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## SOME SUGGESTIONS CONCERNING THE BACTERIOLOGICAL DIAGNOSIS OF HUMAN BOTULISM.

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### Considerations Prompting Bacteriological Study.

In the course of an analysis of a fairly large number of outbreaks of botulism in man reported during the last 10 years, it was noted that the diagnosis was frequently based on clinical symptoms only. Sometimes it was possible to demonstrate the botulism toxin or the organisms in the causative food. In numerous instances, however, the remnants of the suspected food were evidently not available or were examined by a chemist instead of a bacteriologist. From a medico-legal, and also from an epidemiological, standpoint, the diagnosis could therefore be questioned, and the statistician attempting to unravel the all-embracing diagnosis "ptomaine or food poisoning" finds little definite information in the published reports. If one recalls, moreover, that botulism can be mistaken by the inexperienced person for methyl-alcohol poisoning, encephalitis lethargica, or cerebrospinal syphilis, it is obviously important to conduct careful necropsies on such cases and to determine either by cultural or histological studies the true nature of the disease. In connection with the latter procedure it must be said that the characteristic thrombi or prethrombotic stages in the arteries and veins of the meninges and brain originally described by Ophüls (1) may not be present, and a microscopic study alone may therefore fail to render a diagnosis. Bacteriologic studies of the tissues of fatal cases have been made in a few instances. V. Ermengem (2), Ornstein (3), and Graham (4) report the demonstration of *B. botulinus* in the spleen of fatal botulism cases. Some writers also recommend a cultural study of the intestinal contents at autopsy, but nothing is said regarding the possibility of finding *B. botulinus* in the stools of clinical cases.

Theoretically, at least, stool examinations appear to be valuable, inasmuch as numerous observers have found this organism in the excreta of animals which ingested food spontaneously or experimentally contaminated with the poison and spores of the organism. Constipation is almost a constant manifestation of botulism and is naturally conducive to the persistence of the organism for a considerable period in the alimentary canal of man and animals. This must be particularly the case in those instances in which a bowel

movement can not be procured, in spite of all medication, until the 10th or even the 16th day, as reported by Schumacher (5).<sup>1</sup>

These and other considerations to be discussed elsewhere prompted us to study bacteriologically some cases of botulism which came to our notice during the last 12 months. The findings thus far made are suggestive and are reported in order that other workers may amplify our observations when the occasion arises.

#### Methods Employed in Culturing Tissues or Stool Specimens for *B. botulinus*.

Portions of the organs are ground in a mortar with sea sand and emulsified with saline. Stool specimens are diluted with saline until the formed portions are finely divided. The emulsions are placed in 250-c. c. culture flasks and heated for one hour at 60° C. They are then mixed with 100 c. c. sterile beef heart medium, which consists of one part of ground beef heart and two parts of peptic digest broth of a reaction P<sub>H</sub> 7.4. The mixture is stratified with oil, or, better, with vaseline. The flasks, which are closed with rubber stoppers and sealed with Imperial or Major's glue, are exhausted of air as completely as possible. After incubation for from 10 to 30 days at 37° C., the centrifugalized supernatant fluid is administered, in 1- to 2-c. c. doses, to guinea pigs. The presence of *B. botulinus* toxin is definitely ascertained by a neutralization test with known type A, and B, *B. botulinus* antitoxic sera. Isolation of *B. botulinus* is accomplished by fractional heating, enrichment, and deep cultivation in liver-peptone agar. Heating of the emulsions at 60° C. for one to two hours alone insures the possibility of obtaining proper cultures, as is shown in the case reports.

#### Report of Cases.

*Richmond, Calif., outbreak* (Feb. 25, 1920).—*B. botulinus* type A, and *B. botulinus* type A toxin were demonstrated in a can of olive relish, responsible for one fatal case. Anaerobic cultures from the spleen of the patient (25 grams), liver (20 grams), lung (10 grams), kidneys (9 grams), mucus from ileum (5 grams), and jejunum were negative for *B. botulinus*. The intestinal wall was not cultured.

*Florence, Ariz., outbreak* (May, 1920).—Canned beets were suspected as the causative food. For a bacteriological examination, the spleen (weight 242 grams), a portion of the jejunum, and the brain of Ch. R., who died on May 19, 1920, were available.

Cultures of the spleen (30 grams) and chyme (5 c. c.) of the intestinal loop demonstrated *B. welchii*, *B. sporogenes*, and *B. bifermentans*.

#### <sup>1</sup> References:

- (1) Arch. Int. Med. 1914, 14, p. 589.
- (2) Ztschr. f. Hyg. u. Infektionskr. 1897, 88, p. 4.
- (3) Ztschr. f. Chemotherap. Orig., 1913, 1, p. 458.
- (4) McCaskey: Am. Jour. Med. Sc. 1919, 158, p. 57.
- (5) Münch. Med. Wechnschr. 1913, 60, p. 124.

A specimen consisting of 4 grams of macerated jejunal wall gave a culture of *B. botulinus*, type B, associated with *B. tertius*, *B. welchii*, *B. sporogenes*, *B. tetano morphus*, and two other unidentified anaerobes. The strain of *B. botulinus* was isolated in pure culture. The remaining portion of the intestinal wall, which had been kept in the ice chest for four weeks, had undergone autolysis and decomposition, but when cultured, *B. botulinus*, type B, was isolated. Sections of the brain revealed definite prethrombotic stages in the blood vessels of the brain. Cultures of the brain revealed cocci and gram negative aerobic rods.

*Oakland, Calif., outbreak* (October, 1920).—Canned spinach was suspected as the causative food. Available for a bacteriological study were some stool specimens collected from Miss A. R., who recovered from the disease. The responsible meal was consumed on October 14, 1920; the first symptoms were noted on the 16th; intestinal washings were obtained on October 20, and a formed stool on October 21, 1920. Six specimens of 75 c. c. each of the intestinal washings were heated for one hour at 60° C. and cultured; five contained *B. botulinus*, type A. Five specimens of 75 c. c. each were cultured in an unheated state. These cultures, on repeated tests, were negative for *B. botulinus*. Three samples of 50 grams of solid stool were emulsified in saline, heated at 60° C. for one hour and cultured. Only one sample gave a culture of *B. botulinus*. Three unheated specimens of the same sample were negative. *B. botulinus* was, therefore, present in six stool specimens collected on the sixth and seventh days, respectively, after the consumption of the causative meal.

*Grand Rapids, Mich., outbreak* (January, 1921).—Canned spinach was suspected as the causative food. Through the courtesy of Dr. Merrill Wells the intestinal washing (cnema) of Miss H. was collected on the eleventh day and made available on the seventeenth day after the consumption of the infected meal. One flask out of five stool specimens of 50 c. c. each, which had been heated to 60° C. and cultured, contained, on the tenth day of incubation, *B. botulinus* toxin, type A. The isolation of the organism in pure culture is in progress. Two unheated specimens were negative. *B. botulinus* was, therefore, present in a stool specimen on the eleventh day after the causative meal had been consumed.

#### Comment.

The foregoing observations indicate that the spores of *B. botulinus*, when presumably ingested in the poisonous food, may remain in the intestinal canal and may be eliminated in the stools of typical botulism cases. Several important problems suggest themselves for immediate experimental study or investigations on human cases of

this disease; the following points deserve particular consideration: (1) Determination of the average period of fecal discharge of *B. botulinus* spores in severe and mild cases of botulism; (2) quantitative estimation of the eliminated spores per 1 or 10 grams of enema or formed stool; (3) quantitative comparison of the spore content of the causative food and that of the stools; (4) testing of filtered stool suspensions, on guinea pigs, for the presence of toxin; and (5) testing for *B. botulinus* spores the stools of normal human beings who eat raw fruit or vegetables and live in districts in which the organism is quite common in the soil.

These investigations would undoubtedly contribute information as to the possible pathogenicity of *B. botulinus* spores as suggested by Orr (6), Edmondson, Giltner, and Thom (7), and others. *B. botulinus* possesses a noteworthy degree of growth adaptability, and it is possible that the spores can germinate in the parietic intestinal tube and form toxin. Some personal observations on spontaneously diseased domesticated animals justify this suggestion. It appears also of importance to know if botulism convalescents can remain "spore carriers" and, as such, assist in the progressive pollution of the earth with dangerous bacteria. The diagnostic value of the demonstration of *B. botulinus* spores can only be accepted when repeated tests on normal stool samples have demonstrated an absence of this organism. An experimental study of the problem mentioned under (5) in the preceding paragraph is in progress. The examination of numerous sewage samples of urban and rural origin has thus far failed to give positive *B. botulinus* cultures, and we therefore feel confident that the stool test will be of practical value. However, it remains to be demonstrated as to the number of days a botulism patient is capable of discharging *B. botulinus* spores. The observations made by Thom, Edmondson, and Giltner (8), and others on guinea pigs strengthen our belief that the spores may be demonstrated only in the fecal remnants of the causative meal. Inasmuch as the discharge of this material is quite often delayed for many days, on account of the intestinal paresis, positive findings may be recorded for two, perhaps even three, weeks.

A quantitative estimation of the spores in the stool samples or in the causative food offers no technical difficulties. For example, in one of the recent outbreaks the spinach responsible contained *B. botulinus* spores in practically a pure state. Shake cultures and particularly those in dried liver agar gave colonies which could be readily counted.

The finding of *B. botulinus* spores in the jejunal wall, but not in the chyme, of the particular intestinal loop mentioned may be merely accidental or may vaguely support the recently advanced, but rather fanciful, conception (9) that "*B. botulinus* when taken into the human

system lodges in the digestive tract, and the toxins produced there spread over the body." It is our intention to discuss this phase of botulism elsewhere in detail; nevertheless, the diagnostic significance should be emphasized. We had recently occasion to study, in cooperation with Dr. L. R. Vawter, of Reno, Nev., a cattle disease in which *B. botulinus* apparently exhibited invasive properties. Invariably the organism was isolated from the inflamed duodenum and jejunum, the liver, mesenteric lymph-nodes, etc.

It is noteworthy that our two attempts to isolate *B. botulinus* from the spleen were not successful. These results may, in part, be due to the fact that post-mortem invasion was made impossible by the early removal and careful preservation of the tissues after death.<sup>1</sup>

#### Summary.

*B. botulinus*, type B, has been isolated from the jejunal wall of a case of botulism fatal on the fifth day of the disease. Spleen cultures in two instances were negative for *B. botulinus*. Stool specimens of two clinical cases of botulism, obtained from two different outbreaks, contained *B. botulinus*, type A, on the sixth, seventh, and eleventh day, respectively, after the consumption of the causative meal. The methods of tissue and stool cultures are described. The importance of culturing the stools and tissues of all clinical cases of botulism is evident.

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## THE COMPARATIVE TOXICITY OF THYMOL AND CARVACROL (ISOTHYMOL.)<sup>2</sup>

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#### Introduction.

Uncinariasis was shown by Stiles in 1903 to be quite prevalent in the southern portion of the United States, and his efforts are largely responsible for the fact that it is commonly diagnosed as such in this country at the present time. The treatment, which is now recognized as an important economic problem in many localities, usually consists of some vermifuge which will either kill or paralyze the parasite, causing it to release its hold on the intestinal wall and thus be swept from the digestive tract with the excreta. The ideal treatment should quickly kill all the parasites and at the same time produce no undesirable effects on the patient. Such a substance has not thus far been found. Among the various remedies which have been used may be mentioned

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#### <sup>1</sup> References:

- (6) Proc. Soc. Exp. Biol. and Medicine, 1919, 17, p. 47.
- (7) Arch. Int. Med., 1920, 26, p. 357.
- (8) Jour. Am. Med. Assn., 1919, 73, p. 911.
- (9) Boston Med. & Surg. Jour., 1920, July 29, 183, p. 139.

<sup>2</sup> From the Division of Pharmacology, Hygienic Laboratory, United States Public Health Service.

eucalyptus oil, naphthol, chloroform, male fern, calomel, thymol, oil of chenopodium, and chloroform in various combinations with other substances. Thymol has been used in hookworm disease for the past 40 years and in 1914 it constituted the principal remedy for this disease in this country. Our stock of thymol at that time was imported chiefly from Germany. This fact made our supply very uncertain and at times almost unobtainable, as pointed out by Motter (1914). With this decrease in supply, the price advanced to approximately five times that of previous years.

Because of these conditions, physicians began to prescribe oil of chenopodium (American wormseed oil), which had long been known to have an anthelmintic value. This oil is distilled in this country from *Chenopodium anthelminticum*, which makes our supply comparatively certain, but owing to its variability it is not established as a safe remedy for general use in hookworm disease.

Darling, Barber, and Hacker (1918), for instance, mention some of the objectionable features of thymol and oil of chenopodium. Among 123 cases which they treated with thymol, in doses ranging from 40 to 180 grains, the following effects were noted: Muscular incoordination, dizziness, inability to rise, marked burning in stomach, marked headache, vomiting, and albuminuria. Among 79 cases treated with oil of chenopodium, in doses varying from 0.75 to 3.0 c. c., the effects as compared with thymol were as follows: Dizziness more common, muscular incoordination more marked, inability to rise much more frequent, burning in stomach less marked, and headache less marked. Vomiting and albuminuria were also noticed, but the comparison with thymol was not definite. A semicomatose state was rarely noted. Five cases of deafness followed 3 c. c. doses; and in two cases death followed two treatments of 3 c. c., each administered with an interval of four days between. The critical observer may attribute many of these undesirable effects to the comparatively large doses used, but at best the literature regarding the treatment of hookworm disease indicates that new or additional specifics are desirable. Realizing this condition, Dr. Ralph W. McKee suggested that a study of carvacrol be made. This drug seemed to merit a preliminary investigation to determine its relative toxicity on animals before being tested clinically as a substitute for thymol in hookworm cases.

#### Carvacrol as a Possible Substitute for Thymol.

*Sources of thymol and carvacrol.*—Both thymol and carvacrol occur in nature and are found in several volatile oils. From *Thymus vulgaris*, a common plant indigenous to southern Europe, may be derived the "white oil of thyme." The less volatile and more valuable portion of this oil consists chiefly of thymol. Carvacrol is also present at times in this fraction, replacing part or all of the thymol.

Oils of origanum and savory contain carvacrol in varying concentrations, but none of these sources lends itself to production on a commercial scale. Samuel Clark Hood (1916), of the United States Department of Agriculture, has extended experiments over five years, showing that as much as 20 pounds of thymol per acre may be produced from horsemint, but that the cost of production at that time (1911-1915) was prohibitive as a commercial proposition.

