The onset was sudden, with nausea and vomiting, followed by diarrhea, chills and fever, and occasionally tenesmus. Two cases varied from this in that diarrhea only was present. Both of them had positive stools for *S. berta*. The diarrhea was relatively marked in all cases but none had blood in the stools. Fever was a common symptom, the temperature rising to 102° F. in some cases. Two of the cases, both young white males, were sufficiently ill to be hospitalized. The acute symptoms subsided in from 3 to 8 days, leaving the patients in a weakened condition. All cases recovered.

After a preliminary investigation of the outbreak, on March 24, by the local Parish Health Unit, it was felt that all of the individuals were suffering from food poisoning and that the sausage was the probable agent. Several pounds of the remaining sausage were collected and shipped to the State Central Laboratory for bacteriological examination, where it was received March 27, 1942.

A Gram negative, motile organism giving the following biochemical reactions was isolated from cultures made from various portions of the sausage:

Acid and gas from: Dextrose, mannitol, maltose, dulcitol, rhamnose, sorbitol, arabinose, xylose, trehalose.

No action from: Lactose, adonite, inositol, salicin.

Simmons citrate agar: Positive.

Phenol red tartrate agar: Positive.

Gelatin: No liquefaction.

No H₂S produced.

Indol not formed.

As soon as it became apparent in the laboratory that the contaminating organism might belong to the *Salmonella* group, it was recommended to the Health Unit director that he collect stool specimens on those affected.

Stools from five of the cases, including the two hospitalized, were collected on March 31, 1942, and sent to the central laboratory where they were received April 2, 1942. Following the isolation of

TABLE 1.—Chart of findings and results of laboratory examination by cases

Case	Color	Sex	Age	Date of onset	Incubation period Hours	Duration of illness Days	Symptoms					Stool		Serum		Remark
							Nausea	Vomiting	Diarrhea	Chills	Rever	Date collected	<i>S. berta</i>	Date collected	Agglutination <i>S. berta</i> (titer)	
J. B.	W	M	34	1943 Mar. 22	10	4	+	-	+	++	+	1943 Apr. 21	Positive	1943 Apr. 15	Positive; 1:160	Relatively mild.
E. B.	W	M	26	do.	10	7	-	+	+	++	+	Apr. 16	Negative	do.	Positive; 1:180	Relatively mild.
G. J.	N	M	13	do.	10	7	+	+	+	++	+	do.	Positive	do.	Positive; 1:160	Hospitalized.
O. J.	W	F	21	do.	9	3	+	+	+	++	+	Mar. 31	do.	do.	do.	Do.
R. D.	W	M	10	do.	8	8	+	+	+	++	+	Apr. 16	do.	do.	do.	Relatively mild.
L. D.	W	M	18	do.	5	8	+	+	+	++	+	Mar. 31	Negative	do.	Negative	Do.
L. D.	W	F	15	Mar. 24	48	4	-	-	-	-	-	Apr. 21	Positive	Apr. 15	do.	Relatively mild.
Mrs. J. L. D.	W	F	52	Mar. 23	27	6	+	+	+	+	+	Apr. 16	do.	do.	do.	Do.
Mr. J. L. D.	W	M	62	do.	18	4	-	-	+	-	-	Mar. 31	Negative	do.	do.	Do.
							-	-	-	-	-	Apr. 16	Positive	do.	do.	Do.

S. berta in two of these five specimens,⁵ further stool specimens were requested on these five cases and on all of the others if possible. These specimens were collected on April 16 and 21 and received in the laboratory on April 20 and 27, respectively.

Stools from a total of eight of the individuals were submitted for bacteriological examination and an organism identical in character and giving the same biochemical reaction as that isolated from the sausage was recovered from the stools of six of the eight.

The organism gave positive agglutination reactions with enteritidis serum, but since its biochemical reactions were not identical with those of *Salmonella enteritidis*, cultures of the organism isolated from both sausage and stools were sent to Dr. R. P. Edwards, of the National Salmonella Center, Lexington, Ky., and were classified as *S. berta*.

To complete the investigation, samples of blood for agglutination tests were collected from as many patients as possible. Blood specimens from three out of four of these patients collected approximately one month after onset of the disease agglutinated *S. berta*.

In comparing the antigenic formula of *S. enteritidis* IX, XII: gm., with that of *S. berta* IX, XII: fgt., it can readily be seen why it agglutinated with *S. enteritidis* serum (2, 3).

In reviewing the literature, it was found that this organism had previously been isolated by Hormaeche and Salsamendi (1) and Hormaeche and Peluffo (4) from mesenteric glands of normal pigs in Montevideo, Uruguay. After intensive studies of the organism they concluded that it could not be included in any of the known *Salmonella* types because of its antigenic formula.

Kauffman (5) studied the strain and accepted the formula proposed by Hormaeche as *S. berta*, IX, XII: fgt.

Hormaeche, Peluffo, and Salsamendi (6) also studied the pathogenicity of *S. berta* and found it to be pathogenic for the rabbit and rat. However, they state that "until now we have only found *S. berta* in a normal pig, we cannot then affirm the spontaneous pathogenic action of this type for the pig or man."

As the occurrence of *S. berta* in this country in animals or man had not previously been reported, an investigation of the source of the pork used in the sausage was conducted. The Federal Bureau of Animal Industry reported nothing to indicate that any of the hogs used were imported; but, on the contrary, that they were of domestic stock.

Since the recovery of *S. berta* from these cases, it has been found in New York City and Florida. A personal communication from the National Salmonella Center in New York State (7) describes a case of

⁵ In the cases of L. D. (W. F., 15) and L. D. (W. M., 18) the specimens collected on March 31, 1942, were reported as negative for *S. berta*. It was noted at the time of receipt of the specimens in the laboratory that there was "excessive feces in bottle."

"chronic diarrhea with intermittent attacks for the past years with blood and mucous in the stool" in which *S. berta* was isolated from the stools. In another communication (8), Dr. Edwards states that he has typed four other cultures of *S. berta* received from the State of Florida, two from feces in enteric fevers, one from feces in gastroenteritis, and one from a stool culture of a normal human carrier.

SUMMARY

An outbreak of food poisoning due to *S. berta* in sausage is described.

The illness was characterized by nausea and vomiting, followed by diarrhea, chills and fever, and occasionally tenesmus.

S. berta was isolated from the sausage and from stool specimens submitted.

Blood specimens showed agglutinins for *S. berta*.

Evidence has been presented to show *S. berta* pathogenic for man.

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PROVISIONAL MORTALITY FROM SPECIFIC CAUSES IN 1944 AND PRECEDING YEARS

Annual mortality rates for specific causes for the 5 years 1940-44 are shown in table 1 for a group of 39 States and the District of Columbia.¹ These data are made available through a cooperative arrangement with the respective States which furnish provisional tabulations of current birth and death records to the Public Health Service. For several reasons the rates are provisional and will differ from final figures subsequently published by the Bureau of the Census. To keep the comparison of changes from year to year on the same basis, the rates for preceding years represent the same type of provisional data as are used for the 1944 figures. Populations are estimates as of July 1 as published by the Bureau of the Census; they

¹ Detailed tables showing rates for each State are available in multilithed form upon request. They are not printed here because of lack of space.

include members of the armed forces stationed in each State but exclude those outside of the country.

TABLE 1.—*Summary of mortality trends from certain causes in a group of 40 States¹ 1940-44 (estimated population July 1, 1944, 110,964,645) (rates provisional for all years)*

Diseases (numbers in parentheses are from the International List of Causes of Death, 1938 revision)	1944	1943	1942	1941	1940
Rate per 1,000 population					
Deaths, all causes.....	10.6	10.9	10.3	10.4	10.6
Births, exclusive of stillbirths.....	20.4	21.3	20.6	18.5	17.5
Rate per 1,000 live births					
Infant mortality (live births, 1944, 2,264,148).....	40	40	40	45	45
Maternal mortality.....	2.1	2.3	2.5	3.0	3.5
Rate per 100,000 population					
Typhoid and paratyphoid fever (1, 2).....	0.38	0.49	0.51	0.77	1.01
Dysentery (27).....	1.20	1.25	1.28	1.93	1.90
Diarrhea and enteritis under 2 years (119).....	7.29	6.89	6.40	7.38	6.99
Appendicitis (121).....	5.52	5.76	6.28	8.15	10.01
Scarlet fever (8).....	.32	.34	.33	.35	.51
Diphtheria (10).....	.73	.77	.83	.89	1.00
Whooping cough (9).....	1.29	2.40	1.77	2.61	1.97
Measles (35).....	1.38	.93	.80	1.56	.47
Cerebrospinal (meningococcus) meningitis (6).....	2.12	2.12	.64	.48	.44
Acute poliomyelitis and acute polioencephalitis (36).....	1.06	.76	.38	.56	.70
Acute infectious encephalitis (lethargic) (17).....	.44	.49	.43	.72	.52
Malaria (28).....	.32	.34	.47	.63	.74
Pellagra (69).....	.66	.87	1.00	1.17	1.28
Tuberculosis, all forms (13-22).....	39.7	41.1	41.4	42.8	43.8
Syphilis (30).....	10.3	11.0	11.2	12.9	13.9
Influenza (grippe) (33).....	12.9	12.7	8.0	15.8	14.5
Pneumonia (107-109).....	47.4	52.5	46.4	47.7	54.3
Cancer, all forms (45-55).....	130.2	125.8	123.5	121.0	120.0
Diabetes mellitus (61).....	27.1	28.0	25.8	25.8	26.8
Intracranial lesions of vascular origin (83).....	94.2	95.9	90.9	87.4	90.4
Diseases of the heart (90-95).....	320.0	323.8	298.0	291.4	293.9
Nephritis, all forms (130-132).....	68.6	73.9	71.5	73.4	77.2
All accidents, including automobile accidents (160-195).....	66.4	68.8	67.3	73.1	70.1
Automobile accidents (170a, b, c).....	16.3	16.0	19.5	28.0	24.4

¹ Includes all States except Alabama, Arizona, Arkansas, California, Mississippi, New Hampshire, Oregon, Washington, and West Virginia.