The thymol of commerce at the beginning of the war (1914) was derived almost entirely from ajowan seed which was grown in northern India and shipped to Europe, where the oil was extracted.

Carvacrol may be prepared artificially by a number of different methods as pointed out by Hixson (1918), but in most cases the materials used would result in a very expensive product. Hixson and McKee (1918) reported a new process for the manufacture of carvacrol on a large scale from spruce turpentine, which is obtained in large quantities as a by-product in the manufacture of wood pulp. This process seems to assure our supply for medical purposes, and probably at a much lower price than that commanded by thymol or oil of chenopodium.

*Properties of thymol and carvacrol.*—Carvacrol is an isomer of thymol, as seen by the following formulæ:



As it solidifies at 1° C. and boils at 236° C., it is encountered as a liquid; whereas thymol, having a melting point of 49.6° C. and a boiling point of 231.8° C., is a solid, even at body temperature. Carvacrol has a pungent aromatic taste, which much resembles that of thymol, and possesses a distinct local anesthetic property, as may be noticed when the drug is applied to the tongue. At the time of distillation it is a colorless oil, which, upon long standing, assumes a reddish brown color. It has a peculiar odor not unlike that of thymol, but much less pleasant.

Thymol, according to Seidell (1919), is soluble in water at 20° C. to the extent of about 880 parts per million. No definite statement in regard to the solubility of carvacrol in water has been found; but with the highest concentrations used in these experiments, which was 500 parts per million, a perfectly clear solution was obtained.

The United States Dispensatory (1918) quotes Martindale as stating that carvacrol is almost as actively germicidal as its isomer, thymol, but the data upon which this statement is based have not thus far been found by the writer. Hixson (1918) includes the state-

ment that "Recent comparative tests have shown carvacrol to be practically equal to and, in some cases, to possess greater antiseptic values than thymol," but this conclusion is based on only four viability tests on bacteria. Sollman (1919), the results of whose work were published after the present study was under way, concludes that carvacrol ranks with oil of chenopodium and thymol in toxicity for earthworms, that probably it is more irritant and toxic for dogs than thymol, and that it deserves a careful clinical trial as an anthelmintic substitute for thymol. The writer has been advised that clinicians have found that patients objected to its use on account of the taste. It is possible that a method of administration might be adopted which would obviate this objection.

The factors, then, which indicate that carvacrol may be used as a substitute for thymol are as follows: Its source of supply in this country is assured; the raw materials from which it may be made are inexpensive; it is a liquid instead of a solid, as thymol, at body temperature, which gives it a better chance of coming in contact with all parts of the intestinal wall; it has a distinct local anesthetic property which, combined with its anthelmintic action, indicates a high efficiency; and, being an isomer of thymol, its toxicity, as well as its anthelmintic properties, as shown by Sollman, is probably quite similar to that of thymol. In connection with the present toxicity experiments on rabbits and paramecia, it seemed that additional evidence in regard to its anthelmintic action, as indicated by tests on earthworms, might be valuable.

#### EXPERIMENTS ON RABBITS.

Dogs were found to be unsuitable for this work because they vomited soon after the drug was given, which, of course, made it possible that some of the drug might be lost. For this reason rabbits were chosen for further work. Both drugs have been administered by three methods: sometimes they were given in a 50 per cent solution in olive oil in gelatin capsules, sometimes in full strength in gelatin capsules, and at other times by means of a small inelastic catheter attached to an accurately graduated syringe. In the case of thymol the catheter method could be used only when the drug was dissolved in oil, while this method was applicable to carvacrol either in full strength or in oil. No comparison of results has been made to determine whether or not any difference in toxicity has resulted from these different methods of administration. The introduction by catheter and syringe, both being completely filled, has proved the most satisfactory from the standpoints of accuracy and convenience.

In all, 109 rabbits have been used, grouped, according to the drug used, into four series, namely, those receiving 50 per cent thymol dissolved in olive oil, those receiving thymol in the form of powder,

those receiving 50 per cent carvacrol in olive oil, and those receiving carvacrol in pure form. The dose for each ranged from 0.25 gram to 3 grams per kilo. A considerable individual variation in susceptibility was noticed, which was probably due, in part at least, to the variable amount of food in the stomach. The length of time of survival for each animal, or the time the animal was kept under observation, varied from a few hours to several weeks.

TABLE I.—Results of different sized doses of thymol and carvacrol administered with and without olive oil.

Thymol.						Carvacrol.					
In olive oil.			Not in oil.			In olive oil.			Not in oil.		
No. of animal.	Dose in gm. per kg.	Days survived.	No. of animal.	Dose in gm. per kg.	Days survived.	No. of animal.	Dose in gm. per kg.	Days survived.	No. of animal.	Dose in gm. per kg.	Days survived.
123.....	0.25	65+				107.....	0.25	65+			
124.....	.25	15				108.....	.25	65+			
125.....	.25	65+				109.....	.25	65+			
126.....	.25	65+				106.....	.25	65+			
127.....	.25	65+				105.....	.25	65+	59.....	0.33	25
45.....	.5	120+	37.....	0.5	24	31.....	.5	3	41.....	.5	8
48.....	.5	18	33.....	.5	24	33.....	.5	3	40.....	.5	9
47.....	.5	31	34.....	.5	19	32.....	.5	10	43.....	.5	32
44.....	.5	34	35.....	.5	18	29.....	.5	40	39.....	.5	35
46.....	.5	54	36.....	.5	34	112.....	.5	65+	86B.....	.5	10
131.....	.5	65+	38.....	.5	16	115.....	.5	65+			
128.....	.5	65+				114.....	.5	65+			
129.....	.5	65+				118.....	.5	65+			
130.....	.5	65+				116.....	.5	65+			
132.....	.5	65+									
134.....	.75	15	89.....	.75	9	119.....	.75	65+	102.....	.75	2
136.....	.75	20				122.....	.75	65+			
133.....	.75	65+				121.....	.75	4			
135.....	.75	65+				120.....	.75	27			
137.....	.75	65+									
10.....	1.0	76				36.....	1.0	95	103.....	1.0	3
12.....	1.0	37				23.....	1.0	120+	86E.....	1.0	120
11.....	1.0	5				28.....	1.0	3	92.....	1.0	118
9.....	1.0	6				24.....	1.0	2			
8.....	1.0	6				25.....	1.0	2			
138.....	1.0	65+									
14.....	1.5	120+				20.....	1.5	16	93.....	1.5	2
16.....	1.5	120+				21.....	1.5	120+	86C.....	1.5	120
17.....	1.5	64				18.....	1.5	5			
15.....	1.5	6				22.....	1.5	2			
13.....	1.5	7				19.....	1.5	3			
0.....	2.0	79	95.....	2.0	5	2.....	2.0	2	104.....	2.0	118
144.....	2.0	3	112.....	2.0	15	142.....	2.0	1	115.....	2.0	4
4.....	2.0	2	106.....	2.0	19	1.....	2.0	2	114.....	2.0	3
143.....	2.0	21	126.....	2.0	11	141.....	2.0	1	118.....	2.0	1
5.....	2.0	4	131.....	2.0	1	3.....	2.0	118	149.....	2.0	3
145.....	3.0	1	100.....	3.0	4	147.....	3.0	1	62.....	3.2	3
146.....	3.0	1	101.....	3.0	8	148.....	3.0	1	119.....	3.0	6

<sup>1</sup> Hours.

NOTE.—The + sign means that the rabbit was discarded on the day indicated and probably lived even longer.

It may be observed from Table I that, in doses of 0.25 gram per kilo, 5 received thymol and 5 carvacrol. Only 1 rabbit died during the period of observation, which extended over 65 days. This rabbit lived 15 days after receiving thymol, which probably means that neither the thymol nor carvacrol in this dose was responsible for any deaths.

The next higher dose was 0.5 gram per kilo, 30 rabbits receiving this amount. Among the 14 animals receiving this dosage of carvacrol, 2 died within 3 days, whereas the remaining 12 lived 8 days or longer (most of them 5 weeks) after receiving the drug. Of the 16 rabbits receiving 0.5 gram of thymol per kilo, none died in less than 16 days.

Among 11 rabbits which received 0.75 gram per kilo, 5 received the carvacrol and 6 the thymol. The table shows that of the 5 receiving carvacrol, 1 died the second and 1 the fourth day, whereas the other 3 lived 27 days or longer. Of the 6 receiving thymol, the first to die lived 9 days, and the next 15 days. The other 4 lived 20 days or longer.

Of the 14 animals receiving 1 gram per kilo, 8 received carvacrol and 6 thymol. Six of the 8 rabbits receiving carvacrol died within 3 days, and 3 of the 6 rabbits receiving thymol died within 6 days. All others lived beyond the time when the drug might probably have been the cause of death.

The dose of 1.5 grams of carvacrol per kilo was used on 7 and of thymol on 5 rabbits. Of the 7 receiving carvacrol, 5 were dead within 5 days, and of the 5 animals receiving thymol, 2 were dead in 7 days. The only other rabbit which may possibly have died from either carvacrol or thymol lived 16 days after receiving carvacrol.

A still larger dose of 2 grams per kilo was given to 20 rabbits, 10 receiving carvacrol and 10 thymol. All 10 receiving carvacrol died within 4 days, whereas 4 of the 10 animals given thymol were dead in the same time, 1 in 5 days, 4 in 11 to 21 days, and 1 certainly survived all effects, since it lived 79 days.

Eight animals received 3 grams per kilo. Four of these received carvacrol and 4 received thymol. All died within 8 days.

No statement has thus far been made as to the comparative results when either thymol or carvacrol was given with or without olive oil. This, however, is shown in Table I. There was no intention of dwelling particularly on this question, but, since both methods were used, attention may be called to the results obtained. In regard to thymol in doses of 0.5 gram per kilo, no animal died in less than 16 days, and the length of time of survival varied to such an extent that it seems improbable for thymol to have been the cause of death in any case. Of these 16 rabbits receiving 0.5 gram per kilo, 10 received the thymol in olive oil and 6 received it in powdered form in gelatin capsules. In doses of 2 grams per kilo, however, 3 of the 5 animals receiving thymol in olive oil died within 4 days, whereas the same dose without oil in 5 cases produced 2 deaths in 5 days, and 1 of these animals showed on post-mortem examination that death was probably due to pneumonia.

Two rabbits received 3 grams of thymol per kilo in olive oil and both died within 1 day. In contrast to these, of the 2 rabbits which

received 3 grams of thymol without olive oil, 1 lived 4 and the other 8 days. When carvacrol is given in doses less than 2 grams per kilo, the table would indicate that if any difference in toxicity is shown, it would seem to be more toxic without than with the olive oil. This, however, is not the case when given in doses of 2 and 3 grams per kilo. Definite conclusions as to whether or not carvacrol or thymol is more toxic when given with olive oil can not be reached without further experiments. There seems to be no reason why carvacrol, being already in liquid form at body temperature, should be more toxic with an oil. On the other hand, since thymol is a solid at body temperature, it might be expected to be more toxic in the presence of a solvent such as an oil. This was reported by Stiles (1902) to be the case in dogs when thymol was followed by castor oil. Schultz (1915), on the other hand, says: "It was found that oils in which thymol readily dissolves, if used as a solvent, greatly increased the dose necessary to kill." The question which concerned us more in this connection was the relative toxicity of thymol and carvacrol. It is evident from Table II that there is no striking difference in the toxicity of the two substances when introduced into the stomach of rabbits. A close examination of the whole series, however, apparently shows a slightly greater toxicity for carvacrol than for thymol. This difference is certainly not enough to discourage a clinical trial in cases where conditions can be carefully controlled. As a matter of precaution, the dose used at first should, of course, be much smaller than the relative toxicity on rabbits would indicate.

#### EXPERIMENTS ON EARTHWORMS.

There is no intention of concluding directly that if carvacrol is toxic for earthworms it is likewise toxic for hookworms in the intestinal tract of man. Thymol, however, is generally known to have such an action; and if thymol and carvacrol affect earthworms in the same way, then we have reason to believe that they may also act the same on hookworms. Two species have been used, namely, *Helodrilus calignosa* (common garden worm) and *Allobophora foetida* (commonly known as the dung worm). In only a few cases, however, were the former observed, and hence all conclusions herein mentioned will refer to the latter. The worms were brought into the laboratory in some of the earth in which they were found and were kept in a large evaporating dish covered with a piece of plate glass. This prevented their escape and also kept the earth from becoming too dry.

Earthworms were used by Straub (1902) for the determination of the relative toxicity of various substances. He used glass dishes of a size such as to allow 50 c. c. of the solution tested to fill the dish to a depth of about 3 mm., and states that in well water the worms behaved normally for days.





The method used by Sollman (1919) and later by Macht (1919) consists in placing five worms in 100 c. c. of the solution to be tested in a conical urine glass. This method was used in the first few of these experiments, but the control experiments carried out by immersing the worms in distilled water, tap water, and tap water containing some of the earth in which the worms live, showed that two worms in each glass did not remain in good condition over long periods of time. In these fluids, in some cases, the worms were found to be dead the next day. This suggested some cause other than the drug itself. Drowning was suspected, and petri dishes were substituted for the urine glasses. Fifty cubic centimeters of the control, or of the solution containing the drug to be tested, were placed in a petri dish 15 cm. in diameter, and the dish was kept closed. By using 50 c. c. in these dishes, the control fluids caused no effect, even though the worms were confined in them for more than a week. The solution is thus too shallow to complicate the results by a possibility of drowning, yet deep enough to insure an exposure of the worms to the drug at all times and to prevent an appreciable loss of the drug. All experiments have been made at room temperature, which ranges in the neighborhood of 21° C. Fresh solutions of the drugs in distilled water were always used. Before making an observation the worms were immersed in water to remove adhering particles of earth. Two were then placed in each dish and closely observed for a few minutes. Further observations were made at intervals of 15 minutes for several hours, or until death occurred.