The data in table 1 are crude rates which take no account of changes since 1940 in the age composition of the population. Such changes, however, have been large and of a character which affects the crude death rates considerably. Specifically, the withdrawal from the population of the United States, for foreign service in the armed forces, of several million men of the age groups which have the lowest death rates leaves in this country an abnormal population composed of a considerably higher percentage of old people than was true at the time of the 1940 census. Since withdrawals continued throughout 1944 with few soldiers returning to the United States, the effect on the crude mortality rates was cumulative; thus crude rates for 1944 are less comparable with those for 1940 than were rates for 1943 and 1942.

Table 2 shows for the more important causes death rates for 1943 and 1944 that have been adjusted ² for this changing age distribution of the population. The crude death rates per 1,000 population from all causes for 1944 and 1943 were 10.6 and 10.9, respectively, as compared with 10.6 for 1940. When these rates are adjusted for changing age distribution they are 9.8, 10.4, and 10.6 for 1944, 1943, and 1940, respectively. The 1944 adjusted rate from all causes is only 93 percent of the crude rate and the 1943 rate is 95 percent of the crude rate.

TABLE 2.—Crude and adjusted death rates for certain diseases, 1944 and prior years

Diseases	Age adjusted (40 States)			All States	Crude (40 States)		Ratio of adjusted to crude rate	
	1944	1943	1940	1940	1944	1943	1944	1943
All causes.....	Rate per 1,000 population						0.928	0.954
	9.8	10.4	10.6	10.8	10.6	10.9		
	Rate per 100,000 population							
Cancer, all forms.....	121.0	120.1	119.9	120.1	130.2	125.8	.929	.955
Diabetes mellitus.....	25.1	26.7	26.8	26.6	27.1	28.0	.926	.953
Diseases of the heart.....	295.0	307.6	293.9	292.3	320.0	323.8	.922	.950
Intracranial lesions of vascular origin.....	86.5	90.9	90.4	90.9	94.2	95.9	.918	.948
Nephritis, all forms.....	63.3	70.3	77.2	81.4	68.6	73.9	.923	.951
Pneumonia.....	43.1	49.3	54.3	54.9	47.4	52.5	.909	.939
Tuberculosis, all forms.....	39.4	40.8	43.8	45.8	39.7	41.1	.992	.993
Accidents (other than automobile).....	48.2	51.6	45.7	68.2	50.1	52.8	.962	.975

Rates for cancer, diabetes, heart disease, nephritis, and intracranial lesions of vascular origin all show approximately the same percentage reduction by reason of age adjustment; the 1943 adjusted rates are approximately 95 percent of the respective crude rates, and the 1944 adjusted rates are approximately 93 percent of the crude rates. Since these diseases all have a roughly similar age curve of mortality, with exceptionally high rates in the oldest ages, this rough similarity in the percentage reduction by reason of the adjustment

² The adjustment of the rate for age changes since 1940 is done as follows: Death rates for each specific age group in 1940 are multiplied by the 1944 estimated population for that age group to obtain an expected number of deaths at the 1940 age-specific rates. These expected deaths for specific ages are added to get a figure for all ages which is divided by the 1944 estimated population for all ages to obtain an expected death rate in 1944. This expected rate represents the crude death rate that would occur in 1944 if the age-specific death rates were identical with those in 1940. Any difference between this expected rate for all ages for 1944 and the actual rate for all ages in 1940, therefore, represents the result of changes in the age composition of the population since 1940. For example, if the actual 1940 rate for all ages is 95 percent of the expected rate for 1944, it means that the actual observed rate in 1944 can be corrected for age changes by multiplying by 0.95. This multiplier, which is called the "adjustment factor," is obtained as follows:

$$\text{Adjustment factor} = \frac{\text{Actual death rate in 1940 (all ages)}}{\text{Expected death rate in 1944 (all ages)}}$$

Thus if age changes will increase the 1944 crude rate for all ages by 5 percent without any change in the age-specific death rates, the actual crude rate for 1944 must be reduced by approximately that percentage to make it comparable with the 1940 rate. This process eliminates the change in the crude death rate that is due to age changes and indicates what the trend has been when the effects of age changes are eliminated.

Adjustments for 1943 are, of course, made by an identical method using population estimates for that year.

was to be expected. The cumulative effect as more young adult males were sent abroad is illustrated by the fact that adjustment for age makes a larger difference in 1944 than in 1943.

Age adjustment had considerable effect on the pneumonia rate, the adjusted rate in 1944 being only 91 percent of the crude rate. On the other hand, adjustment for age had little or no effect on the tuberculosis rate, the adjusted rates for 1944 and 1943 both being better than 99 percent of the crude rates. Accidents other than automobile are also not greatly affected by this process, the adjusted rates in 1944 and 1943 being 96 and 98 percent of the respective crude rates for those years.

DEATHS DURING WEEK ENDED SEPTEMBER 1, 1945

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

	Week ended Sept. 1, 1945	Correspond- ing week, 1944
Data for 93 large cities of the United States:		
Total deaths.....	8,548	7,610
Average for 3 prior years.....	7,747	
Total deaths, first 35 weeks of year.....	316,984	320,009
Deaths under 1 year of age.....	638	615
Average for 3 prior years.....	620	
Deaths under 1 year of age, first 35 weeks of year.....	21,211	21,688
Data from industrial insurance companies:		
Policies in force.....	67,342,877	66,720,177
Number of death claims.....	14,013	12,006
Death claims per 1,000 policies in force, annual rate.....	10.9	9.4
Death claims per 1,000 policies, first 35 weeks of year, annual rate.....	10.4	10.2

PREVALENCE OF DISEASE

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

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED SEPTEMBER 8, 1945

Summary

For the second consecutive week a decrease was reported in the incidence of poliomyelitis for the country as a whole. Of a total of 891 cases reported for the current week, as compared with 917 last week, 1,498 for the corresponding week last year, and 758 for the 5-year (1940-44) median, 453, or 51 percent, occurred in the Middle Atlantic and East North Central areas. Of 24 States reporting 9 or more cases each, 11 reported an aggregate increase of 92 cases, while the other 13 States reported a decrease of 124 cases. States reporting the largest increases are Illinois (from 94 to 131) and Washington (22 to 33). The largest decreases were reported in New York (138 to 114), New Jersey (96 to 60), and Utah (34 to 23). Of the total of 7,047 cases reported to date this year, 4,615 occurred during the past 6 weeks (since July 28). For the corresponding periods last year the figures are, respectively, 10,972 and 7,912. In the 10-year period 1935-44, the peak of incidence of this disease, based on the date of reports, occurred 6 times by the end of the second week of September.

Of the total of 73 reported cases of meningococcus meningitis, as compared with 59 cases last week and 91 for the next earlier week, New York and Ohio reported 6 cases each, and Illinois, Texas, and California, 5 each. The total to date this year is 6,399, as compared with 13,481 for the same period last year and a 5-year median of 2,541.

The incidence to date of diphtheria, the dysenteries, tularemia, undulant fever, and whooping cough is above that for last year.

An aggregate of 8,120 deaths was reported for the week in 93 large cities in the United States, as compared with 8,549 for the preceding week, 7,673 for the corresponding week last year, and a 3-year (1942-44) average of 7,550. The total to date is 325,105, as compared with 327,682 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended September 8, 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, men- ingococcus		
	Week ended—		Med- ian 1940- 44	Week ended—		Med- ian 1940- 44	Week ended—		Med- ian 1940- 44	Week ended—		Med- ian 1940- 44
	Sept. 8, 1945	Sept. 9, 1944		Sept. 8, 1945	Sept. 9, 1944		Sept. 8, 1945	Sept. 9, 1944		Sept. 8, 1945	Sept. 9, 1944	
NEW ENGLAND												
Maine.....	0	0	1	-----	-----	-----	3	0	7	1	0	0
New Hampshire.....	0	0	0	-----	-----	-----	0	0	0	0	0	0
Vermont.....	2	1	1	-----	-----	-----	1	1	4	0	0	0
Massachusetts.....	3	2	2	-----	-----	-----	28	13	34	0	3	2
Rhode Island.....	0	2	0	23	7	-----	0	4	4	2	0	1
Connecticut.....	0	0	0	-----	-----	1	2	13	10	3	3	1
MIDDLE ATLANTIC												
New York.....	13	6	6	12	-----	11	10	36	71	6	17	7
New Jersey.....	4	0	3	-----	5	5	14	5	33	2	6	4
Pennsylvania.....	2	4	5	1	4	-----	31	21	33	4	11	4
EAST NORTH CENTRAL												
Ohio.....	6	5	5	2	5	6	7	8	18	6	2	2
Indiana.....	5	11	4	2	-----	1	6	1	5	3	1	1
Illinois.....	4	3	9	9	-----	3	54	10	23	5	3	2
Michigan ¹	9	3	3	-----	-----	1	18	17	23	2	3	1
Wisconsin.....	2	0	0	9	6	13	20	27	54	2	2	1
WEST NORTH CENTRAL												
Minnesota.....	8	7	6	-----	-----	-----	6	1	9	1	2	0
Iowa.....	0	1	3	-----	-----	-----	0	2	3	0	1	1
Missouri.....	2	2	4	-----	-----	1	6	6	6	1	1	1
North Dakota.....	5	0	1	-----	-----	1	0	0	0	0	0	0
South Dakota.....	6	3	3	-----	-----	-----	2	2	2	1	0	0
Nebraska.....	1	0	1	5	5	1	3	3	3	0	1	0
Kansas.....	5	4	3	-----	-----	2	6	4	3	1	0	1
SOUTH ATLANTIC												
Delaware.....	0	0	0	-----	-----	-----	1	0	1	0	1	0
Maryland ¹	12	1	1	1	1	1	7	6	9	1	1	2
District of Columbia.....	0	0	1	-----	-----	-----	0	2	4	0	1	1
Virginia.....	11	13	12	119	75	76	3	10	10	1	2	2
West Virginia.....	9	2	7	-----	3	3	0	3	3	0	2	2
North Carolina.....	41	13	34	-----	-----	-----	1	5	10	2	2	1
South Carolina.....	33	12	15	176	110	120	5	11	11	1	2	1
Georgia.....	25	8	19	3	13	13	1	2	2	1	5	1
Florida.....	5	5	5	-----	-----	1	1	12	4	1	1	0
EAST SOUTH CENTRAL												
Kentucky.....	35	5	5	-----	-----	-----	9	2	6	3	3	1
Tennessee.....	14	4	12	7	1	3	0	4	17	1	1	2
Alabama.....	14	30	30	14	1	3	0	0	3	3	2	1
Mississippi ¹	27	13	10	-----	-----	-----	-----	-----	-----	2	3	2
WEST SOUTH CENTRAL												
Arkansas.....	10	9	9	4	18	4	5	0	5	0	1	0
Louisiana.....	8	9	5	139	2	2	2	0	2	1	0	0
Oklahoma.....	6	7	6	7	1	15	3	1	2	1	3	0
Texas.....	50	32	32	433	356	273	38	25	25	5	2	1
MOUNTAIN												
Montana.....	0	0	0	5	10	1	0	0	2	2	0	0
Idaho.....	2	0	0	4	-----	-----	22	2	0	0	0	0
Wyoming.....	0	0	0	-----	-----	-----	2	4	4	0	0	0
Colorado.....	0	6	8	3	1	4	3	5	5	2	4	1
New Mexico.....	2	4	2	-----	1	-----	2	5	5	0	0	0
Arizona.....	2	1	1	11	17	21	2	2	2	0	0	0
Utah ¹	0	0	0	-----	-----	2	37	2	6	1	0	0
Nevada.....	0	1	0	-----	-----	-----	0	0	0	0	1	0
PACIFIC												
Washington.....	6	2	2	-----	-----	-----	27	11	8	0	3	1
Oregon.....	2	1	1	-----	7	2	18	12	12	0	2	1
California.....	19	7	8	10	5	9	59	92	55	5	12	1
Total.....	410	239	314	989	654	654	465	392	576	73	110	46
26 weeks.....	9,304	7,451	8,192	73,299	340,323	170,447	103,024	192,714	540,027	6,401	13,481	2,541

¹ New York City only.

² Period ended earlier than Saturday.

³ Correction: Massachusetts, week ended Sept. 1, meningococcus meningitis 2 cases (instead of 0).

Telegraphic morbidity reports from State health officers for the week ended September 8, 1945, and comparison with corresponding week of 1944 and 5-year median—Con.

Division and State	Pollomyelitis			Scarlet fever			Smallpox			Typhoid and para-typhoid fever ¹		
	Week ended—		Median 1940-44	Week ended—		Median 1940-44	Week ended—		Median 1940-44	Week ended—		Median 1940-44
	Sept. 8, 1945	Sept. 9, 1944		Sept. 8, 1945	Sept. 9, 1944		Sept. 8, 1945	Sept. 9, 1944		Sept. 8, 1945	Sept. 9, 1944	
NEW ENGLAND												
Maine.....	10	0	2	23	9	5	0	0	0	0	0	1
New Hampshire.....	1	6	0	5	0	2	0	0	0	0	0	0
Vermont.....	8	2	2	0	3	2	0	0	0	0	4	2
Massachusetts.....	30	42	18	41	48	48	0	0	0	0	4	2
Rhode Island.....	1	1	1	0	2	2	0	0	0	0	0	0
Connecticut.....	9	13	6	4	5	8	0	0	0	0	1	1
MIDDLE ATLANTIC												
New York.....	114	581	68	92	48	56	0	0	0	8	12	12
New Jersey.....	60	50	22	10	9	26	0	0	0	2	2	8
Pennsylvania.....	62	130	11	38	48	47	0	0	0	12	12	15
EAST NORTH CENTRAL												
Ohio.....	33	92	33	63	61	52	0	0	0	7	8	8
Indiana.....	28	23	16	12	19	16	0	0	0	2	2	5
Illinois.....	131	45	44	50	44	44	1	0	0	4	5	9
Michigan ²	11	75	34	36	33	32	0	0	0	1	3	6
Wisconsin.....	19	20	14	47	24	38	1	0	0	0	0	1
WEST NORTH CENTRAL												
Minnesota.....	17	48	14	11	19	18	0	0	0	0	1	0
Iowa.....	9	25	23	19	22	15	0	1	0	2	0	1
Missouri.....	31	14	14	18	8	13	0	0	0	3	3	8
North Dakota.....	5	7	1	6	2	2	0	0	0	0	0	0
South Dakota.....	1	0	1	0	1	4	0	1	0	0	0	0
Nebraska.....	7	11	11	10	6	4	0	0	0	0	0	0
Kansas.....	13	7	7	18	18	21	0	0	0	2	3	2
SOUTH ATLANTIC												
Delaware.....	3	12	0	2	1	1	0	0	0	1	0	2
Maryland ³	5	32	2	15	19	11	0	0	0	5	2	2
District of Columbia.....	4	17	2	3	9	3	0	0	0	0	0	0
Virginia.....	30	67	15	68	23	22	0	0	0	10	6	11
West Virginia.....	9	24	8	53	45	32	0	0	0	1	5	8
North Carolina.....	11	26	7	30	36	38	0	0	0	3	4	4
South Carolina.....	6	4	3	9	5	7	0	0	0	7	2	8
Georgia.....	3	1	1	8	6	16	0	0	0	10	5	5
Florida.....	0	4	0	3	8	2	0	0	0	9	2	1
EAST SOUTH CENTRAL												
Kentucky.....	4	33	17	14	14	20	0	0	0	10	5	11
Tennessee.....	30	10	10	30	13	25	0	1	0	36	1	18
Alabama.....	4	5	2	19	21	16	0	0	0	2	4	4
Mississippi ⁴	1	9	4	9	12	9	0	0	0	4	8	10
WEST SOUTH CENTRAL												
Arkansas.....	5	0	1	6	5	3	0	0	0	7	9	9
Louisiana.....	7	5	3	13	1	3	0	0	0	2	15	15
Oklahoma.....	10	1	1	11	6	11	0	0	0	6	1	12
Texas.....	30	11	6	46	22	20	0	0	0	10	24	24
MOUNTAIN												
Montana.....	7	6	1	2	4	6	0	0	0	2	0	0
Idaho.....	1	0	0	3	4	3	0	0	0	4	3	1
Wyoming.....	2	0	0	3	0	1	0	0	0	0	0	0
Colorado.....	23	6	3	6	17	14	0	0	0	0	4	3
New Mexico.....	1	3	1	3	4	1	0	0	0	3	0	2
Arizona.....	1	0	0	0	1	1	0	0	0	1	0	3
Utah ⁵	23	0	0	6	2	3	0	0	0	1	0	0
Nevada.....	1	0	0	0	1	0	0	0	0	0	0	0
PACIFIC												
Washington.....	33	7	7	20	18	11	0	1	0	1	0	1
Oregon.....	7	11	6	7	8	6	0	0	0	2	1	1
California.....	30	12	12	87	61	42	0	0	0	5	5	4
Total.....	891	1,498	758	979	795	795	2	4	2	185	166	202
36 weeks.....	7,047	10,972	4,611	137,174	149,688	100,121	275	311	625	3,296	3,762	4,700

¹ Period ended earlier than Saturday.

² Including paratyphoid fever reported separately as follows: Illinois, 1; Virginia, 3; South Carolina, 1; Georgia, 2; Florida, 1; Kentucky, 1; Louisiana, 1; Texas, 2; Montana, 1; Utah, 1; California, 1.

³ 1 June case included, delayed report.

Telegraphic morbidity reports from State health officers for the week ended September 8, 1945, and comparison with corresponding week of 1944 and 5-year median.—Con.