The findings for thymol and carvacrol agree in every respect with the possible exception of the length of time required to kill. The response varies in intensity, but not in character, with the concentration of the solution used. In the strongest solution (500 parts per million) the worms at first make a few frantic efforts to escape. These are quickly followed by whipping and writhing movements, which rapidly become more and more feeble until all motion ceases, which occurs within from 10 to 15 minutes. Incidentally, it is of interest to note that within a few seconds after the worms are placed in either solution they begin to discharge a round mass of yellow substance from the mid-dorsal portion of each segment, which gives a beaded appearance along the dorsal surface. It is soon thrown off and gives the solution a yellow tint. No evidence has been found which would indicate that this is a waste product, thrown off on account of a stimulating action of the drug, or a protective mechanism designed to neutralize in some way the irritating action of substances with which they may come in contact. With the lower concentration these reactions require more time to develop, so that in a solution of 100 parts per million the movements continue for an average of about 90 minutes. Cessation of spontaneous movements is not

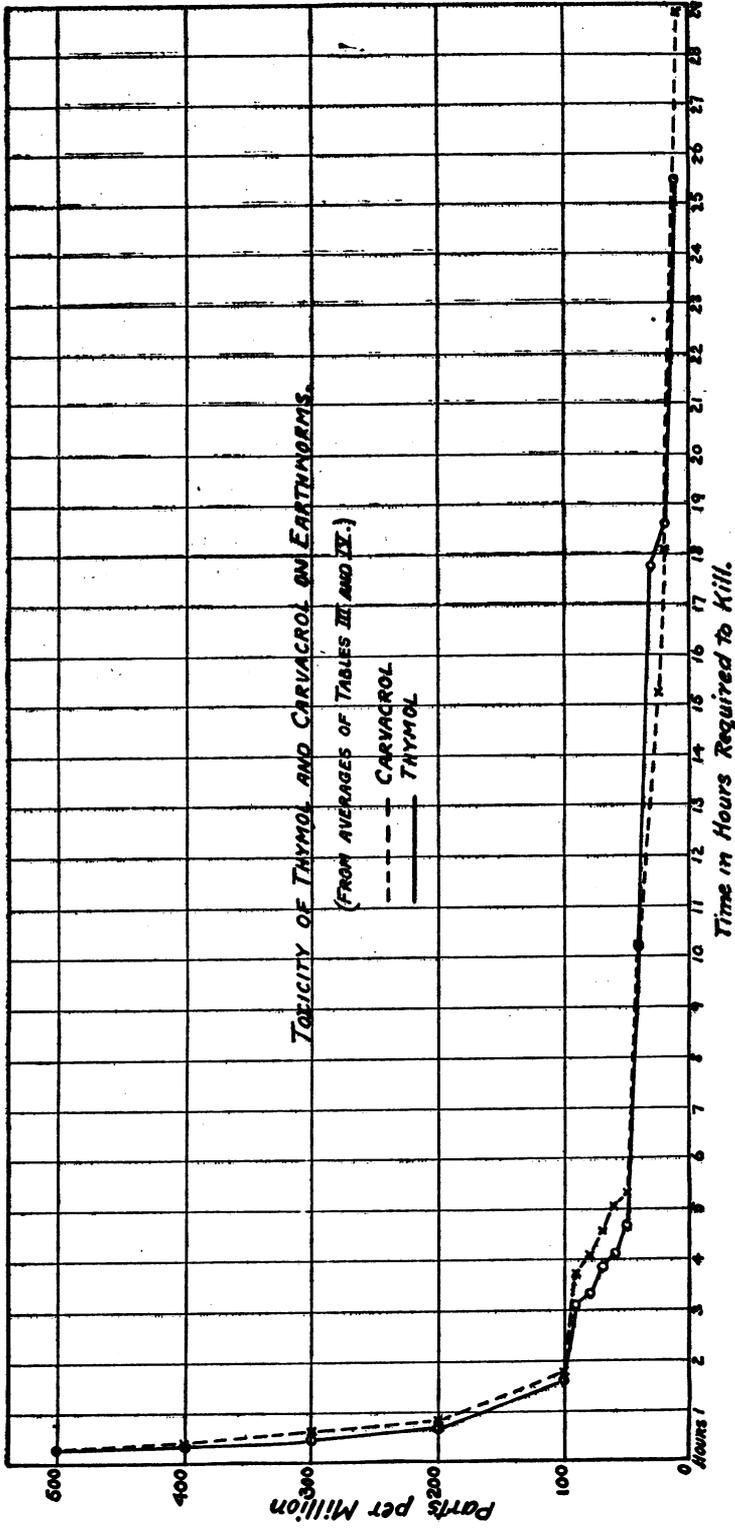


FIG. 1.

considered a criterion of the time of death, because movements may still be produced by mechanical stimulation for a somewhat longer time. The exact time at which no reaction can be obtained by mechanical stimulation has been considered as the time of death. The length of time required to produce death by the different concentrations is shown in Tables II and III. The corresponding curves (Fig. 1) plotted from these figures reveal the fact that with most concentrations carvacrol requires slightly more time than thymol in which to produce death. This difference is so slight, however, that it may possibly lie within the limits of experimental error. An irregularity in the curves for both thymol and carvacrol is shown for concentrations between 50 and 100 parts per million. No explanation can be given at present for this variation.

EXPERIMENTS WITH PARAMECIA.

For the purpose of supplementing the toxicity experiments with a unicellular type, the paramecium was selected. It was soon found by a few preliminary tests that this organism is rapidly killed by 10 parts of the drug per 100,000 parts of distilled water, whereas 1 part per 100,000 does not kill. The experiments were therefore confined between these limits of concentration. The method usually followed consisted in arranging nine small test tubes in a rack and placing in them, respectively, 1, 2, 3, 4, 5, 6, 7, 8, and 9 c. c. of a 0.01 per cent solution of the drug to be tested. In the same order was added 8, 7, 6, 5, 4, 3, 2, 1, and 0 c. c. of distilled water. Each tube, therefore, contained 9 c. c. To each tube was now added 1 c. c. of water containing the paramecia, which resulted in dilutions, mentioned in the same order, of 1, 2, 3, 4, 5, 6, 7, 8, and 9 parts per 100,000. The data card as used in tabulated form is shown below:

DATA CARD.

DRUG (*Thymol* or *Carvacrol*) DATE.....

	Number of tube.								
	1	2	3	4	5	6	7	8	9
Cubic centimeters of 0.01 per cent (thymol or carvacrol)	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
Cubic centimeters of distilled H <sub>2</sub> O	8.0	7.0	6.0	5.0	4.0	3.0	2.0	1.0	0.0
Cubic centimeters of H <sub>2</sub> O containing paramecia	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Resulting dilutions	.00001	.00002	.00003	.00004	.00005	.00006	.00007	.00008	.00009
Time of day culture was added	11:17:0	11:17:0	11:18:0	11:18:0	11:19:0	11:57:0	11:53:0	11:51:30	11:50:0
Time of day all were found dead						1:0:0	11:54:30	11:52:0	11:50:30
Time required to kill						1:30:0	0:1:30	0:0:30	0:0:30

It is necessary, especially with the stronger solutions, that the time be very carefully observed when the culture is added and when all

paramecia are dead. As soon as the culture was added, the tube was inverted once or twice to insure immediate contact of the paramecia with the drug. This was usually accomplished in one or two seconds. A drop of the mixture was immediately placed on a slide under the microscope and carefully observed. Fresh drops were thus examined as rapidly as possible until all paramecia were found to be dead. This procedure was repeated for the various dilutions.

The length of time of survival for all dilutions is shown in Table IV. From these averages the corresponding curves (Fig. 2) were plotted. It may be observed that between 5 and 7 parts per 100,000 there is a sharp break in the curve. Only after a day or more were all found to be dead in solutions of less than 5 parts per 100,000, whereas with 7 parts per 100,000 all were usually dead in two minutes or less. Of course, in any given tube some individuals were dead some time before all were dead. It was found that a much more definite end point could be obtained by taking the time at which all were dead instead of when approximately all were dead.

The culture of paramecia contained the individuals in numbers such as to permit the dilution as described above, and then with a magnification of about 50 times there were usually 4 to 6 in the field of the microscope at any one time. Thus, an approximate idea may be gained as to the number of paramecia exposed.

The point of most interest at the present time is the fact that there is no striking difference in the toxicity of the two substances for paramecia.

The author wishes to express his thanks to Dr. James E. Benedict, of the Smithsonian Institution, for assistance in the identification of the earthworms used, and to Prof. Carl Voegtlin, of the Hygienic Laboratory, for helpful suggestions throughout the work.

TABLE IV.—Toxicity of thymol and carvacrol on paramecia.  
TIME REQUIRED TO KILL FOR INDICATED PARTS PER 100,000.

	Thymol.									Carvacrol.								
	4	5	6	7	8	9	4	5	6	7	8	9	4	5	6	7	8	9
Parts per 100,000.....	H. m. s.	H. m. s.	H. m. s.	H. m. s.	H. m. s.	H. m. s.	H. m. s.	H. m. s.	H. m. s.									
	24 0 0	20 0 0	0 22 0	0 3 0	0 1 0	0 0 30	0 22 0	0 3 0	0 1 0	0 0 30	0 22 0	0 3 0	0 1 0	0 0 30	0 22 0	0 3 0	0 1 0	0 0 30
	.....	.....	0 33 0	0 2 0	0 0 50	0 0 30	0 33 0	0 2 0	0 0 50	0 0 30	0 33 0	0 2 0	0 0 50	0 0 30	0 33 0	0 2 0	0 0 50	0 0 30
	20 0 0	5 0 0	0 11 30	0 1 30	0 0 30	0 0 30	0 11 30	0 1 30	0 0 30	0 0 30	0 11 30	0 1 30	0 0 30	0 0 30	0 11 30	0 1 30	0 0 30	0 0 30
	.....	.....	0 30 0	0 2 0	0 0 40	0 0 25	0 30 0	0 2 0	0 0 40	0 0 25	0 30 0	0 2 0	0 0 40	0 0 25	0 30 0	0 2 0	0 0 40	0 0 25
	28 0 0	9 0 0	0 12 30	0 2 40	0 0 42	0 0 35	0 12 30	0 2 40	0 0 42	0 0 35	0 12 30	0 2 40	0 0 42	0 0 35	0 12 30	0 2 40	0 0 42	0 0 35
Average.....	24 0 0	10 45 0	0 19 22	0 1 52	0 0 42	0 0 30	24 0 0	18 0 0	0 49 18	0 1 25	0 0 41	0 0 26	24 0 0	18 0 0	0 49 18	0 1 25	0 0 41	0 0 26

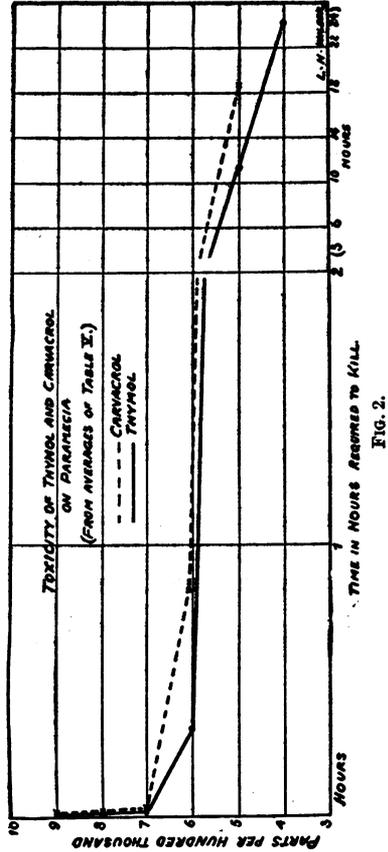


FIG. 2.

### Conclusions.

1. The toxicity of thymol and of carvacrol on rabbits is essentially the same.
2. The toxicity of thymol and of carvacrol as tested on paramecia shows no striking difference.
3. Tests on earthworms indicate that the relative anthelmintic value of thymol and carvacrol is practically the same.

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## RÉSUMÉ OF INSTRUCTIONS RELATING TO THE ENFORCEMENT OF THE UNITED STATES QUARANTINE REGULATIONS AT FOREIGN PORTS.

The following circular has recently been issued by Asst. Surg. Gen. Rupert Blue, in supervisory charge of medical inspection at European ports, stationed at Paris:

In order to secure uniformity of procedure at ports of embarkation, the following résumé of instructions is hereby issued for the information and guidance of all concerned:

**I. Vaccination:**

(a) Steerage passengers, whatever their origin, shall be vaccinated prior to embarkation unless they show satisfactory evidence of having acquired immunity to smallpox by previous attack or a successful vaccination within one year.

Medical certificates of vaccination shall not be accepted as evidence of a person's immunity to smallpox. Actual examination of every individual for marks and signs of a *successful* vaccination shall be required.

(b) Each steerage passenger shall receive a card, as required by paragraph 109 of the United States Quarantine Regulations. This card, stamped by the Medical or Consular Officer, shall be issued to every member of a family as well as to the head thereof.

(c) Members of the crew shipped in ports where smallpox prevails shall be vaccinated as in the case of steerage passengers.

(d) When it appears that second-class passengers who would ordinarily be third class (steerage) are traveling second class either to avoid quarantine regulations or because transportation has been provided for them, they should be vaccinated unless rendered immune by a previous attack of smallpox or a successful vaccination within one year.

**II. Inspection—Delousing—Detention:**

(a) All steerage and second-class passengers originating in countries east and south of Germany, Switzerland, and Italy, or coming from Asiatic or African Mediterranean, or Black Sea ports, shall be deloused and placed under observation in clean quarters for a period of not less than 12 days prior to embarkation.

All steerage and second-class passengers who have been in such contact, prior to delousing and disinfection, with the classes of passengers subject to 12 days' detention as to render them liable to have become infested, shall also be detained 12 days under observation.

During the period of detention, passengers shall be kept in separate quarters and subjected to a daily medical inspection. While "observation" does not mean the absolute isolation of the passengers, it is intended to safeguard them against the possibility of reinfestation. Care should be taken that all passengers who are subject to detention, presenting themselves for the final examination on the day of embarkation, have actually been detained 12 days subsequent to delousing.

(b) Steerage passengers originating in Continental Europe, west of the easterly boundaries of Germany, Switzerland, and Italy, shall be deloused and their effects disinfected.

Second-class passengers from the same territory, and steerage and second-class passengers from Great Britain, Denmark, Norway, and Sweden, shall be inspected, and if found to have lice or eggs on their persons or clothing, shall be deloused and their effects disinfected.

(c) The United States Public Health Officer shall examine each individual of the steerage and second-class passengers separately on the day of embarkation; he may be assisted in this examination by one or more experienced male or female assistants.