Division and State	Whooping cough			Week ended September 8, 1945								
	Week ended—		Me- dian 1940-44	Dysentery			En- cep- halitis, infect- ious	Rocky Mt. spot- ted fever	Tula- ræmia	Ty- phus fever, en- demic	Un- du- lant fever	
	Sept. 8, 1945	Sept. 9, 1944		Ame- bic	Bacil- lary	Un- speci- fied						
NEW ENGLAND												
Maine.....	20	10	16	0	0	0	0	0	0	0	2	
New Hampshire.....	0	0	0	0	0	0	0	0	0	0	0	
Vermont.....	24	29	16	0	0	0	0	0	0	0	1	
Massachusetts.....	0	55	72	0	3	0	0	0	0	0	0	
Rhode Island.....	20	7	7	0	0	0	0	0	0	0	0	
Connecticut.....	43	53	44	0	0	0	0	0	0	0	2	
MIDDLE ATLANTIC												
New York.....	296	121	266	4	17	0	1	1	0	0	0	
New Jersey.....	144	44	115	0	0	5	0	0	0	0	4	
Pennsylvania.....	122	48	185	0	0	0	0	1	0	0	3	
EAST NORTH CENTRAL												
Ohio.....	221	116	160	1	0	0	1	0	0	0	1	
Indiana.....	25	24	26	2	0	3	1	0	0	0	4	
Illinois.....	133	109	176	11	3	0	3	0	1	0	5	
Michigan ¹	93	47	190	2	4	0	0	0	0	0	6	
Wisconsin.....	63	106	184	0	0	0	0	0	0	0	4	
WEST NORTH CENTRAL												
Minnesota.....	28	43	48	1	0	0	0	0	0	0	1	
Iowa.....	6	6	25	0	0	0	0	0	0	0	0	
Missouri.....	12	29	29	0	0	1	0	0	0	0	3	
North Dakota.....	2	6	6	0	0	0	0	0	0	0	0	
South Dakota.....	9	22	4	0	0	0	0	0	0	0	1	
Nebraska.....	0	12	12	0	0	0	0	0	0	0	0	
Kansas.....	28	32	32	0	0	0	1	0	0	0	1	
SOUTH ATLANTIC												
Delaware.....	6	1	1	0	0	0	0	0	0	0	0	
Maryland ²	32	78	61	0	0	2	0	0	0	0	0	
District of Columbia.....	7	4	9	0	0	0	0	0	0	0	0	
Virginia.....	51	41	71	0	0	505	0	6	4	0	3	
West Virginia.....	10	13	13	0	0	0	0	0	0	0	0	
North Carolina.....	43	94	80	0	1	0	0	0	0	7	0	
South Carolina.....	73	67	63	3	82	0	0	1	0	8	0	
Georgia.....	32	9	20	1	6	1	0	3	0	33	1	
Florida.....	5	1	2	1	3	0	0	0	0	3	0	
EAST SOUTH CENTRAL												
Kentucky.....	44	25	40	0	0	2	0	0	0	0	0	
Tennessee.....	22	20	34	0	0	9	0	1	0	2	0	
Alabama.....	3	8	8	0	0	0	0	0	0	24	0	
Mississippi ¹				0	0	0	0	0	1	10	7	
WEST SOUTH CENTRAL												
Arkansas.....	8	17	14	9	4	0	0	2	3	0	1	
Louisiana.....	8	4	4	0	2	0	0	0	0	12	0	
Oklahoma.....	13	2	8	0	8	0	1	2	0	0	2	
Texas.....	134	126	127	5	658	28	0	0	0	33	17	
MOUNTAIN												
Montana.....	0	73	8	0	0	0	0	0	1	0	0	
Idaho.....	4	0	0	0	0	0	0	1	0	0	0	
Wyoming.....	1	12	6	0	0	0	0	0	0	0	0	
Colorado.....	57	30	30	0	0	0	0	0	0	0	1	
New Mexico.....	1	11	11	0	6	0	0	0	1	0	1	
Arizona.....	4	3	3	0	0	15	0	0	0	0	2	
Utah ¹	11	15	24	0	0	0	0	0	0	0	0	
Nevada.....	0	0	0	0	0	0	0	0	0	0	0	
PACIFIC												
Washington.....	26	16	25	0	0	0	0	0	0	0	0	
Oregon.....	8	17	17	1	0	0	0	0	0	0	2	
California.....	105	47	114	1	0	0	10	0	0	0	2	
Total.....	1,991	1,653	2,542	42	797	571	18	18	11	132	77	
Same week, 1944.....	1,653			30	461	386	17	18	11	171	63	
Average, 1942-44.....	2,364			35	399	328	20	*12	13	*134		
36 weeks: 1945.....	90,860			1,316	18,020	7,554	355	404	550	3,182	3,330	
1943.....	68,301			1,209	15,621	6,026	459	407	408	3,262	2,522	
Average, 1942-44.....	113,071		*130,991	1,164	11,171	5,518	446	*406	576	*2,232		

¹ Period ended earlier than Saturday.

² 5-year median, 1940-44.

Anthrax: Georgia, 1 case.

NOTIFIABLE DISEASES, SECOND QUARTER 1945¹

The figures in the following table are the totals of the monthly morbidity reports received from the State health authorities for April, May, and June 1945. These reports are preliminary and the figures are therefore more or less incomplete. In most instances they include cases reported in both civilian and military populations. The comparisons made are with similar preliminary reports; but owing to population shifts and the presence of large military populations in certain States, the figures for some States are not comparable with those for prior years, especially for certain diseases. Each State health officer has been requested to include in the monthly report for his State all diseases that are required by law or regulation in the State. The lists of diseases required to be reported are not the same for each State. Only 11 of the common communicable diseases are notifiable in all the States. In some instances cases are reported in some States, of diseases that are not required by law or regulation to be reported, and the figures are included although manifestly incomplete. There are also variations among the States in the degree of completeness of reporting of cases of the reportable diseases. As compared with the deaths, incomplete case reports are obvious for such diseases as malaria, pellagra, pneumonia, and tuberculosis, while in many States other diseases, such as puerperal septicemia and Vincent's infection, are not reportable.

In spite of these known deficiencies, however, these monthly reports, which are published quarterly and annually in consolidated form, have proved of value in presenting early information regarding the reported incidence of a large group of diseases and in indicating a trend by providing a comparison with similar preliminary figures for prior years. To some extent they also give a picture of the geographic prevalence of certain diseases, as the States are arranged by geographic location.

Leaders are used in the table to indicate that no case of the disease was reported.

Consolidated monthly State morbidity reports for April, May, and June 1945

Division and State	Anthrax	Chick- enpox	Con- juncti- vitis	*Diph- theria	Dysen- tery, amoebic	Dysen- tery, bacil- lary	Dysen- tery, unde- fined	En- ceph- alitis, infecti- ous	Gar- dan men- ingitis	Hook- worm disease	Infur- culation	Mal- aria	*Meas- les	*Men- ingitis, menin- gococ- cus	Mumps	Oph- thal- mia neone- torum	Pelle- gra	Pneu- monia all forms
NEW ENGLAND																		
Maine.....		702		3					81		19	5	24	6	513			• 196
New Hampshire.....		159							38		1		207	5	123			14
Vermont.....		768		7					842			2	248	1	1,284			2
Massachusetts.....		3,867	79	52	3	20		2	501			362	3,137	58	6,330	47		723
Rhode Island.....		852		2		4		2	4		485	17	141	11	1,394			80
Connecticut.....		2,266	14	16	1			1	219	1	35		1,396	23	1,418			710
MIDDLE ATLANTIC																		
New York.....	1	8,499		125	54	107		7	1,223		• 21	372	1,665	244	• 2,171	20		4,188
New Jersey.....		7,129	3	34	7	2			1		41	344	744	70	3,307	4		708
Pennsylvania.....	5	6,454		96	3			2			15		5,874	142	5,263	4		889
EAST NORTH CENTRAL																		
Ohio.....		4,143		75	3	3		4	633		62	14	838	111	1,856	114		666
Indiana.....		651	1	70	2		6		102		73	160	468	37	814			65
Illinois.....		3,283		48	21	17		17	433	1	42	1	3,447	185	2,821	125		1,489
Michigan.....		4,796	103	124	14	10			615		21	171	2,992	74	2,898	10		585
Wisconsin.....		7,618		20	1			3			316	25	1,015	36	6,191			186

WEST NORTH CENTRAL									
Minnesota.....	2,463	1	58	29	5	5	12	22	20
Iowa.....	711		39				31	37	240
Missouri.....	444		48		3	3	1	62	136
North Dakota.....	228	2	42		1	1			44
South Dakota.....	280		18		1	1			230
Nebraska.....	462		26		1	1		35	306
Kansas.....	983	31	68	2	1	1	270	17	522
SOUTH ATLANTIC									
Delaware.....	46		10						45
Maryland.....	966	8	115	3	3	1	269	11	192
District of Columbia.....	354		7						73
Virginia.....	1,122		53	3	767			1,142	284
West Virginia.....	302		26	3	1	2	355	122	58
North Carolina.....	76		76	2	5	4			70
South Carolina.....	850		74	47	393		264	2,028	329
Georgia.....	373	4	37	7	54	17		962	264
Florida.....	448	15	29	18	7	4	64	933	207
EAST SOUTH CENTRAL									
Kentucky.....	276		27	1				9	342
Tennessee.....	354		30	6		14	44		49
Alabama.....	389		74	13			257	232	702
Mississippi.....	2,175		75	316	3,200			5,886	775
WEST SOUTH CENTRAL									
Arkansas.....	308		26	10	33			7	574
Louisiana.....	129		51	43	15		60	96	478
Oklahoma.....	134		46	2	7			636	395
Texas.....	4,904		374	144	4,731	679		7,377	2,366
MOUNTAIN									
Montana.....	467	77	11	1			87	96	131
Idaho.....	251	14	4	2	2		55		163
Wyoming.....	148	19	2	1			18	9	101
Colorado.....	981		74		3		13		252
New Mexico.....	161	10	35	4	6	5	11	225	376
Arizona.....	454	26	6	2	2	256	140	17	32
Utah.....	1,552	1					257	662	47
Nevada.....	45	9		2		6		112	42
PACIFIC									
Washington.....	2,722	23	85	1	2	131	427	33	2
Oregon.....	716		48			8		94	6
California.....	18,591	6	277	34	56		6,283	181	623
Total.....	94,986	416	2,644	809	8,692	1,905	13,623	21,338	17,817
Second quarter, 1944.....	10,085,042	459	2,440	697	9,676	1,726	21,103	3,438	14,540
Median, 1940-44.....	18,96,427		2,522	796	7,633	1,045	76,053	4,769	15,816
Hawaii Territory.....	586	8	6	11	67		73	53	70
Panama Canal Zone.....	48		15	11	10				219

See footnotes at end of table.

Consolidated monthly State morbidity reports for April, May, and June 1945—Continued

Division and State	*Polio- myeli- tis	Rabies in man	Rheu- matic fever	Rocky Moun- tain spotted fever	*Scar- let fever	Septic sore throat	*Small- pox	Teta- nus	Tra- cho- ma	Trichi- nosis	*Tuber- culosis, all forms	Tuber- culosis, respir- atory	Tuba- rui- nia	*Ty- phoid and para- ty- phoid fever	Para- ty- phoid fever	Ty- phus fever, en- demic	*Un- dis- tant fever	Vin- cent's infect- ion	*Whoop- ing cough
NEW ENGLAND																			
Maine.....	1				594	3			1	3	138	123	1	2			11	2	608
New Hampshire.....	1				323	16					36						3	8	85
Vermont.....	2				162						12						22	3	283
Massachusetts.....	5				3,897	49		2		7	767	726		31	27		10	1	1,801
Rhode Island.....	1		76		289	5					243	234	3	3	1		4		1,238
Connecticut.....	7				722	149		2		4	388	372		5			30		618
MIDDLE ATLANTIC																			
New York.....	93			7	7,714			4		4	3,508	3,291		46	15	3	71		2,829
New Jersey.....	17			8	1,464	27		4		10	922			10	2		25		1,677
Pennsylvania.....	13		324	4	5,925			1			1,107			56			40		2,446
EAST NORTH CENTRAL																			
Ohio.....	27	1	1		3,994	8	5	4	6	2	1,514	1,457	1	35	3	2	25	3	1,868
Indiana.....	13		2	8	1,122	11	18	4	4		1,771	1,771	1	23			11	40	218
Illinois.....	14	3	70	6	3,126	84	2	2	14		1,378	1,219	10	42	15	1	103	27	637
Michigan.....	8		93		3,130	147	2	10	1	1	1,508			26	10		98		793
Wisconsin.....	4				2,880	81	3				682		3	1			71		386
WEST NORTH CENTRAL																			
Minnesota.....	6		8		1,027	76	1				4368			3			92	19	114
Iowa.....	3		3	2	704	3	6				244	244	1	1			27		34
Missouri.....	4		33		576		3		87		542		5	10			27		267
North Dakota.....	1		11		272	6	5	1	4		68	64		8			2	10	28
South Dakota.....					713	3	1		10		135			1			-10		27
Nebraska.....	2			1	718		1				40						41		41
Kansas.....					806	1	6	2			181	165	3	6			48	18	393
SOUTH ATLANTIC																			
Delaware.....	1			1	64				1		52	52		2					14
Maryland.....	5		50	26	1,527	55		2		2	1,033	1,007		9	2		7	8	882
District of Columbia.....	4			1	345						444	380		7	1				121
Virginia.....	16			16	893	554		4			948	948	11	33	3	2			884
West Virginia.....	7				527	12					389			16			8		227
North Carolina.....	14	1		11	707	13					1,019	985	1	1		1	6		2,241
South Carolina.....	42		106	3	102		1	1			240		4	25	7	32	3		948
Georgia.....	18	2	9	5	281	58	4	7			396	396	17	67	12	140	58	28	244
Florida.....	21				69	7		10			283	195		46	13	106	6	35	139
EAST SOUTH CENTRAL																			
Kentucky.....	7	1		3	505	3					564	548	3	47	1	1	7		489
Tennessee.....	20			6	421	30	2	8		1	1,114		12	52	2	4	5	34	327
Alabama.....	51				186			10	1		677		2	51	3	97	29		393
Mississippi.....	7				126				14		404	391	14	26		31	17		2,554

WEST SOUTH CENTRAL									
Arkansas.....	5	102	169	4	1	76	264	282	36
Louisiana.....	8	154	115	6	14	24	720	691	4
Oklahoma.....	9	246	48	4	1	34	616	7	9
Texas.....	266	530	457	6	1	34	1,030	4	130
MOUNTAIN									
Montana.....	1	193	42	1	1	14	95	34	3
Idaho.....	1	232	15	1	1	1	28	1	10
Wyoming.....	1	158	21	2	2	1	6	3	2
Colorado.....	3	569	87	2	2	6	292	1	5
New Mexico.....	3	185	2	2	2	6	656	1	12
Arizona.....	10	402	2	3	44	44	355	16	3
Utah.....	10	236	10	3	54	4	54	16	4
Nevada.....	10	13	10	1	1	4	47	1	1
PACIFIC									
Washington.....	11	916	80	2	2	7	735	1	9
Oregon.....	2	322	10	5	16	7	258	28	5
California.....	57	4,678	10	5	16	7	3,186	3,001	28
Total.....	807	9,455	2,447	101	113	352	39,331	167	1,048
Second quarter, 1944.....	628	162	55,856	1,961	89	845	94	19,087	159
Median, 1940-44.....	416	10	917	262	102	845	95	20,289	17,995
Hawaii Territory.....	1	40	2	6	6	1	281	243	11
Panama Canal Zone.....	1	40	2	6	6	1	281	243	11

Diseases marked with an asterisk () are reportable by law or regulation in all the States, including the District of Columbia. Typhoid fever is reportable in all the States; paratyphoid fever in all except 6 States. Syphilis is reportable in all the States and the District of Columbia but is not included in the table. Conjunctivitis was dropped from the list of reportable diseases in North Carolina on Jan. 1, 1945.

† For reports for first quarter of 1945 see page 622 of the PUBLIC HEALTH REPORTS of June 1, 1945.

‡ Includes cases of kerato and suppurative conjunctivitis and of pink eye.

§ In some States practically all in the military.

¶ New York City only.

‡ Includes nonresidents.

§ Includes 508 cases delayed reports for 26 weeks.

¶ Exclusive of prisoners of war.

‡ Includes the cities of Colon and Panama.

§ In the Canal Zone only.

¶ Includes septic sore throat.

The following list includes certain rare conditions, diseases of restricted geographical distribution, and those reportable in or reported by only a few States:

Actinomycosis: Michigan 2, Minnesota 1.

Bertrams: Illinois 1, Arizona 4, California 6.

Coccidioidomycosis: Arizona 2, California 11.

Colorado tick fever: Wyoming 2, Colorado 31.

Dengue: South Carolina 3, Texas 12, California 1, Hawaii Territory 11.

Dermatitis: New Hampshire 8.

Diarrhea: New Jersey 2, Ohio 81 (diarrhea and enteritis), Indiana 1, Michigan 8, Maryland 14, South Carolina 4,972, Florida 10, New Mexico 32, Utah 6, California 6.

Dog bite: Illinois 3,701, Michigan 2,988, Arkansas 197.

Food poisoning: Indiana 3, Illinois 102, Minnesota 33, Louisiana 5, New Mexico 1, Nevada 1, Washington 5, California 188.

Granuloma (unspecified): Ohio 13.

Granuloma inguinale: Indiana 10, Illinois 20, Michigan 188, Iowa 1, Missouri 2, North Dakota 1, Kansas 6, Maryland 2, Montana 4, Wyoming 3, Colorado 1, Nevada 30, Washington 77, Hawaii Territory 34.

Jaundice (including hepatitis and Weil's disease): Massachusetts 1, Indiana 8, Florida 135, Michigan 47, Minnesota 2, Iowa 3, Kansas 3, Maryland 5, South Carolina 8, Florida 9, Louisiana 1, Montana 1, Idaho 11, Washington 36, Oregon 6, California 68, Hawaii Territory 47.

Leprosy: Connecticut 1, Illinois 1, Louisiana 1, Texas 4, Washington 1, California 6, Hawaii Territory 4.

Lymphocytic choriomeningitis: Tennessee 12, Utah 1.

Lymphogranuloma venereum: Missouri 4, Florida 39, Tennessee 22, Louisiana 35, Utah 2.

Plague (human): Hawaii Territory 1 (proved fatal).

Rabies in animals: New York 2, Pennsylvania 3.

Puerperal septicemia: Tennessee 1, Mississippi 43, Louisiana 6, Nevada 1.