(d) He shall inspect the quarters occupied by the steerage and second-class passengers aboard the vessel for the purpose of ascertaining that the bedding and quarters are free from lice or the eggs of the same, or that measures adequate for the destruction of said lice and eggs have been adopted and performed.

In so far as is practicable, such an inspection shall be made of quarters and bedding in the hotels accommodating clean passengers awaiting embarkation.

**III. Disinfection:**

(a) The baggage, both hand and hold baggage, of passengers mentioned in Article II (a) shall be disinfected by steam under pressure and appropriately labeled; the baggage of continental steerage passengers shall be disinfected in similar manner;

the baggage of other steerage and second-class passengers who are found, on inspection, to be infested with vermin, shall also be disinfected.

(b) It should be pointed out to the steamship companies concerned that the disinfection by steam, under pressure, of bedding, blankets, and clothing from typhus and smallpox infected countries is as important an obligation as the delousing of the passengers and their body clothing.

In no instance should this class of baggage of second and third class passengers escape disinfection.

If the facilities at a port are inadequate for the purpose, the companies should take the proper steps to prohibit the bringing of such baggage ; they can well do so on the ground that it is a serious menace to the health of the passengers and to the public health of the United States.

All personal effects (baggage) that have been disinfected should be labeled to show where and when the work was done.

#### IV. *Bills of health:*

Whenever detention or delousing has not been performed to the satisfaction of the Medical Officer, or when passengers whom the Officer has recommended for rejection are embarked, the Medical Officer shall not countersign the bill of health, but should a bill of health be issued by the Consul he shall note the facts, as well as the reason for his action, upon the margin thereof. The Quarantine Officer at the port of destination will thus know that the omission of the Officer's signature is intentional and not accidental.

#### V. *Certification of transit passengers:*

(a) Steerage and second-class passengers departing for the United States via British, Danish, Norwegian, and Swedish ports may be deloused, detained, and have their effects disinfected at any of the following ports—namely, Danzig, Hamburg, Bremen, Rotterdam, and Antwerp—provided that adequate measures are adopted by the companies concerned to prevent contact between them and verminous emigrants while transferring to the ports of embarkation. Individual delousing and detention certificates should be issued to such passengers for the information and guidance of the sanitary officers in the ports and places through which they will pass.

(b) Steerage and second-class passengers ultimately destined for the United States via Canada shall be subjected to exactly the same measures as are required of persons sailing directly for ports of the United States.

#### VI. *Periodic deratization of freighters:*

Upon the request of owners or agents, Medical Officers shall supervise the fumigation of vessels (when empty) from plague-infected ports, for the destruction of rodents and other vermin, in accordance with the standards prescribed by the United States Quarantine Regulations. A fumigation certificate shall be issued in each case. (See Public Health Reports for plague-infected ports.) This matter should be taken up with the shipping agents with a view to systematic deratization of vessels bound for American ports at least twice a year.

#### VII. *Station files:*

Medical Officers are required to keep a complete file at the Consulates of official communications received and official communications sent, so that incoming officers may, by consulting the same, readily acquaint themselves with the scope and character of the operations carried on at the station.

#### VIII. *Reports:*

The weekly and monthly report shall be addressed and forwarded directly to the Surgeon General; it shall have at the lower left corner the following: "Copy to the Medical Officer in Charge, Paris," and said copy shall be forwarded to No. 10 Rue de l'Elysee, Paris, France.

Matters relating to station management or the interpretation and conduct of Service operations shall be forwarded to this office.

Respectfully,

RUPERT BLUE,  
Assistant Surgeon General,  
In Supervisory Charge of Medical Inspection at European Ports.

## COURT COMPELS BOARD OF HEALTH TO ABATE NUISANCE.

In two recent cases <sup>1</sup> decided by the Supreme Court of Nebraska, the court holds that, where a nuisance actually exists and the local board of health has failed, neglected, and refused to abate it, although it is its duty under the law to abate it, the board may be compelled by mandamus to take action and perform its duty.

## TYPHOID FEVER IN CLEVELAND, OHIO, FOR THE YEARS 1918, 1919, AND 1920—ERRATUM.

In the article, "Typhoid Fever in Cleveland, Ohio, for the Years 1918, 1919, and 1920," published in Public Health Reports for May 20, 1921, the lower curve in Chart 6, page 1115, should be titled "Chlorine dosage" instead of "Mean of fermentations in treated water," and the curve titled "Chlorine dosage" should have the designation, "Mean of fermentations in treated water." These titles were inadvertently interchanged when they were redrawn from the originals which Dr. Perkins submitted with his paper.

## DEATHS DURING WEEK ENDED MAY 28, 1921.

*Summary of information received by telegraph from industrial insurance companies for week ended May 28, 1921, and corresponding week, 1920. (From the "Weekly Health Index," May 31, 1921, issued by the Bureau of the Census, Department of Commerce.)*

	Week ended May 28, 1921.	Corresponding week, 1920.
Policies in force.....	46, 990, 382	43, 875, 553
Number of death claims.....	7, 671	8, 372
Death claims per 1,000 policies in force.....	8. 5	9. 9

<sup>1</sup> State ex rel. Glatfelter et al. v. Hart et al., Board of health, 182 N. W. 567; State ex rel. Glatfelter et al. v. Clark et al., County Board of Health, 182 N. W. 569.

Deaths from all causes in certain large cities of the United States during the week ended May 28, 1921, infant mortality, annual death rate, and comparison with corresponding week of preceding years. (From the "Weekly Health Index," May 31, 1921, issued by the Bureau of the Census, Department of Commerce.)

City.	Estimated population, July 1, 1921.	Week ended May 28, 1921.		Average annual death rate per 1,000. <sup>2</sup>	Deaths under 1 year.		Infant mortality rate, week ended May 28, 1921. <sup>3</sup>
		Total deaths.	Death rate. <sup>1</sup>		Week ended May 28, 1921.	Previous year or years. <sup>4</sup>	
Akron, Ohio.....	229,185	16	3.6	10.4	5	46	48
Albany, N. Y.....	115,071	42	19.0	C 14.6	3	C 5	67
Atlanta, Ga.....	207,473	52	13.1	C 16.2	9	C 11	.....
Baltimore, Md.....	751,537	192	13.3	A 15.4	21	A 25	59
Birmingham, Ala.....	186,133	59	16.5	A 21.1	6	A 10	.....
Boston, Mass.....	757,634	213	14.7	A 16.5	30	A 36	81
Bridgeport, Conn.....	149,967	37	12.9	A 15.9	5	A 6	63
Buffalo, N. Y.....	519,608	121	12.1	C 13.3	23	C 19	89
Cambridge, Mass.....	110,444	39	18.4	A 14.1	6	A 3	107
Camden, N. J.....	119,672	24	10.5	.....	5	.....	.....
Chicago, Ill.....	2,780,655	682	12.8	A 14.3	116	A 115	.....
Cincinnati, Ohio.....	403,418	108	14.0	C 13.0	8	C 13	53
Cleveland, Ohio.....	831,138	166	10.4	C 12.8	24	C 38	64
Columbus, Ohio.....	245,358	68	14.5	C 11.3	7	C 8	81
Dallas, Tex.....	165,282	45	14.2	A 14.8	8	A 4	.....
Dayton, Ohio.....	158,119	30	9.9	C 9.8	6	C 4	98
Denver, Colo.....	263,152	82	16.2	A 12.8	11	.....	.....
Detroit, Mich.....	1,070,450	215	10.5	C 12.8	48	C 45	91
Fall River, Mass.....	120,668	52	22.5	C 16.0	1	C 14	15
Grand Rapids, Mich.....	141,197	37	13.7	C 16.5	5	C 6	85
Houston, Tex.....	144,340	36	13.0	.....	1	.....	.....
Indianapolis, Ind.....	325,215	81	13.0	C 13.6	4	C 14	31
Jersey City, N. J.....	302,788	72	12.4	C 12.9	12	C 10	.....
Kansas City, Kans.....	103,908	29	14.6	.....	6	.....	143
Kansas City, Mo.....	336,157	80	12.4	C 12.2	7	C 12	.....
Los Angeles, Calif.....	611,636	156	13.3	A 12.7	15	A 14	71
Louisville, Ky.....	236,083	79	17.4	C 14.2	8	C 2	92
Lowell, Mass.....	113,757	21	9.6	A 15.2	4	A 6	64
Memphis, Tenn.....	165,389	72	22.7	C 19.2	7	C 9	.....
Milwaukee, Wis.....	468,386	107	11.9	A 11.7	21	A 25	102
Minneapolis, Minn.....	392,815	67	8.9	C 12.3	8	C 11	46
Nashville, Tenn.....	119,536	24	10.5	C 15.4	3	C 5	.....
New Bedford, Mass.....	125,012	27	11.3	A 15.7	3	A 8	46
New Haven, Conn.....	167,007	38	11.9	C 14.6	8	C 8	95
New Orleans, La.....	394,657	134	17.7	A 19.1	25	A 19	.....
New York, N. Y.....	5,751,867	1,216	11.0	C 12.2	160	C 201	63
Newark, N. J.....	424,885	85	10.4	C 13.7	15	C 25	.....
Norfolk, Va.....	121,260	23	9.9	.....	9	.....	160
Oakland, Calif.....	226,472	45	10.4	A 11.0	2	A 4	25
Omaha, Nebr.....	197,066	58	15.3	.....	7	.....	.....
Paterson, N. J.....	137,463	32	12.1	.....	4	.....	.....
Philadelphia, Pa.....	1,866,212	398	11.1	15.6	57	63	69
Pittsburgh, Pa.....	506,413	167	14.6	C 15.7	27	C 30	96
Portland, Oreg.....	264,860	71	14.0	C 13.4	6	C 7	60
Providence, R. I.....	239,645	73	15.9	C 15.3	19	C 14	.....
Richmond, Va.....	175,686	56	16.6	C 16.6	9	C 5	110
Rochester, N. Y.....	305,229	52	8.9	C 13.8	10	C 12	78
St. Louis, Mo.....	786,164	208	13.8	C 12.9	18	C 23	.....
St. Paul, Minn.....	237,781	51	11.2	C 13.9	2	C 9	20
Salt Lake City, Utah.....	121,595	38	16.3	A 12.8	9	.....	139
San Francisco, Calif.....	520,546	144	14.4	C 12.0	5	C 13	29
Seattle, Wash.....	327,227	50	8.0	A 9.0	6	A 7	50
Spokane, Wash.....	104,442	14	7.0	C 10.0	2	C 2	44
Springfield, Mass.....	135,877	33	12.7	.....	5	.....	75
Syracuse, N. Y.....	177,265	39	11.5	C 15.9	8	C 9	96
Toledo, Ohio.....	253,696	67	13.8	A 16.3	8	A 11	81
Trenton, N. J.....	122,700	41	17.4	A 18.7	3	A 6	.....
Washington, D. C.....	454,026	111	12.7	A 15.3	7	A 12	41
Wilmington, Del.....	113,406	23	10.6	C 15.9	6	.....	.....
Worcester, Mass.....	184,972	49	13.8	C 12.1	6	C 8	64
Yonkers, N. Y.....	103,324	23	11.6	A 10.9	2	A 2	45
Youngstown, Ohio.....	139,432	29	10.8	.....	2	.....	25

<sup>1</sup> Annual rate per 1,000 population.

<sup>2</sup> "A" indicates data for the corresponding week of the years 1913 to 1917, inclusive. "C" indicates data for the corresponding week of the year 1920.

<sup>3</sup> Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1920. Cities left blank are not in the registration area for births.

<sup>4</sup> Data based on statistics of 1915, 1916, and 1917.





CURRENT STATE SUMMARIES—Continued.

Telegraphic Reports for Week Ended June 4, 1921—Continued.

MARYLAND—continued.		MONTANA.	
	Cases.		Cases.
Septic sore throat.....	5	Diphtheria.....	10
Smallpox.....	6	Poliomyelitis—Great Falls.....	1
Trachoma.....	1	Rocky Mountain spotted or tick fever:	
Tuberculosis.....	42	Ismay.....	1
Typhoid fever.....	8	Scarlet fever.....	7
Whooping cough.....	150	Smallpox.....	36
		Typhoid fever.....	3
MASSACHUSETTS.		NEBRASKA.	
Cerebrospinal meningitis.....	3	Chicken pox.....	22
Chicken pox.....	104	Diphtheria.....	19
Conjunctivitis (suppurative).....	11	German measles.....	3
Diphtheria.....	144	Influenza.....	9
German measles.....	25	Measles.....	43
Influenza.....	3	Mumps.....	13
Lethargic encephalitis.....	1	Scarlet fever.....	20
Measles.....	455	Smallpox:	
Mumps.....	121	Omaha.....	9
Ophthalmia neonatorum.....	22	Scattering.....	34
Pellagra.....	1	Tuberculosis.....	15
Pneumonia (lobar).....	79	Typhoid fever:	
Poliomyelitis.....	1	Grand Island.....	12
Scarlet fever.....	124	Lincoln.....	1
Septic sore throat.....	3	Whooping cough.....	10
Tetanus.....	1		
Trachoma.....	3	NEW JERSEY.	
Tuberculosis (all forms).....	142	Cerebrospinal meningitis.....	2
Typhoid fever.....	13	Chicken pox.....	112
Whooping cough.....	129	Diphtheria.....	146
		Influenza.....	9
MISSISSIPPI.		Malaria.....	3
Cerebrospinal meningitis.....	1	Measles.....	209
Diphtheria.....	13	Pneumonia.....	80
Scarlet fever.....	11	Scarlet fever.....	150
Smallpox.....	36	Smallpox.....	51
Typhoid fever.....	32	Typhoid fever.....	5
		Whooping cough.....	221
MINNESOTA.		NEW MEXICO.	
Cerebrospinal meningitis.....	2	Chicken pox.....	5
Chicken pox.....	33	Conjunctivitis.....	3
Diphtheria.....	27	Diphtheria.....	17
Measles.....	64	Measles.....	34
Pneumonia.....	2	Mumps.....	2
Scarlet fever.....	87	Pneumonia.....	1
Smallpox.....	151	Scarlet fever.....	2
Trachoma.....	1	Smallpox.....	5
Tuberculosis.....	51	Tuberculosis.....	14
Typhoid fever.....	7	Typhoid fever.....	3
Whooping cough.....	13	Whooping cough.....	7
		NEW YORK.	
MISSOURI.		(Exclusive of New York City.)	
Cerebrospinal meningitis.....	1	Diphtheria.....	227
Chicken pox.....	61	Influenza.....	8
Diphtheria.....	52	Lethargic encephalitis.....	1
Epidemic sore throat.....	3	Measles.....	800
Influenza.....	3	Pneumonia.....	158
Measles.....	97	Scarlet fever.....	214
Mumps.....	28	Smallpox:	
Scarlet fever.....	55	Georgetown.....	9
Smallpox.....	142	Scattering.....	6
Trachoma.....	10	Typhoid fever.....	23
Tuberculosis.....	46	Whooping cough.....	260
Typhoid fever.....	4		
Whooping cough.....	102		

CURRENT STATE SUMMARIES—Continued.