Rabies in humans: New York 139, Ohio 269, Illinois 142, Michigan 12, Iowa 14, Missouri 21, Kansas 2, Maryland 12, District of Columbia 41, South Carolina 44, Florida 2, Alabama 208, Arkansas 62, Louisiana 20, Texas 185, New Mexico 2, Utah 14, California 244.

Relapsing fever: Louisiana 1.

Relapsing fever: Texas 1.

Rhinorrhea: Pennsylvania 208, Michigan 437, Minnesota 339, Iowa 1, Missouri 104, Idaho 1, Nevada 5, Washington 151.

Syphilis: Pennsylvania 29, Michigan 201, Missouri 1, North Dakota 5, South Dakota 3, Kansas 16, Delaware 1, Montana 9, Idaho 14, Wyoming 4, Nevada 30.

WEEKLY REPORTS FROM CITIES

City reports for week ended September 1, 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.....	0	1	-----	0	0	0	2	1	1	0	0	7
New Hampshire:												
Concord.....	0	0	-----	0	0	0	3	0	1	0	0	0
Vermont:												
Barre.....	0	0	-----	0	0	0	0	0	0	0	0	0
Massachusetts:												
Boston.....	1	0	-----	0	6	2	5	21	12	0	0	34
Fall River.....	0	0	-----	0	1	0	0	0	2	0	0	4
Springfield.....	0	0	-----	0	0	0	0	0	0	0	1	0
Worcester.....	0	0	-----	0	2	0	5	0	0	0	0	3
Rhode Island:												
Providence.....	0	1	-----	0	0	0	0	0	0	0	1	10
Connecticut:												
Bridgeport.....	0	0	-----	0	0	0	1	1	0	0	0	0
Hartford.....	0	0	-----	0	0	0	1	0	2	0	0	0
New Haven.....	0	1	-----	0	0	1	0	1	0	0	0	14
MIDDLE ATLANTIC												
New York:												
Buffalo.....	0	0	-----	0	1	0	3	6	3	0	0	0
New York.....	8	1	-----	2	12	1	44	53	13	0	4	132
Rochester.....	0	0	-----	0	2	0	1	18	3	0	0	3
Syracuse.....	0	0	-----	0	0	1	2	0	3	0	0	22
New Jersey:												
Camden.....	0	0	-----	1	0	1	1	1	3	0	0	1
Newark.....	0	0	-----	1	0	2	0	5	2	0	2	14
Trenton.....	0	0	-----	0	0	0	0	16	0	0	0	1
Pennsylvania:												
Philadelphia.....	1	0	-----	3	16	9	9	17	8	0	3	56
Pittsburgh.....	0	0	-----	1	0	2	7	6	2	0	0	16
Reading.....	0	0	-----	0	0	0	0	0	0	0	0	0
EAST NORTH CENTRAL												
Ohio:												
Cincinnati.....	0	0	-----	1	0	3	13	4	2	0	0	8
Cleveland.....	0	0	-----	1	3	0	1	13	7	0	0	65
Columbus.....	1	0	-----	0	0	0	1	0	2	0	0	5
Indiana:												
Fort Wayne.....	0	0	-----	0	2	0	1	1	0	0	0	5
Indianapolis.....	3	0	-----	0	1	0	4	4	1	0	1	3
South Bend.....	0	0	-----	0	0	0	0	0	0	0	0	0
Terre Haute.....	0	0	-----	0	0	0	0	0	0	0	0	0
Illinois:												
Chicago.....	0	0	-----	1	31	4	20	26	21	0	1	50
Springfield.....	0	0	-----	0	0	0	1	0	0	0	0	2
Michigan:												
Detroit.....	5	0	-----	0	10	1	2	6	5	0	0	68
Flint.....	0	0	-----	0	5	0	2	2	0	0	0	0
Grand Rapids.....	0	0	-----	0	0	0	0	0	0	0	1	2
Wisconsin:												
Kenosha.....	0	0	-----	0	0	0	0	0	1	0	0	0
Milwaukee.....	0	0	-----	0	2	0	5	9	6	0	0	2
Racine.....	0	0	-----	0	0	0	0	0	1	0	0	5
Superior.....	0	0	-----	0	0	0	0	0	1	0	0	1
WEST NORTH CENTRAL												
Minnesota:												
Duluth.....	0	2	-----	0	0	0	1	0	2	0	0	0
Minneapolis.....	1	0	-----	0	1	0	1	3	5	0	0	1
Missouri:												
Kansas City.....	0	0	-----	0	1	0	3	1	4	0	0	3
St. Joseph.....	0	0	-----	0	0	0	0	1	0	0	0	0
St. Louis.....	0	0	-----	2	1	0	6	14	8	0	1	14

See footnotes at end of table.

City reports for week ended July 28, 1945—Continued

	Diphtheria cases	Etiophallitis, 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	0	0	1	6	0	0	0	0
Kansas:												
Topeka.....	0	0	0	0	0	0	1	0	4	0	0	0
Wichita.....	0	1	0	0	0	0	0	1	0	0	0	1
SOUTH ATLANTIC												
Delaware:												
Wilmington.....	0	0	0	0	0	0	3	0	0	0	0	1
Maryland:												
Baltimore.....	6	0	0	0	2	0	5	1	2	0	1	42
Cumberland.....	0	0	0	0	0	0	0	0	1	0	0	0
Frederick.....	0	0	0	0	0	0	0	0	0	0	0	0
District of Columbia:												
Washington.....	0	0	0	0	0	0	6	8	0	0	0	8
Virginia:												
Lynchburg.....	0	0	0	0	1	0	1	0	1	0	0	3
Richmond.....	0	0	0	0	0	0	0	9	2	0	0	0
Roanoke.....	0	0	0	0	0	0	1	0	0	0	0	0
West Virginia:												
Charleston.....	0	0	0	0	0	0	0	0	2	0	0	0
Wheeling.....	0	0	0	0	0	0	1	0	0	0	0	0
North Carolina:												
Raleigh.....	0	0	0	0	0	0	0	1	0	0	0	3
Wilmington.....	0	0	0	0	2	0	0	0	0	0	0	4
Winston-Salem.....	0	0	0	0	0	0	0	1	1	0	0	3
South Carolina:												
Charleston.....	0	0	2	0	0	0	1	0	0	0	0	0
Georgia:												
Atlanta.....	0	0	0	0	0	0	1	0	0	0	0	0
Brunswick.....	0	0	0	0	0	0	0	0	0	0	0	0
Savannah.....	0	0	0	0	0	0	1	3	0	0	0	0
Florida:												
Tampa.....	3	0	0	0	0	0	1	0	1	0	0	1
EAST SOUTH CENTRAL												
Tennessee:												
Memphis.....	0	0	0	0	4	0	1	3	3	0	0	7
Nashville.....	0	0	0	0	0	0	1	2	2	0	0	8
Alabama:												
Birmingham.....	0	0	2	0	0	0	2	2	1	0	1	0
Mobile.....	1	0	0	0	0	0	0	0	0	0	0	0
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock.....	1	0	0	0	0	0	0	0	0	0	0	0
Louisiana:												
New Orleans.....	0	0	5	3	1	0	5	9	1	0	1	3
Shreveport.....	2	0	0	0	0	0	2	3	0	0	1	0
Texas:												
Dallas.....	1	0	0	0	0	0	1	1	3	0	0	1
Galveston.....	1	0	0	0	0	0	1	0	0	0	0	0
Houston.....	3	0	0	0	0	0	3	9	1	0	0	1
San Antonio.....	0	0	0	0	0	2	2	3	0	0	0	2
MOUNTAIN												
Montana:												
Billings.....	0	0	0	0	0	0	0	0	1	0	1	0
Great Falls.....	0	0	0	0	0	0	1	0	0	0	0	0
Helena.....	0	0	0	0	0	0	0	0	1	0	0	0
Missoula.....	0	0	0	0	0	0	0	0	0	0	0	0
Idaho:												
Boise.....	0	0	0	0	0	0	0	0	0	0	0	0
Colorado:												
Denver.....	0	0	1	0	2	1	8	6	2	0	0	12
Pueblo.....	0	0	0	0	1	0	0	0	0	0	0	5
Utah:												
Salt Lake City.....	0	0	0	0	6	0	3	12	0	0	0	11

City reports for week ended July 28, 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.....	0	0	-----	0	5	1	4	2	2	0	0	14
Spokane.....	2	0	-----	0	1	0	2	1	4	0	2	1
Tacoma.....	0	0	-----	0	10	0	0	0	0	0	0	0
California:												
Los Angeles.....	5	0	5	0	11	3	2	8	12	0	2	23
Sacramento.....	0	0	-----	0	0	0	1	0	5	0	0	7
San Francisco.....	1	0	1	1	23	0	6	2	8	0	0	4
Total.....	46	7	27	8	168	32	215	1313	181	0	24	725
Corresponding week, 1944.....	43	-----	19	7	99	-----	184	-----	191	0	36	478
Average, 1940-44.....	43	-----	27	8	173	-----	215	-----	201	0	38	942

¹ Exclusive of 2 cases for week ended August 18, delayed report, Trenton, New Jersey.

² 3-year average 1940-42. ³ 5-year median 1940-44.

Dysentery, amebic.—Cases: New York 6; Detroit 1.

Dysentery, bacillary.—Cases: Providence 3; Buffalo 1; New York 6; Chicago 1; Detroit 2. St. Louis 2; Charleston, S. C. 8; Nashville 1; Los Angeles 4.

Dysentery, unspecified.—Cases: San Antonio 4.

Rocky Mountain spotted fever.—Cases: Philadelphia 1.

Typhus fever, endemic.—Cases: Wilmington, N. C. 1; Charleston, S. C. 8; Atlanta 4; Savannah 7; Tampa 1; Birmingham 4; Little Rock 1; New Orleans 3; Houston 3; San Antonio 4.

Rates (annual basis) per 100,000 population, by geographic groups, for the 88 cities in the preceding table (estimated population, 1943, 34,086,800)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Pollomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England.....	2.6	7.8	0.0	0.0	24	7.8	44.4	62.7	47	0.0	5.2	188
Middle Atlantic.....	4.2	0.5	3.7	0.9	15	6.5	31.9	51.8	17	0.0	4.2	113
East North Central.....	5.5	0.0	0.6	1.2	33	4.9	30.4	39.5	29	0.0	1.8	137
West North Central.....	2.3	6.8	4.5	0.0	7	0.0	29.3	58.6	52	0.0	2.3	43
South Atlantic.....	14.7	0.0	3.3	0.0	8	0.0	34.3	37.6	16	0.0	1.6	106
East South Central.....	5.9	0.0	11.8	0.0	24	0.0	23.6	41.3	35	0.0	5.9	89
West South Central.....	23.0	0.0	14.3	8.6	3	5.7	40.2	71.7	14	0.0	5.7	20
Mountain.....	0.0	0.0	7.9	0.0	71	7.9	95.3	143.0	32	0.0	7.9	222
Pacific.....	12.7	0.0	9.5	1.6	79	6.3	23.7	20.6	49	0.0	6.3	77
Total.....	7.1	1.1	4.1	1.2	26	4.9	33.0	48.0	28	0.0	3.7	111

TERRITORIES AND POSSESSIONS

Puerto Rico

Notifiable diseases—4 weeks ended August 11, 1945.—During the 4 weeks ended August 11, 1945, cases of certain notifiable diseases were reported in Puerto Rico as follows:

Disease	Cases	Disease	Cases
Bilharziasis.....	2	Ophthalmia neonatorum.....	3
Chickenpox.....	24	Poliomyelitis.....	1
Diphtheria.....	58	Syphilis.....	327
Dysentery, unspecified.....	30	Tetanus.....	13
Filariasis.....	1	Tetanus, infantile.....	1
Gonorrhea.....	271	Tuberculosis (all forms).....	486
Influenza.....	20	Typhoid and paratyphoid fever.....	28
Leprosy.....	2	Typhus fever (murine).....	22
Malaria.....	178	Whooping cough.....	55
Measles.....	29	Yaws.....	1

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended August 18, 1945.—

During the week ended August 18, 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.....		2		15	60	4	9	21	32	143
Diphtheria.....		7	4	21	1	4				37
Dysentery, bacillary.....									4	4
German measles.....					4		1	3	3	11
Influenza.....		6			22					28
Measles.....			1	10	74	2	4	6	25	122
Meningitis, meningococcus.....								1		1
Mumps.....		2	1	6	14	12	3	25	6	69
Pollomyelitis.....					¹ 14					¹ 14
Scarlet fever.....	6	4	4	35	24	10	1	7	4	95
Tuberculosis (all forms).....		21	4	141	36	15	26	19	22	284
Typhoid and paratyphoid fever.....				8	5	1			1	15
Undulant fever.....				2	1					3
Venereal diseases:										
Gonorrhea.....	1	25	12	91	200	44	68	37	62	540
Syphilis.....		2	5	73	53	6	11	8	21	179
Whooping cough.....		2	2	141	61	2		3	4	215

¹ Includes 1 case, delayed report.

CUBA

Habana—Communicable diseases—4 weeks ended August 18, 1945.—

During the 4 weeks ended August 18, 1945, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria.....	3		Tuberculosis.....	7	
Malaria.....	1		Typhoid fever.....	27	4
Scarlet fever.....	1	1			

Provinces—Notifiable diseases—4 weeks ended August 11, 1945.—During the 4 weeks ended August 11, 1945, 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.....	-----	-----	3	4	-----	16	23
Chickenpox.....	-----	-----	1	-----	1	-----	2
Diphtheria.....	-----	5	2	3	2	4	16
Hookworm disease.....	-----	19	-----	1	-----	-----	20
Leprosy.....	-----	1	1	-----	-----	3	5
Malaria.....	3	1	-----	1	3	145	153
Measles.....	-----	1	-----	-----	-----	3	4
Polioimyelitis.....	-----	-----	-----	-----	-----	1	1
Rabies in man.....	-----	-----	-----	-----	-----	1	1
Scarlet fever.....	-----	1	-----	-----	-----	-----	1
Tuberculosis.....	16	24	30	59	41	46	216
Typhoid fever.....	34	94	33	106	87	75	429

¹ Includes the city of Habana.

FINLAND

Helsinki—Typhoid fever.—Information dated September 7, 1945, stated that the epidemic of typhoid fever was continuing, with 155 new cases reported on September 5 and 115 cases reported on September 6, 1945. The total number of cases reported in Helsinki to the latter date is 2,472, with additional cases reported in other cities. (See also PUBLIC HEALTH REPORTS, Sept. 14, 1945, p. 1099.)

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-June 1945	July 1945	August 1945—week ended—			
			4	11	18	25
ASIA						
China:						
Hupeh Province.....	C	14				
Kweichow Province—Kweijang.....	C	12				
Szechwan Province.....						
Chengtun.....	C	P 9				
Chungking.....	C	8,000				
Hsin Chiaco.....	C	1				
Hsin Kai Shih.....	C	1				
Kiang Pei.....	C	1				
Kweyang.....	C	26				
Nel Kiang.....	C	200				
Pi Shan.....	C	40				
Yunnan Province.....	C	P				
India.....	C	133,347	32,317			
Bombay.....	C	47	15	13		
Calcutta.....	C	4,203	460	40	62	57
Cawnpore.....	C	120	29	8	14	10
Chittagong.....	C	17			1	1
Delhi.....	C	57	105	20	19	17
Madras.....	C	49		2		
Visagapatam.....	C	13	10	3	2	1
Indochina: Cochinchina.....	C	P				

PLAGUE

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

Place	January-June 1945	July 1945	August 1945—week ended—			
			4	11	18	25
AFRICA						
Algeria.....	C	12		1		
Basutoland.....	C	4				
Bechuanaland.....	C	7				
Belgian Congo.....	C	8	3		2	
British East Africa:						
Kenya.....	C	11	25	3		5
Uganda.....	C	6				
Egypt.....	C	172				
Ismailiya.....	C	72	10	1		
Port Said.....	C	53	15	2		5
Suez.....	C	16	3		3	
French West Africa.....	C	5				
Dakar.....	C	1				
Madagascar.....	C	112	1			
Morocco (French).....	C	501	174		97	
Senegal.....	C	54				
Tunisia.....	C	3				
Union of South Africa.....	C	7				
ASIA						
China:						
Foochow.....	C	30				
Yunnan Province ¹	C	P				
India.....	C	18,088	390			
Iraq.....	C	34				
Palestine.....	C	12	1	1		2
Plague-infected rats.....		17				
EUROPE						
France: Corsica—Ajaccio.....	C	6	2			
Great Britain: Malta.....	C	4	14	1	1	3
Portugal: Azores.....	C	5	3		4	
Spain: Canary Islands.....	C	1				
NORTH AMERICA						
Canada: Alberta Province: ²						
Plague-infected squirrels.....		1	1			
SOUTH AMERICA						
Argentina:						
Buenos Aires Province—Plague-infected rats.....		2				
Santiago del Estero Province.....	C	1				
Bolivia: Santa Cruz Department.....	C	75				
Ecuador:						
Chimborazo Province.....	C	6				
Loja Province.....	C	2	11			
Peru:						
Ancash Department.....	C	1				
Ica Department.....	C	3	1			
Lambayeque Department.....	C	13				
Libertad Department.....	C	10	1			
Lima Department.....	C	11	2			
Otuzco Department.....	C	3				
Piura Department.....	C	4				
OCEANIA						
Hawaii Territory.....	D	1				
Plague-infected rats ¹⁰		10	2			