Telegraphic Reports for Week Ended June 4, 1921—Continued.

NORTH CAROLINA.	
	Cases.
Chicken pox.....	47
Diphtheria.....	20
German measles.....	1
Measles.....	181
Poliomyelitis.....	1
Scarlet fever.....	22
Smallpox.....	39
Typhoid fever.....	50
Whooping cough.....	260

SOUTH DAKOTA.	
	Cases.
Chicken pox.....	2
Diphtheria.....	1
Measles.....	22
Pneumonia.....	1
Scarlet fever.....	16
Smallpox.....	27

TEXAS.	
	Cases.
Chicken pox.....	49
Diphtheria.....	20
Measles.....	119
Mumps.....	59
Pellagra.....	6
Scarlet fever.....	14
Smallpox.....	54
Typhoid fever.....	11
Whooping cough.....	53

VERMONT.	
	Cases.
Chicken pox.....	34
Measles.....	58
Mumps.....	5
Pneumonia.....	1
Scarlet fever.....	21
Smallpox.....	3
Whooping cough.....	40

VIRGINIA.	
	Cases.
Smallpox—Richmond.....	2

WASHINGTON.	
	Cases.
Chicken pox.....	46
Diphtheria.....	7
Measles.....	115
Mumps.....	16
Scarlet fever.....	23
Smallpox.....	68
Tuberculosis.....	19
Typhoid fever.....	5
Whooping cough.....	24

WEST VIRGINIA.	
	Cases.
Diphtheria.....	5
Measles.....	19
Scarlet fever.....	8
Smallpox:	
Weston.....	11
Scattering.....	5

WISCONSIN.	
	Cases.
Milwaukee:	
Chicken pox.....	46
Diphtheria.....	7
German measles.....	2
Measles.....	6
Scarlet fever.....	18
Smallpox.....	6
Tuberculosis.....	15
Whooping cough.....	41
Scattering:	
Cerebrospinal meningitis.....	1
Chicken pox.....	106
Diphtheria.....	51
Influenza.....	13
Measles.....	85
Poliomyelitis.....	2
Scarlet fever.....	93
Smallpox.....	103
Tuberculosis.....	21
Typhoid fever.....	10
Whooping cough.....	78

Reports for Week Ended May 28, 1921.

DISTRICT OF COLUMBIA.	
	Cases.
Chicken pox.....	12
Diphtheria.....	10
Measles.....	143
Scarlet fever.....	8
Smallpox.....	6
Tuberculosis.....	21
Typhoid fever.....	2
Whooping cough.....	12
IOWA.	
Cerebrospinal meningitis.....	1
Diphtheria.....	19
Scarlet fever.....	37
Smallpox.....	97

KENTUCKY.	
	Cases.
Cerebrospinal meningitis—Carroll County.....	1
Chicken pox.....	9
Diphtheria:	
Jefferson County.....	8
Scattering.....	8
German measles.....	2
Influenza.....	1
Malaria.....	2
Measles:	
Hopkins County.....	16
Jefferson County.....	71
Scattering.....	27
Mumps.....	14
Pellagra.....	1

**CURRENT STATE SUMMARIES—Continued.**

**Reports for Week Ended May 28, 1921—Continued.**

KENTUCKY—continued.		MISSOURI.	
	Cases.		Cases.
Pneumonia.....	10	Cerebrospinal meningitis.....	3
Scarlet fever:		Chicken pox.....	32
Jefferson County.....	12	Diphtheria.....	76
Scattering.....	11	Epidemic sore throat.....	2
Septic sore throat.....	1	Influenza.....	3
Smallpox:		Measles.....	94
Fulton County.....	8	Mumps.....	37
Graves County.....	8	Scarlet fever.....	107
Harlan County.....	12	Smallpox.....	217
Muhlenberg County.....	16	Trachoma.....	4
Scattering.....	35	Tuberculosis.....	53
Trachoma.....	8	Typhoid fever.....	5
Tuberculosis.....	15	Whooping cough.....	87
Typhoid fever.....	14		
Whooping cough.....	17		

**PLAGUE.<sup>1</sup>**

**HUMAN CASES OF PLAGUE REPORTED.**

Place.	Period covered.	Cases.	Deaths.	Remarks.
California:	1921.			
San Benito County.....	Feb. 7.....		1	

<sup>1</sup> A summary of the reports received of the occurrence of plague and the finding of plague-infected rodents in the United States during 1920 was published in Public Health Reports, Jan. 7, 1921, p. 15.

**PLAGUE-INFECTED RODENTS.**

Place.	Period covered.	Rodents found plague infected.
California:	1921.	
San Benito County.....	May 15 to 21.....	0
	May 21-28.....	14
Florida:		
Pensacola.....	Jan. 1 to Apr. 18.....	5
	Apr. 19 to June 4.....	0
Louisiana:		
New Orleans.....	Jan. 1 to May 26.....	38
	May 27 to June 4.....	0
Texas:		
Galveston.....	Jan. 1 to May 28.....	1
	May 29 to June 4.....	0

<sup>1</sup> Ground squirrels, *Citellus beechyi*.

**CITY REPORTS FOR WEEK ENDED MAY 21, 1921.**

**ANTHRAX.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
New York:			Ohio:		
New York.....	1		Cleveland.....	1	

## CITY REPORTS FOR WEEK ENDED MAY 21, 1921—Continued.

## CEREBROSPINAL MENINGITIS.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1920, inclusive. In instances in which data for the full six years are incomplete, the median is that for the number of years for which information is available.

Place.	Median for previous years.	Week ended May 21, 1921.		Place.	Median for previous years.	Week ended May 21, 1921.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				Massachusetts:			
Birmingham.....	1	1	.....	Boston.....	1	1	1
California:				Michigan:			
Bakersfield.....	0	1	.....	Detroit.....	2	.....	2
San Francisco.....	0	1	.....	Hanstramck.....	.....	2	1
Connecticut:				Port Huron.....	0	.....	1
Meriden.....	.....	1	1	Minnesota:			
Georgia:				Duluth.....	0	1	.....
Atlanta.....	0	.....	1	New Jersey:			
Illinois:				Bayonne.....	0	1	.....
Oak Park.....	.....	.....	1	New York:			
Indiana:				Buffalo.....	0	1	.....
Kokomo.....	0	.....	1	New York.....	8	7	3
Iowa:				Schenectady.....	0	1	1
Dubuque.....	0	1	.....	North Carolina:			
Kansas:				Winston-Salem.....	0	1	1
Wichita.....	0	.....	1	Ohio:			
Louisiana:				Sandusky.....	0	1	1
New Orleans.....	0	1	1	Pennsylvania:			
Maine:				Philadelphia.....	3	1	1
Lewiston.....	.....	.....	1	Texas:			
Maryland:				Galveston.....	0	.....	1
Baltimore.....	1	1	.....				

## DIPHTHERIA.

See p. 1347; also Telegraphic weekly reports from States, p. 1336.

## INFLUENZA.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Alabama:			Michigan:		
Mobile.....	.....	1	Detroit.....	3	1
California:			Minnesota:		
Sacramento.....	3	.....	Minneapolis.....	.....	1
San Francisco.....	10	.....	Missouri:		
Connecticut:			Kansas City.....	1	.....
Hartford.....	1	.....	New Jersey:		
Meriden.....	1	1	Hoboken.....	.....	1
Illinois:			Trenton.....	2	.....
Chicago.....	14	.....	New York:		
Kentucky:			Albany.....	2	.....
Louisville.....	.....	1	New York.....	17	11
Louisiana:			Yonkers.....	1	1
New Orleans.....	1	1	Ohio:		
Maryland:			Cincinnati.....	.....	3
Baltimore.....	2	.....	Pennsylvania:		
Massachusetts:			Philadelphia.....	2	2
Boston.....	2	1	Tennessee:		
Everett.....	1	.....	Nashville.....	.....	1
Haverhill.....	1	.....	Texas:		
Lynn.....	1	.....	El Paso.....	.....	1
Medford.....	.....	1			
Somerville.....	1	.....			

## LEPROSY.

Louisiana:			Michigan:		
New Orleans.....	1	.....	Ann Arbor.....	1	.....
			Detroit.....	1	.....

CITY REPORTS FOR WEEK ENDED MAY 21, 1921—Continued.

LETHARGIC ENCEPHALITIS.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Nebraska:			Ohio:		
Omaha.....	1	1	Coshocton.....	1	.....

MALARIA.

Georgia:			New Jersey:		
Brunswick.....	2	.....	Plainfield.....	1	.....
Savannah.....	2	.....	New York:		
Louisiana:			New York.....		1
Alexandria.....	10	.....	Texas:		
Lake Charles.....	18	.....	Beaumont.....		1
New Orleans.....	1	.....	Dallas.....	8	1

MEASLES.

See p. 1347; also Telegraphic weekly reports from States, p. 1336.

PELLAGRA.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Alabama:			South Carolina:		
Birmingham.....	5	.....	Charleston.....		1
Montgomery.....	1	.....	Texas:		
Louisiana:			Dallas.....	1	1
Baton Rouge.....	1	.....	Virginia:		
Massachusetts:			Portsmouth.....		1
Boston.....	1	.....			

PNEUMONIA (ALL FORMS).

Alabama:			Georgia—Continued.		
Anniston.....	2	.....	Macon.....		1
Birmingham.....		5	Savannah.....		2
Montgomery.....		1	Illinois:		
Arizona:			Chicago.....	174	42
Tucson.....		4	East St. Louis.....		2
California:			Elgin.....		4
Bakersfield.....	2	1	Galesburg.....		1
Eureka.....		1	Kewanee.....		1
Long Beach.....		3	Oak Park.....	5	2
Los Angeles.....	29	9	Peoria.....		1
Oakland.....	3	2	Indiana:		
Pasadena.....	1	.....	East Chicago.....		8
Sacramento.....		2	Fort Wayne.....		1
San Diego.....		1	Gary.....		2
San Francisco.....	4	3	Indianapolis.....		8
Santa Barbara.....		3	Kokomo.....		1
Stockton.....		1	Marion.....		2
Colorado:			Kansas:		
Denver.....		5	Hutchinson.....	1	.....
Pueblo.....		4	Kansas City.....	2	.....
Connecticut:			Topeka.....		1
Bridgeport.....	2	1	Kentucky:		
Bristol.....		2	Covington.....		2
Greenwich.....	3	.....	Lexington.....		1
Hartford.....	3	1	Louisville.....		5
Manchester.....	1	.....	Louisiana:		
Meriden.....	3	1	Baton Rouge.....	2	1
New Haven.....		2	New Orleans.....		9
Norwalk.....		1	Maine:		
Waterbury.....	3	.....	Bangor.....	1	.....
Delaware:			Biddeford.....		1
Wilmington.....		5	Lewiston.....		1
District of Columbia:			Maryland:		
Washington.....		5	Baltimore.....	47	16
Georgia:			Massachusetts:		
Atlanta.....		7	Amesbury.....	2	.....
Brunswick.....	1	.....	Arlington.....		1
La Orange.....	1	.....	Attleboro.....		1

## CITY REPORTS FOR WEEK ENDED MAY 21, 1921—Continued.

## PNEUMONIA (ALL FORMS)—Continued.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
<b>Massachusetts—Continued.</b>			<b>New Jersey—Continued.</b>		
Belmont.....	2	.....	Trenton.....	7	1
Beverly.....	1	.....	West Orange.....	.....	1
Boston.....	26	17	<b>New York:</b>		
Brockton.....	1	.....	Albany.....	3	.....
Cambridge.....	3	1	Buffalo.....	22	18
Chelsea.....	7	.....	Cohoes.....	2	1
Chicopee.....	.....	1	Lackawanna.....	1	.....
Clinton.....	.....	2	Middletown.....	.....	3
Easthampton.....	.....	1	Mount Vernon.....	4	.....
Everett.....	1	.....	Newburgh.....	2	1
Fall River.....	.....	3	New York.....	206	189
Haverhill.....	4	.....	Niagara Falls.....	.....	1
Lowell.....	.....	1	Olean.....	.....	1
Lyons.....	.....	2	Port Chester.....	1	.....
Malden.....	.....	2	Poughkeepsie.....	1	.....
Medford.....	.....	1	Rochester.....	11	5
Methuen.....	1	.....	Rome.....	1	.....
New Bedford.....	.....	3	Schenectady.....	2	.....
Northampton.....	1	.....	Syracuse.....	11	6
Pittsfield.....	.....	1	Troy.....	2	.....
Salem.....	3	1	White Plains.....	.....	1
Somerville.....	5	1	Yonkers.....	.....	4
Springfield.....	.....	3	<b>North Carolina:</b>		
Wakefield.....	1	.....	Charlotte.....	.....	1
Watertown.....	.....	1	Rocky Mount.....	.....	2
Winthrop.....	2	.....	Wilmington.....	.....	2
Worcester.....	.....	2	<b>Ohio:</b>		
<b>Michigan:</b>			Akron.....	2	.....
Ann Arbor.....	2	.....	Barberton.....	2	.....
Detroit.....	57	31	Canton.....	1	.....
Flint.....	.....	3	Cincinnati.....	.....	7
Grand Rapids.....	4	1	Cleveland.....	.....	15
Hamtramck.....	.....	2	Columbus.....	.....	4
Highland Park.....	6	3	Dayton.....	2	.....
Kalamazoo.....	1	.....	East Cleveland.....	1	.....
Port Huron.....	.....	1	Hamilton.....	.....	1
Sault Ste. Marie.....	1	.....	Kenmore.....	1	.....
<b>Minnesota:</b>			Newark.....	.....	1
Duluth.....	.....	3	Niles.....	1	.....
Hibbing.....	1	.....	Piqua.....	.....	1
Minneapolis.....	.....	3	Sandusky.....	.....	2
St. Paul.....	.....	3	Toledo.....	.....	3
<b>Missouri:</b>			Youngstown.....	.....	4
Independence.....	.....	1	<b>Oklahoma:</b>		
Jefferson City.....	.....	2	Oklahoma City.....	.....	2
Kansas City.....	.....	9	Portland.....	.....	5
St. Joseph.....	.....	4	<b>Pennsylvania:</b>		
Springfield.....	.....	1	Philadelphia.....	68	44
<b>Montana:</b>			<b>Rhode Island:</b>		
Butte.....	.....	3	Pawtucket.....	.....	1
Great Falls.....	.....	1	Providence.....	.....	2
Missoula.....	.....	2	<b>South Carolina:</b>		
<b>Nebraska:</b>			Charleston.....	.....	2
Lincoln.....	.....	1	<b>Tennessee:</b>		
Omaha.....	.....	4	Nashville.....	.....	2
<b>New Hampshire:</b>			<b>Texas:</b>		
Berlin.....	.....	1	Dallas.....	.....	4
Keene.....	1	.....	El Paso.....	.....	11
Manchester.....	.....	2	Fort Worth.....	.....	2
<b>New Jersey:</b>			Galveston.....	.....	1
Atlantic City.....	2	1	<b>Vermont:</b>		
Belleville.....	2	.....	Burlington.....	.....	1
Bloomfield.....	.....	1	Rutland.....	1	.....
Clifton.....	1	.....	<b>Virginia:</b>		
Elizabeth.....	.....	4	Lynchburg.....	.....	1
Garfield.....	4	1	Norfolk.....	.....	1
Glanester City.....	1	.....	Portsmouth.....	.....	2
Hoboken.....	.....	2	Richmond.....	.....	8
Irvington.....	2	.....	<b>West Virginia:</b>		
Jersey City.....	6	.....	Huntington.....	.....	1
Keany.....	1	.....	Moansville.....	.....	1
Montclair.....	1	.....	Wheeling.....	.....	1
Pascatic.....	.....	1	<b>Wisconsin:</b>		
Paterson.....	2	.....	Green Bay.....	.....	1
Phillipsburg.....	.....	1	Madison.....	.....	2
Plainfield.....	.....	4			