¹ Includes 4 cases of pneumonic plague.² Includes 5 suspected cases.³ For the period Aug. 1-20, 1945.⁴ 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.⁵ Includes 4 suspected cases.⁶ 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.⁷ Includes 6 suspected cases.⁸ Includes 1 suspected case.⁹ Previously reported as a case, death occurring on June 2, 1945.¹⁰ 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-June 1945	July 1945	August 1945—week ended —			
			4	11	18	25
AFRICA						
Algeria.....	C	153	11			
Angola.....	C	81				
Basutoland.....	C	320	24			
Belgian Congo.....	C	4,981	203	79	24	
British East Africa:						
Kenya.....	C	154	12	2		
Nyasaland.....	C	9				
Tanganyika.....	C	2,853	381			
Uganda.....	C	669	155			
Cameroon (French).....	C	334	49			1 366
Dahomey.....	C	103	14			1 33
Egypt.....	C	1,008	40	4		
French Equatorial Africa.....	C	1,526	10			
French Guinea.....	C	1,423	53			
French West Africa: Dakar District.....	C	384	6			
Gambia.....	C	81	1			
Gold Coast.....	C	29	25	25	4	30
Ivory Coast.....	C	422	46			
Libya.....	C	6	6			
Mauritania.....	C	80	3			
Morocco (French).....	C	470	637			1 64
Nigeria.....	C	3,363				
Niger Territory.....	C	446	26			
Rhodesia, Northern.....	C	874	566			
Senegal.....	C	447	40			
Sierra Leone.....	C	23	8			
Sudan (Anglo-Egyptian).....	C	1 3				
Sudan (French).....	C	1,622	304			1 92
Togo (British).....	C	25				
Togo (French).....	C	457	25			
Tunisia.....	C	2				
Union of South Africa ¹	C	1,270	P	P		
ASIA						
Arabia.....	C	22				
Ceylon.....	C	4 379	37		95	
China.....	C	696				
India.....	C	207,473	10,182			
Iran.....	C	390				
Iraq.....	C	36			1	1
Syria and Lebanon.....	C	6	2			
Turkey (see Turkey in Europe).....	C					
EUROPE						
Belgium.....	C	1				
France.....	C	4	22			
Great Britain: Scotland.....	C	1 2				
Italy.....	C	1,561	21			
Sicily.....	C	6				
Portugal.....	C	19	4			
Spain.....	C	30				
Canary Islands.....	C	1				
Turkey.....	C	289	2			
NORTH AMERICA						
Canada.....	C	6				
Guatemala.....	C	4				
Honduras.....	C	8				
Mexico.....	C	1,066				
Nicaragua.....	C	123	1 13			
SOUTH AMERICA						
Bolivia.....	C	293	200			
Brazil.....	C	1 139	1 14			
Columbia.....	C	211	47	9		
Ecuador.....	C	21	1			
Paraguay.....	C	1				
Peru.....	C	39				
Uruguay.....	C	19	67			
Venezuela.....	C	1 485	1 24			1 28

¹ For the period Aug. 1-20, 1945.² Imported.³ For the week ended June 30, 1945, cases of virulent smallpox were reported in the Union of South Africa.⁴ Includes some cases of chickenpox.⁵ Includes cases of alastrim.⁶ For the month of August.

TYPHUS FEVER*

[C indicates cases; P, present]

Place	January- June 1945	July 1945	August 1945—week ended—			
			4	11	18	25
AFRICA						
Algeria.....	C	934	20			
Basutoland.....	C	50	1			
Belgian Congo ¹	C	135	24	27		
British East Africa: Kenya.....	C	27		2		
Egypt.....	C	14,539	455	116		
French West Africa: Dakar ¹	C	14	1			
Gold Coast.....	C	1				
Libya: Tripolitania.....	C	17		1		
Morocco (French).....	C	5,089	1,247		1,415	
Nigeria.....	C	P				
Rhodesia, Northern.....	C	31				
Sierra Leone.....	C	3				
Tunisia.....	C	375				
Union of South Africa.....	C	517	P ⁴	P		
ASIA						
China.....	C	908				
India.....	C	22				
Iran.....	C	823				
Iraq.....	C	192	20	2	5	3
Palestine ¹	C	62				6
Syria and Lebanon.....	C	12				
Trans-Jordan.....	C	42		1		
Turkey (see Turkey in Europe).						
EUROPE						
Albania.....	C	100				
Austria.....	C	30	16			
Belgium.....	C	143	14			
Bulgaria.....	C	928				
Denmark.....	C	144	1	1		
France.....	C	231	32	4		
Germany.....	C	7,579	293			
Gibraltar.....	C	4				
Great Britain.....	C	21				
Malta and Gozo ¹	C	9				
Greece.....	C	60	25			
Italy.....	C	129				
Netherlands.....	C	158				
Portugal.....	C	43	4	1		
Rumania.....	C	17,831				
Slovakia.....	C	255				
Spain.....	C	13				
Sweden.....	C	220	3			
Switzerland.....	C	1				
Turkey.....	C	2,203	102	17	26	16
Yugoslavia.....	C	1,194				27
NORTH AMERICA						
Canada ¹	C	1				
Costa Rica ¹	C	5	1			
Cuba ¹	C	5	2			
Guatemala.....	C	1,033				
Jamaica ¹	C	21	3			
Martinique ¹	C				1	
Mexico.....	C	953				
Panama (Republic).....	C	3				
Puerto Rico ¹	C	70	42	8	15	
Virgin Islands ¹	C	8				
SOUTH AMERICA						
Bolivia.....	C	293				
Brazil.....	C	1				
Chile ¹	C	304	28			
Colombia.....	C	20				
Curacao.....	C	1				
Ecuador.....	C	229	61			
Peru.....	C	361				
Venezuela ¹	C	75				
OCEANIA						
Australia ¹	C	75	5			
Hawaii Territory ¹	C	55	6	1	2	

*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 August 1-20, 1945.³ Includes imported cases.⁴ For the period Jan. 1-20, 1945.

YELLOW FEVER

[C indicates cases; D, deaths]

Place	January- June 1945	July 1945	August 1945—week ended—			
			4	11	18	25
AFRICA						
Gold Coast:						
Nsawam.....	C	2	1			
Takoradi.....	C	1				
Winneba.....	C	1	1	1		1
Ivory coast:						
Gaoua.....	C	1				
Guiglo.....	C	1				
Sierra Leone: Moyamba.....	C	2				
SOUTH AMERICA						
Brazil:						
Goiaz State.....	D	76				
Minas Geraes State.....	D	25				
Para State.....	D		1			
Colombia:						
Magdalena Department.....	D		2			
Santander de Norte Department.....	D	10	1			
Peru:						
Cuzco Department.....	C	3				
Loreto Department.....	C	1				
Venezuela:						
Bolivar State.....	C	1				
Merida State.....	C		2			
Tachira State.....	D	14	6			
Zulia State.....	C		6			

¹ Suspected.

STUDIES OF TYPHUS FEVER¹

A Review

National Institute of Health Bulletin No. 183, entitled: "Studies of Typhus Fever" has recently been released for circulation. It represents part of the work on the rickettsial diseases done at the National Institute of Health since the outbreak of the war. After the restrictions on this type of information were lifted, it seemed appropriate to collect the studies on typhus fever and issue them as a report of work accomplished.

The bulletin contains the following articles:

Studies of typhus fever vaccines. By N. H. Topping, I. A. Bengtson, and M. J. Shear.

Section I. Tests on available vaccines.

Section II. On the addition of alum to Cox vaccine.

Section III. Studies of antigens in infected yolk sacs.

Section IV. Studies of the relationship of the abundance of rickettsiae in yolk sacs infected with epidemic and endemic typhus and the complement fixation reaction.

Epidemic typhus: Demonstration of a substance lethal for mice in the yolk sac of eggs infected with *Rickettsia prowazeki*. By I. A. Bengtson, N. H. Topping, and R. G. Henderson.

Notes on the preparation of epidemic typhus vaccine. By N. H. Topping.

Notes on the mouse test with typhus vaccines. By R. G. Henderson.

Epidemic typhus vaccine: Preparation of seed virus for the inoculation of eggs and of lethal material for the neutralization test in mice. By I. A. Bengtson.

Epidemic typhus fever: Neutralization of the toxic substance. By R. G. Henderson and N. H. Topping.

Epidemic typhus fever: A study of the antigenicity of various strains of typhus virus. By N. H. Topping, I. A. Bengtson, and R. G. Henderson.

Epidemic typhus fever: Studies of epidemic typhus vaccine. By N. H. Topping, R. G. Henderson, and I. A. Bengtson.

Technic of a precipitin test for the study of typhus fever. By C. C. Shepard and N. H. Topping.

Typhus fever: Antigens of the rickettsiae of typhus fever and the changes produced by heat. By C. C. Shepard.

INDUSTRIAL HYGIENE BIBLIOGRAPHY²

A Review

A bibliography of industrial hygiene covering selected books and articles produced in the years 1900-43 is presented in Public Health Bulletin No. 289.

The bulletin was prepared by the Industrial Hygiene Division, Bureau of State Services, United States Public Health Service, in

¹ Studies of typhus fever. By N. H. Topping, I. A. Bengtson, R. G. Henderson, C. C. Shepard, and M. J. Shear. National Institute of Health Bulletin No. 183. Government Printing Office, 1945. For sale by the Superintendent of Documents, Washington 25, D. C. Price 20 cents.

² Bibliography of industrial hygiene, 1900-43; a selected list. Pub. Health Bull. No. 289. Government Printing Office, 1945. For sale by the Superintendent of Documents, Washington 25, D. C. Price 20 cents.

response to demand from industrial hygienists, governmental health and labor personnel, physicians, industrial management, and labor for dependable references on industrial hygiene subjects.

Part I contains general sources of information in this field, including reference volumes useful to an industrial hygiene library, periodicals representing all phases of industrial hygiene interest and activity, sources from which pamphlets and other reference materials may be obtained, a list of governmental industrial hygiene agencies, educational and research organizations, insurance groups active in industry, and libraries.

Part II is a listing of articles and books on specific industrial hygiene subjects. It includes materials on such problems as absenteeism and morbidity; aviation medicine; dermatoses; dust problems in particular industries, determination and control of dusts, and dust diseases; various other diseases, occupational and nonoccupational, as they apply to industry; eye problems; fatigue; hazardous substances, organic and inorganic, and such substances as are found in particular industries and processes, with methods of sampling and analysis; health education; industrial hygiene services; legislation; ventilation; and women in industry.

A number of important papers which appeared early in 1944, when the bibliography was in preparation, have been included.

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