**CITY REPORTS FOR WEEK ENDED MAY 21, 1921—Continued.**

**POLIOMYELITIS (INFANTILE PARALYSIS).**

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1920, inclusive. In instances in which data for the full six years are incomplete, the median is that for the number of years for which information is available.

Place.	Median for previous years.	Week ended May 21, 1921.		Place.	Median for previous years.	Week ended May 21, 1921.	
		Cases.	Deaths.			Cases.	Deaths.
California:				Pennsylvania:			
San Francisco.....	0	1	.....	McKees Rocks.....		1	.....
Connecticut:				Vermont:			
Fairfield.....		1	.....	Burlington.....	0	1	.....
Michigan:				Wisconsin:			
Highland Park.....	0	1	1	Milwaukee.....	0	2	.....

**RABIES IN ANIMALS.**

Place.	Cases.
Missouri:	
Kansas City.....	1
New Jersey:	
West Orange.....	1
Ohio:	
Niles.....	1

**RABIES IN MAN.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
California:			Ohio:		
Sacramento.....	1	1	Cleveland.....	1	.....

**SCARLET FEVER.**

See p. 1347; also Telegraphic weekly reports from States, p. 1336.

**SMALLPOX.**

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1920, inclusive. In instances in which data for the full six years are incomplete, the median is that for the number of years for which information is available.

Place.	Median for previous years.	Week ended May 21, 1921.		Place.	Median for previous years.	Week ended May 21, 1921.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				District of Columbia:			
Birmingham.....	3	19	.....	Washington.....	1	3	.....
Mobile.....	3	8	.....	Georgia:			
Montgomery.....	2	1	.....	Atlanta.....	11	4	.....
Arkansas:				La Grange.....		2	.....
Fort Smith.....	0	1	.....	Macon.....	2	4	.....
Little Rock.....	1	1	.....	Idaho:			
North Little Rock.....	1	1	.....	Boise.....	2	1	.....
California:				Illinois:			
Los Angeles.....	1	1	.....	Alton.....	0	1	.....
Oakland.....	0	1	.....	Chicago.....	2	1	.....
Riverside.....	0	19	.....	East St. Louis.....	2	2	.....
San Francisco.....	2	17	.....	Evanston.....	0	1	.....
Colorado:				Peoria.....	4	2	.....
Denver.....	19	41	.....	Rockford.....	0	1	.....
Connecticut:				Rock Island.....	4	3	.....
Bristol.....		2	.....	Springfield.....	1	5	.....

## CITY REPORTS FOR WEEK ENDED MAY 21, 1921—Continued.

## SMALLPOX—Continued.

Place.	Median for previous years.	Week ended May 21, 1921.		Place.	Median for previous years.	Week ended May 21, 1921.	
		Cases.	Deaths.			Cases.	Deaths.
<b>Indiana:</b>				<b>New York:</b>			
Bloomington.....	0	1	.....	North Tonawanda.....		4	.....
Elkhart.....	0	16	.....	Rochester.....	0	2	.....
Evansville.....	2	1	.....	<b>North Carolina:</b>			
Gary.....	4	3	.....	Charlotte.....	0	3	.....
Indianapolis.....	20	7	.....	Wilmington.....	0	1	.....
La Fayette.....	0	1	.....	Winston-Salem.....	2	14	.....
Marion.....	1	7	.....	<b>North Dakota:</b>			
Mishawaka.....	1	1	.....	Fargo.....	0	5	.....
Muncie.....	2	2	.....	Grand Forks.....	0	1	.....
South Bend.....	0	3	.....	Minot.....			
Terre Haute.....	0	7	.....	<b>Ohio:</b>			
<b>Iowa:</b>				Alliance.....	2	4	.....
Cedar Rapids.....	5	6	.....	Canton.....	0	3	.....
Clinton.....	1	4	.....	Cincinnati.....	1	2	.....
Council Bluffs.....	5	1	.....	Columbus.....	1	15	.....
Des Moines.....	2	4	.....	Coshocton.....	1	1	.....
Mason City.....	0	8	.....	Dayton.....	1	2	.....
Muscatine.....	0	2	.....	Hamilton.....		7	.....
Sioux City.....	4	9	.....	Lancaster.....	0	1	.....
<b>Kansas:</b>				Lorain.....	0	1	.....
A tchison.....	2	1	.....	Middletown.....	0	1	.....
Coffeyville.....	0	2	.....	Newark.....	0	62	.....
Fort Scott.....	4	12	.....	Springfield.....	0	1	.....
Hutchinson.....	0	12	.....	Toledo.....	3	8	.....
Kansas City.....	4	14	.....	<b>Oklahoma:</b>			
Parsons.....	2	6	.....	Oklahoma City.....	3	1	.....
Salina.....		3	.....	Tulsa.....	7	2	.....
Wichita.....	7	15	.....	<b>Oregon:</b>			
<b>Kentucky:</b>				Portland.....	6	10	.....
Covington.....	0	4	.....	<b>South Carolina:</b>			
Louisville.....	2	2	.....	Charleston.....	1	8	.....
<b>Louisiana:</b>				Columbia.....	0	4	.....
Baton Rouge.....	0	1	.....	<b>South Dakota:</b>			
New Orleans.....	6	7	2	Sioux Falls.....	1	1	.....
<b>Maine:</b>				<b>Tennessee:</b>			
Waterville.....		2	.....	Chattanooga.....	1	2	.....
<b>Michigan:</b>				Knoxville.....	1	6	.....
Ann Arbor.....	0	2	.....	Nashville.....	0	1	.....
Battle Creek.....	0	2	.....	<b>Texas:</b>			
Benton Harbor.....	0	10	.....	Dallas.....	7	3	.....
Detroit.....	12	22	.....	El Paso.....	0	1	.....
Flint.....	2	5	.....	Fort Worth.....	8	7	.....
Grand Rapids.....	1	1	.....	Waco.....	1	14	.....
Hamtramck.....		1	.....	<b>Utah:</b>			
Pontiac.....	3	2	.....	Salt Lake City.....	5	15	.....
Sault Ste. Marie.....	0	3	.....	<b>Vermont:</b>			
<b>Minnesota:</b>				Rutland.....	0	1	.....
Austin.....		7	.....	<b>Washington:</b>			
Duluth.....	1	5	.....	Aberdeen.....	1	1	.....
Minneapolis.....	27	26	.....	Bellingham.....	0	2	.....
St. Cloud.....	1	9	.....	Seattle.....	2	41	.....
St. Paul.....	8	46	.....	Spokane.....	17	26	.....
<b>Missouri:</b>				Tacoma.....	2	1	.....
Kansas City.....	11	19	.....	Vancouver.....	0	18	.....
St. Joseph.....	18	5	.....	Walla Walla.....	2	3	.....
St. Louis.....	10	23	.....	<b>West Virginia:</b>			
<b>Montana:</b>				Bluefield.....	4	5	.....
Great Falls.....	1	9	.....	Fairmont.....	1	3	.....
Missoula.....	1	6	.....	Wheeling.....	0	1	.....
<b>Nebraska:</b>				<b>Wisconsin:</b>			
Lincoln.....	6	1	.....	La Crosse.....	0	2	.....
Omaha.....	14	9	.....	Madison.....	1	7	.....
<b>Nevada:</b>				Marinette.....	0	3	.....
Reno.....	0	3	.....	Milwaukee.....	1	14	.....
<b>New Jersey:</b>				Superior.....	0	2	.....
West New York.....		1	.....				

CITY REPORTS FOR WEEK ENDED MAY 21, 1921—Continued.

TETANUS.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
California:			Kansas:		
Riverside.....	1	1	Wichita.....		1
Connecticut:			Louisiana:		
Bridgeport.....	1		New Orleans.....		1
Illinois:					
Chicago.....	1				

TUBERCULOSIS.

See p. 1347; also Telegraphic weekly reports from States, p. 1336.

TYPHOID FEVER.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding weeks of the years 1915 to 1920, inclusive. In instances in which data for the full six years are incomplete, the median is that for the number of years for which information is available.

Place.	Median for previous years.	Week ended May 21, 1921.		Place.	Median for previous years.	Week ended May 21, 1921.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				Minnesota:			
Anniston.....	0	1		St. Paul.....	0	1	
Birmingham.....	2	4		Missouri:			
Arkansas:				Kansas City.....	1	2	1
Little Rock.....	0	1		St. Louis.....	2	1	
California:				New Hampshire:			
Long Beach.....	0	1		Berlin.....	0	1	
Los Angeles.....	3	2		Manchester.....	0	1	
Riverside.....	1	1		New Jersey:			
Sacramento.....	0	2		Newark.....	1	1	
San Francisco.....	2	1		New York:			
Colorado:				Buffalo.....	1	1	
Pueblo.....	0	1		Jamestown.....	0	1	
Connecticut:				Lackawanna.....	0	2	
Hartford.....	0	14		New York.....	18	7	2
Manchester.....	0	1		North Tonawanda.....	0	1	
Meriden.....	0	1		Poughkeepsie.....	0	1	
Georgia:				Troy.....	0	1	
Atlanta.....	0		1	North Carolina:			
Brunswick.....	0	2		Durham.....	0	1	
Macon.....	0	2		Ohio:			
Savannah.....	2	2		Akron.....	0	1	
Illinois:				Cleveland.....	2	2	
East St. Louis.....	0		1	Toledo.....	0	1	1
Oak Park.....	0	1		Pennsylvania:			
Indiana:				Allentown.....	0	1	
Evansville.....	0	1		Chambersburg.....	0	1	
Indianapolis.....	1	2	1	Du Bois.....	0	1	
Kansas:				Philadelphia.....	9	6	
Kansas City.....	0	1		Pittsburgh.....	3	3	
Parsons.....	0	2		Steeltown.....	0	1	
Kentucky:				Washington.....	0	17	
Lexington.....	0	1		Wilksburg.....	0	1	
Louisville.....	3	1		South Carolina:			
Louisiana:				Charleston.....	1	1	
Alexandria.....	1	1		Columbia.....	1	2	
Monroe.....		1	1	Texas:			
New Orleans.....	4	3		Dallas.....	0	2	
Maryland:				Waco.....	0	1	
Baltimore.....	7	6	2	Virginia:			
Massachusetts:				Lynchburg.....	0	1	
Boston.....	3	5		Petersburg.....	0	2	
Cambridge.....	0	1		Portsmouth.....	0	1	
Lynn.....	0	2		Roanoke.....	0	1	
Newton.....	0	1		Washington:			
Salem.....	0	1		Seattle.....	0	5	
Waltham.....	0	54	1	Walla Walla.....	0	1	
Westfield.....	0	1		Yakima.....	0	1	
Michigan:				Wisconsin:			
Alpena.....	0	1		Fond du Lac.....	0	1	
Detroit.....	6	5	1	Racine.....	0	1	1
Flint.....	1	2		Sheboygan.....	0	1	

## CITY REPORTS FOR WEEK ENDED MAY 21, 1921—Continued.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

City.	Popula- tion Jan. 1, 1920, sub- ject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Alabama:										
Anniston.....	17, 734				1					
Birmingham.....	178, 270	45	3		38		2		11	1
Mobile.....	60, 151	20			1					2
Montgomery.....	43, 464	7							1	
Tuscaloosa.....	11, 996						3			
Arizona:										
Tucson.....	20, 292	18								5
Arkansas:										
Fort Smith.....	28, 811		1		3					
Hot Springs.....	11, 695	4								
Little Rock.....	64, 997		1		17				1	
North Little Rock.....	14, 048				10		1			
California:										
Alameda.....	28, 806	7							1	
Bakersfield.....	18, 638	12			12		4			1
Eureka.....	12, 922	6			2		1			2
Long Beach.....	55, 593	14	2		4		3		1	
Los Angeles.....	576, 673	160	49		44	1	19	2	57	32
Oakland.....	216, 361	40	3		1		4		4	6
Pasadena.....	45, 354	8			12		1		3	1
Richmond.....	16, 843	2								
Riverside.....	19, 341	7	1		3		2			1
Sacramento.....	65, 857	20	6		1				5	3
San Bernardino.....	18, 721	9	1				1			2
San Diego.....	74, 683	29	1		38				4	2
San Francisco.....	508, 410	135	34	6	24		12		22	17
Santa Barbara.....	19, 441	9								
Santa Cruz.....	10, 917	4								
Stockton.....	40, 296	7					6			
Vallejo.....	21, 107	6					4	1		
Colorado:										
Colorado Springs.....	30, 105	10	1				2		4	4
Denver.....	256, 369	73	12	1	23		9	1		10
Pueblo.....	42, 908		15	1	6		1		2	
Trinidad.....	10, 906				1		2			
Connecticut:										
Bridgeport.....	143, 538	23	9		3		21			3
Bristol.....	20, 620	6			1		3		3	
Derby.....	11, 238	3								
Fairfield (town).....	11, 475	0					2			
Greenwich (town).....	22, 123				2		1			
Hartford.....	138, 036	28	4		7		5		5	1
Manchester (town).....	18, 370	2			2					
Meriden (city).....	29, 842		1							
Millford (town).....	10, 193	2	1							
New Haven.....	162, 519	29	7		2		12		2	3
New London.....	25, 688	3					1			
Norwalk.....	27, 700	7							1	
Norwich (city).....	22, 304	5	1							
Stonington (town).....	10, 236	4					1		1	
Waterbury.....	91, 410	11	3		7		5			
Delaware:										
Wilmington.....	110, 168	32			1		12			2
District of Columbia:										
Washington.....	437, 571	120	5		152	1	12		16	13
Florida:										
Miami.....	29, 549	13			15					
Georgia:										
Atlanta.....	200, 616	49	1		8		11		5	4
Brunswick.....	14, 413	2			1					
La Grange.....	17, 038		1		3				1	
Macon.....	52, 995	11			1					
Savannah.....	83, 252	32	1						1	1
Idaho:										
Boise.....	21, 393	5	4		14		7			
Illinois:										
Alton.....	24, 682	2			3					
Bloomington.....	28, 725	9					2		2	
Blue Island.....	11, 424	8			3		1		1	1
Centralia.....	12, 491	1								
Chicago.....	2, 701, 705	586	175	12	382	6	124	6	240	49
Cicero.....	44, 995	10	6	1	10		1		1	1
Danville.....	33, 750	6					1		1	

CITY REPORTS FOR WEEK ENDED MAY 21, 1921—Continued.

DIPHThERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1921, sub- ject to correction.	Total deaths from all causes.	Diphtheria.		Meas'es.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Illinois—Continued.										
Decatur.....	43,818	12	1		6		10			
East St. Louis.....	66,740	22	1				3	1		3
Elgin.....	27,454	11	2		3		1		1	1
Evanston.....	37,215	9	1		10		3			1
Forest Park.....	10,768	1	1		2					
Freeport.....	19,669	4	1				1		1	
Galesburg.....	23,834	8			22		3			
Jacksonville.....	15,713	12					2			2
Kewanee.....	16,026	1			1		1			
La Salle.....	13,050	1								
Oak Park.....	39,830	16			80		4		4	
Pekin.....	12,086						5			
Peoria.....	76,121	17	3		2		11			3
Quincy.....	35,978	10								
Rockford.....	65,651	10	1		47		2	1		
Rock Island.....	35,177	5	2				1		1	
Springfield.....	59,183	15			2		2			4
Indiana:										
Bloomington.....	11,595	2							1	1
East Chicago.....	35,967	14								
Elkhart.....	24,277	7					2		1	
Elwood.....	10,790	2							1	
Evansville.....	85,284	18	2				3			
Fort Wayne.....	36,549	18	5		13		2		4	2
Frankfort.....	11,585	5								
Gary.....	55,378	18	2	1	5		1		1	1
Hammond.....	36,004	4	1						2	
Huntington.....	14,000	4	1				1			1
Indianapolis.....	314,194	91	4		7		30		23	13
Kokomo.....	30,067	8					4	1		
La Fayette.....	22,486	7								
Logansport.....	21,626	1					2			
Marion.....	23,747	10	3		1				2	
Mishawaka.....	15,195	1	1				1		4	
Muncie.....	36,624				7		7			
Richmond.....	26,765	3	1							
South Bend.....	70,983	9	1		2		3		12	
Terre Haute.....	66,083	19					6			
Iowa:										
Burlington.....	24,057	5								
Cedar Rapids.....	45,566		1				1			
Clinton.....	24,151		1							
Council Bluffs.....	36,162	10	2				3			
Davenport.....	56,727		1				9			
Des Moines.....	126,468		1				2			
Dubuque.....	39,141		1		1		3			
Mason City.....	20,065	3					2			
Muscatine.....	16,068	5			1		2			
Sioux City.....	71,227		1				3			
Kansas:										
Atholison.....	12,630		1		5					
Coffeyville.....	13,452	4							3	
Fort Scott.....	10,693	6	2							1
Hutchinson.....	23,298		3		15		1			
Kansas City.....	101,177		3		8				1	
Lawrence.....	12,456	5			3				1	
Leavenworth.....	16,912		2		4					
Parsons.....	16,028	4			2					
Salina.....	15,085	2	4				2			
Topeka.....	50,022	10			2		3		5	
Wichita.....	72,128	37	3		135		5		2	
Kentucky:										
Covington.....	57,121	14					1			
Lexington.....	41,534	25			23		1		2	3
Louisville.....	234,891	59	9		50		12		13	8
Paducah.....	24,735								3	
Louisiana:										
Alexandria.....	17,510	9								1
Baton Rouge.....	21,782	6	1						1	1
Lake Charles.....	13,088	4								1
Monroe.....	12,675	7								
New Orleans.....	387,219	118	6				3		16	13

## CITY REPORTS FOR WEEK ENDED MAY 21, 1921—Continued.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Population Jan. 1, 1920, subject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
<b>Maine:</b>										
Auburn.....	16,985	4	1							
Bath.....	14,731	5							1	1
Biddeford.....	18,008	6			2					
Lewiston.....	31,791	9	2		1		2		2	
Portland.....	69,272	14	2		3					1
Sanford.....	10,991	1							1	
Waterville.....	13,351				2					
<b>Maryland:</b>										
Baltimore.....	733,826	191	19		110	4	8	1	26	24
Cumberland.....	29,837	5	1						1	
<b>Massachusetts:</b>										
Adams.....	12,967	2					1			
Amesbury.....	10,036	6	2						1	
Arlington.....	18,665	6			3				1	1
Attleboro.....	19,731	3					3			
Belmont.....	10,749	3	1				1			
Beverly.....	22,561	6								
Boston.....	748,060	193	72	5	100	1	51	2	65	15
Braintree.....	10,580	0	1							
Brockton.....	66,138	1					1		2	
Brookline.....	37,748	11			1		3			
Cambridge.....	109,694	28	4	1	29		12		5	4
Chelsea.....	43,184	8	1		4		7		3	1
Chicopee.....	36,214	18	1	1						
Clinton.....	12,979	7					3			
Danvers.....	11,108		1						1	
Dedham.....	10,792	1								
Easthampton.....	11,261	2	1						1	1
Everett.....	40,120	6	5		1		5		2	
Fall River.....	120,485	33	4		4	1		5	5	2
Greenfield.....	15,462	5					1			
Haverhill.....	53,884	9	1		1		8		3	1
Holyoke.....	60,203	9			1		1			
Lawrence.....	94,270	21	1						7	2
Leominster.....	19,744	3	2		9				1	
Lowell.....	112,479	30	3		2	1		3	4	1
Lynn.....	99,148	16	8		6		3		3	
Malden.....	49,103	17	4		4		1		2	1
Medford.....	39,038		6		16		3		1	
Melrose.....	18,204	2							1	
Methuen.....	15,189	1					1			
New Bedford.....	121,217	20	1		1		4		5	3
Newburyport.....	15,618	5								
Newton.....	46,054	9	4		1		1		1	1
North Adams.....	22,282	4								
Northampton.....	21,951	9			2		2			
Peabody.....	19,552	1					2			
Pittsfield.....	41,751	12	2						2	1
Plymouth.....	13,045	3								
Quincy.....	47,876	6	4		40				1	1
Salem.....	42,529	11	2		2				2	
Somerville.....	93,091	23	7	2	3		5		3	4
Southbridge.....	14,245	1			4					1
Springfield.....	128,563	32	6	1		1	8		2	
Taunton.....	37,137	15	1				2			1
Wakefield.....	15,025	2			5					
Waltham.....	30,915									3
Watertown.....	21,457	2	1				3		1	
West Springfield.....	15,443	3								
Westfield.....	18,604	4			1					
Winthrop.....	15,455	2			4					
Worcester.....	179,754	43	2		26		7			2
<b>Michigan:</b>										
Alpena.....	11,101						2			
Battle Creek.....	36,164		1							
Benton Harbor.....	12,232	0			1					
Detroit.....	963,739	242	100	8	40		69	1	46	23
Flint.....	91,599	18	9				6		3	1
Grand Rapids.....	127,634	29	7	1			6		2	
Hamtramck.....	46,615	15	1		1				2	
Highland Park.....	46,490	14	8		5		4	1		1
Holland.....	12,166	2								
Kalamazoo.....	48,858	11	2				8		2	2

CITY REPORTS FOR WEEK ENDED MAY 21, 1921—Continued.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1920, sub- ject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Michigan—Continued.										
Marquette.....	12,718	1							1	
Muskegon.....	36,570	10	1						1	1
Pontiac.....	34,273	9			1		3			
Port Huron.....	25,944	9					6		1	1
Sault Ste. Marie.....	12,066	1					1			
Minnesota:										
Austin.....	10,118	2								
Duluth.....	98,917	13	4		9		7		5	
Hibbing.....	15,089		3		2		1		1	
Minneapolis.....	390,582	87	15		19		39	2	32	8
Rochester.....	13,722	14			14		3		1	
St. Paul.....	234,595	54	11		8		16	1	7	7
Virginia.....	14,022		2		1					
Winona.....	19,143						2			
Missouri:										
Independence.....	11,686	4					1	1	1	
Jefferson City.....	14,490	3								
Kansas City.....	824,410	85	7	1	39	1	1		3	9
Saint Joseph.....	77,939	40			6					3
Saint Louis.....	772,897	177	63	5	18		69	3	28	12
Springfield.....	39,631	11								
Montana:										
Billings.....	15,100	1					1			
Butte.....	41,611	11	1				1			1
Great Falls.....	24,121	6			3		5			
Missoula.....	12,668	4			3		1			
Nebraska:										
Lincoln.....	54,934	8			2		5		3	
Omaha.....	191,601	67	5		8		9			2
Nevada:										
Reno.....	12,016	5								
New Hampshire:										
Berlin.....	16,104	2								
Concord.....	22,167	7			1		1			
Dover.....	13,029	2								
Keene.....	11,210	2					1			
Manchester.....	78,384	20	3		1		1			
Nashua.....	28,379	8	1				1			
New Jersey:										
Asbury Park.....	12,400	3			1					
Atlantic City.....	50,682	11	3		2		4		1	
Bayonne.....	76,754		3		1		8		2	
Bloomfield.....	22,019	1			1		1		2	
Clifton.....	26,470	2	1		2		2			1
Elizabeth.....	95,682		6		15		18		3	2
Englewood.....	11,627	1			1		5			
Garfield.....	19,381	3		1	1		1			
Gloucester City.....	12,162				2				1	
Hackensack.....	17,667	6	1		1		10			
Harrison.....	15,721	2	2		1		2		1	
Hoboken.....	68,166	19	5		4		7		1	2
Irvington.....	25,480		5		4		5			
Jersey City.....	297,864	17	17		22		13		12	
Kearny.....	26,724	2	1		8		5			
Montclair.....	28,810	1	1		1		1			
Morristown.....	12,548				6		6		1	
New Brunswick.....	32,779		9		1		1			
Orange.....	33,288	3	1		38		3		1	
Passaic.....	63,624	14	2	1	5		3		1	1
Paterson.....	135,963		10		8		1		9	
Perth Amboy.....	41,707		5				2		4	
Phillipsburg.....	16,923	5			2				2	
Plainfield.....	27,700	5					5		1	
Rahway.....	11,942	1								
Trenton.....	119,289	40	4	1	24		7		6	3
West Hoboken.....	49,068	3	2		1					
West New York.....	29,926	3	4						1	
West Orange.....	15,573	2	2		18					
New York:										
Albany.....	113,344		4		41		2		6	
Buffalo.....	508,775	119	51	3	63	1	19	1	30	6
Cohoes.....	22,867	9								
Geneva.....	14,648	1								
Glens Falls.....	16,638	4	1							

## CITY REPORTS FOR WEEK ENDED MAY 21, 1921—Continued.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1920, sub- ject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
New York—Continued.										
Ithaca.....	17,004	4			1		3		1	1
Jamestown.....	38,917	15					1			
Lackawanna.....	17,918	5	1		38		6		3	
Lockport.....	21,306	4	1							
Middletown.....	18,420						2		1	
Mount Vernon.....	42,726	6	3				19		6	
Newburgh.....	30,366	9							1	
New York.....	5,621,151	1,215	348	23	221	4	287	13	243	83
Niagara Falls.....	50,760	18	5	1			12	2		1
North Tonawanda.....	15,482	1	4		10					
Olean.....	20,506	6	2		1					
Peekskill.....	15,868	3							1	
Port Chester.....	16,573	4			8		2		2	
Poughkeepsie.....	35,000	9	2						1	
Rochester.....	295,750	60	23	1			17	1	11	1
Rome.....	26,941	4			2					
Saratoga Springs.....	13,181	3	1		3		2		1	
Schenectady.....	88,723	16	2		19		1		5	
Syracuse.....	171,717	39	16	4	44		7		4	3
Troy.....	72,013	20	1		3				2	3
Watervliet.....	16,073	0								
White Plains.....	21,031	5	1		1		2			
Yonkers.....	100,226	20	4	2	7		9			1
North Carolina:										
Charlotte.....	46,338	7							2	2
Durham.....	21,719	3								
Greensboro.....	19,861	4								
Rocky Mount.....	12,742	6								
Salisbury.....	13,884	0								
Wilmington.....	33,372	11			14					
Winston-Salem.....	48,395	16	1		6				4	1
North Dakota:										
Fargo.....	21,961	6	1		4		1			
Grand Forks.....	14,010	2	2		5					
Minot.....	10,476	3	1				2			
Ohio:										
Akron.....	206,435	25	7		8		13		14	
Alliance.....	21,603	6							1	
Barberton.....	18,811	6					2		1	
Bucyrus.....	10,425	0	3						1	
Canton.....	87,091	18	11		1		2			
Chillicothe.....	15,831	1			1		1			
Cincinnati.....	401,247	105	16		9		9		19	6
Cleveland.....	795,836	20			51		43			
Columbus.....	237,031	64	16				6		4	6
Coshocton.....	19,847								1	
Cuyhoga Falls.....	10,200	3								
Dayton.....	152,559	34					2		4	
East Cleveland.....	27,292								1	
Fremont.....	12,468	1			1				1	
Hamilton.....	39,675	11					2			1
Ironton.....	14,007	4					1		6	
Kenmore.....	12,683		2		2					
Lancaster.....	14,706	4			5					1
Lorain.....	37,295		2		12				1	
Mansfield.....	27,624	4								
Middletown.....	23,594	7								
Newark.....	26,713	9							3	
Niles.....	13,080	0			2		3			
Norwood.....	24,966	5								
Piqua.....	15,044	3								1
Sandusky.....	22,897	7								
Springfield.....	60,840	15	5		1		20		1	3
Steubenville.....	28,506	5					4			
Toledo.....	243,109	52	20	2	2		4		8	9
Youngstown.....	182,358	32	4		43		2	1		4
Zanesville.....	29,569	9	1							1
Oklahoma:										
Oklahoma City.....	91,258	17	2		1		4		1	2
Tulsa.....	72,075		2		1		2			
Oregon:										
Portland.....	258,288	58	7		23		4		10	6

CITY REPORTS FOR WEEK ENDED MAY 21, 1921—Continued.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City.	Popula- tion Jan. 1, 1920, sub- ject to correction.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
<b>Pennsylvania:</b>										
Allentown.....	73,502		3		40		1			
Altoona.....	60,331				10		4			
Ambridge.....	12,730				2					
Beaver Falls.....	12,802						2			
Berwick.....	12,181		2		1		1			
Bethlehem.....	50,358		8		7		4		1	
Bradock.....	20,879		2							
Bradford.....	15,525						2			
Butler.....	23,778		1		45		2			
Canonsburg.....	10,632						1			
Carbondale.....	18,640		1				3			
Charleroi.....	11,516		1				1			
Chester.....	58,080		5				8		3	
Coatesville.....	14,515		1						1	
Columbia.....	10,836								2	
Cannellsville.....	13,804				1		4			
Dickson City.....	11,049		1							
Donora.....	14,131		2		2		1			
Dubois.....	13,681				4					
Easton.....	33,813				2				3	
Erie.....	93,372		6		20		1		10	
Erie.....	15,033				1		1			
Greensburg.....	75,917		5		27		5			
Harrisburg.....	32,277		2		6		2			
Hazleton.....	20,452				2				5	
Homestead.....	67,327		4		16		1		2	
Johnstown.....	53,150		5				5		1	
Lancaster.....	45,975									
McKeesport.....	14,568		1				6			
Meadville.....	18,179				10		1			
Monessen.....	17,469								2	
Mount Carmel.....	44,933		1		2		1		1	
New Castle.....	11,987				1					
New Kensington.....	32,319		3							
Norristown.....	14,928		4							
North Braddock.....	21,274		1							
Oil City.....	10,236				1					
Olyphant.....	1,823,156	506	74	10	50	1	146	2	98	51
Philadelphia.....	10,494		1							
Phoenixville.....	568,193		39		104		39		22	
Pittsburgh.....	18,467		1		1					
Pittston.....	16,500				1					
Flymouth.....	17,431		1		1					
Pottstown.....	21,876		3		10		1		1	
Pottsville.....	107,784		9		26		3			
Reading.....	137,783		4		11		5		6	
Scranton.....	21,747				11		6			
Sharon.....	13,428				1		1			
Steelton.....	15,721		1				1			
Sunbury.....	10,908		1		4					
Swissvale.....	12,333						2			
Tamaqua.....	15,692						3			
Uniontown.....	14,256								1	
Warren.....	11,717		4							
West Chester.....	73,383				1		4			
Wilkes-Barre.....	24,493		1		11		3		2	
Wilkes-Barre.....	36,199		4		2		1			
Williamsport.....	47,512		3				2			
York.....										
<b>Rhode Island:</b>										
Cranston.....	29,407		1		4		1			
East Providence (town).....	30,255		2				4			
Newport.....	64,248		21							2
Pawtucket.....	237,565	60	13		43		15			5
Providence.....										
<b>South Carolina:</b>										
Charleston.....	67,957		25		3					2
Columbia.....	37,524		3		14				2	
<b>South Dakota:</b>										
Sioux Falls.....	25,176		7		3		3			
<b>Tennessee:</b>										
Chattanooga.....	57,895				1					
Knoxville.....	77,818		2		4		1		3	3
Nashville.....	118,342		44		18		8		3	4



## FOREIGN AND INSULAR.

### CUBA.

#### Communicable Diseases—Habana.

Communicable diseases have been notified at Habana as follows:

Disease.	May 11-20, 1921.		Re- main- ing under treat- ment May 20, 1921.	Disease.	May 11-20, 1921.		Re- main- ing under treat- ment May 20, 1921.
	New cases.	Deaths.			New cases.	Deaths.	
Cerebrospinal meningitis.....		1		Measles.....			4
Chicken pox.....	9		9	Paratyphoid fever.....			1
Diphtheria.....	1			Scarlet fever.....	3		3
Leprosy.....			14	Smallpox.....			1
Malaria.....	22		26	Typhoid fever.....	7	2	26

<sup>1</sup> From the interior 18.

<sup>2</sup> From the interior 19; from abroad 1.

### MADAGASCAR.

#### Plague—Tamatave.<sup>1</sup>

During the period from March 1 to April 9, 1921, 80 cases of plague with 49 deaths were reported at Tamatave, Madagascar.

### MEXICO.

#### Plague—Tampico.

Information has been received under date of June 6, 1921, showing the occurrence of 29 cases of plague at Tampico, Mexico, during the previous 10-day period, the last case having been reported May 30, 1921. The total number of cases of plague reported at Tampico from January 1 to June 6, 1921, is 71.

### PERU.

#### Plague—Year 1920.

During the year 1920, 758 cases of plague, with 392 deaths and 108 cases in which the termination was stated to be unknown, were reported in Peru. The cases were distributed in the departments, including the Province of Callao, as follows:

<sup>1</sup> Public Health Reports, Mar. 25, 1921, p. 630.

Department.	Cases.	Deaths.	Termination not known.	Department.	Cases.	Deaths.	Termination not known.
Arequipa.....	51	29	3	Lambayeque.....	53	19	28
Ancash.....	23	10	.....	Libertad.....	174	72	19
Cajamarca.....	39	20	10	Lima.....	153	80	15
Callao (Province).....	61	30	3	Piura.....	204	132	30

The distribution of cases and deaths and cases of unknown termination, according to months, was as follows:

Month (1920).	Cases.	Deaths.	Termination unknown.	Month (1920).	Cases.	Deaths.	Termination unknown.
January.....	119	66	16	July.....	9	6	.....
February.....	130	65	20	August.....	14	6	1
March.....	74	42	5	September.....	53	25	1
April.....	46	18	3	October.....	110	55	30
May.....	23	11	1	November.....	94	56	14
June.....	10	2	9	December.....	76	40	8

#### Yellow Fever—Department of Piura—1919 and 1920.

During the period June to December, 1919, 173 cases of yellow fever, with 41 deaths, were reported in the Department of Piura, Peru; during the period January to August, 1920, 455 cases, with 111 deaths, were reported. The occurrence in 1919 was reported in six localities, the largest number of cases, viz, 112, being reported at Piura; from January to August, 1920, the occurrence was reported in 12 localities, with the largest number of cases, viz, 109, reported at Paita. The distribution according to months was reported as follows:

#### June–December, 1919.

Month.	Cases.	Deaths.	Month.	Cases.	Deaths.
June.....	16	6	October.....	5	1
July.....	60	17	November.....	.....	1
August.....	41	13	December.....	42	.....
September.....	9	3			

#### January–August, 1920.

Month.	Cases.	Deaths.	Termination unknown.	Month.	Cases.	Deaths.	Termination unknown.
January.....	64	14	25	May.....	27	13	1
February.....	123	34	4	June.....	29	5	22
March.....	120	18	.....	July.....	1	1	.....
April.....	88	24	1	August.....	3	2	.....

**PORTUGUESE GUINEA.****Plague.**

Plague was reported present, May 24, 1921, in Portuguese Guinea, West Africa.

**RUSSIA.****Cholera.**

A serious outbreak of cholera in Russia has been reported under date of May 19, 1921. Kolomna, about 55 miles distant from Moscow, and Rostoff on the Don, in south Russia, were reported infected; also several localities in Ukraine and the Caucasus.

**SWEDEN.****Influenza—Goteborg.<sup>1</sup>**

Influenza continued to be reported at Goteborg, Sweden, during the two weeks ended May 7, 1921, with 142 new cases and 10 fatalities.

**UNION OF SOUTH AFRICA.****Typhoid Fever—Cape Town—March, 1921.**

During the four weeks ended March 25, 1921, 103 cases of typhoid fever, as against 87 cases occurring during the previous four-week period, were notified at Cape Town, Union of South Africa. Seven of these cases were imported. The history of milk consumption in the group of cases notified, exclusive of the imported cases, showed that 20 used no milk or condensed milk only, 6 used milk from their own cows, and 70 used milk from one or other of 52 dairies.

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER.****Reports Received During Week Ended June 10, 1921.<sup>2</sup>****CHOLERA.**

Place.	Date.	Cases.	Deaths.	Remarks.
India:				
Calcutta.....	Mar. 27-Apr. 23...	407	357	
Philippine Islands:				
Province—				
Bulacan.....	Apr. 3-9.....	1	1	
Russia:				
Caucasus.....	May 19.....			Reported in several localities.
Kolomna.....	.....do.....			Present. Vicinity of Moscow.
Rostoff on Don.....	.....do.....			Present. On sea of Azof.
Ukraine.....	.....do.....			Reported in several localities.

<sup>1</sup>Public Health Reports, Apr. 29, 1921, p. 965; May 13, 1921, p. 1082; May 27, 1921, p. 1206.

<sup>2</sup>From medical officers of the Public Health Service, American consuls, and other sources.

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

Reports Received During Week Ended June 10, 1921—Continued.

### PLAGUE.

Place.	Date.	Cases.	Deaths.	Remarks.
Ceylon:				
Colombo.....	Apr. 10-16.....	3	1	
Egypt:				
Cities—				
Alexandria.....	Apr. 29-May 4.....	10		
Suez.....	May 4-5.....	2	2	
Provinces—				
Assiout.....	May 3.....	1		
India.....				Apr. 3-9, 1921: Cases, 2,694; deaths, 2,452.
Bombay.....	Apr. 3-9.....	85	66	
Calcutta.....	Apr. 3-23.....	21	17	
Karachi.....	Apr. 17-23.....	6	6	
Madras Presidency.....	Apr. 10-16.....	42	28	
Java:				
West Java—				
Batavia.....				Mar. 31-Apr. 6, 1921: 1 plague rat found.
Madagascar:				
Tamatave.....	Mar. 1-Apr. 9.....	80	49	
Mexico.....				
Tampico.....	May 21-30.....	29		Year 1920: Cases, 758; deaths, 392.
Peru.....				
Departments—				
Arequipa.....	Jan. 1-Dec. 31.....	51	29	
Ancash.....	do.....	23	10	
Cajamarca.....	do.....	39	20	
Callao (Province).....	do.....	61	30	
Lambayeque.....	do.....	53	19	
Libertad.....	do.....	174	72	
Lima.....	do.....	153	80	
Piura.....	do.....	204	132	
Portuguese Guinea.....	May 24.....			Present.

### SMALLPOX.

Brazil:				
Bahia.....	Apr. 9-16.....	1		
Canada:				
Alberta—				
Calgary.....	May 15-21.....	1		
British Columbia—				
Vancouver.....	Apr. 17-May 7.....	11		
Ontario—				
Hamilton.....	May 22-28.....	1		
Ottawa.....	May 15-22.....	23		
Toronto.....	May 15-21.....	1		
Ceylon:				
Colombo.....	Apr. 10-16.....	1		Stated to have been infected in India.
China:				
Amoy.....	Apr. 3-9.....		2	Prevalent.
Canton.....	Mar. 1-31.....			Present.
Foochow.....	Mar. 27-Apr. 16.....			
Hongkong.....	Feb. 20-Mar. 26.....	32	27	
Manchuria—				
Dairen.....	Mar. 21-Apr. 24.....	130	8	Do.
Mukden.....	Apr. 3-9.....			
Tientsin.....	Mar. 27-Apr. 9.....	2	1	
Tsingtau.....	Apr. 4-10.....	1	1	
Colombia:				
Santa Marta.....	May 8-14.....			Do.
Cuba:				
Antilla.....	May 15-21.....	4		
Santiago.....	May 1-10.....	9		
Greece:				
Saloniki.....	Apr. 4-16.....	5	8	
India:				
Bombay.....	Apr. 3-9.....	48	20	
Calcutta.....	Mar. 27-Apr. 23.....	18	13	
Karachi.....	Apr. 17-23.....	2		
Madras.....	Apr. 10-16.....	6	2	
Italy:				
Catania (Province).....	Apr. 25-May 1.....	10		
Messina.....	Apr. 4-24.....	6	3	In Province: Cases, 4; deaths, 2.
Palermo.....	Apr. 20-May 3.....	5	1	

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.****Reports Received During Week Ended June 10, 1921—Continued.****SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
Japan:				
Nagasaki.....	Apr. 18-24.....	18	1	
Java:				
West Java—				
Batavia.....	Mar. 17-23.....	4	1	
Pandegiang.....	do.....		1	
Mexico:				
Chihuahua.....	May 9-15.....		1	
Mexico City.....	Apr. 10-23.....	76		
Senegal:				
Dakar.....	Apr. 1-30.....			Present.
Spain:				
Valencia.....	May 1-7.....	1		
Syria:				
Aleppo.....	Apr. 24-30.....			Present.
Tunis:				
Tunis.....	Apr. 30-May 6.....	1	2	

**TYPHUS FEVER.**

Algeria:				
Algiers.....	Apr. 1-30.....	25	6	
Brazil:				
Bahia.....	Mar. 27-Apr. 9.....	4	4	
Egypt:				
Cairo.....	Feb. 23-Mar. 4.....	4	1	
Greece:				
Saloniki.....	Apr. 4-17.....	202	18	Of these, 6 cases, 2 deaths in civil population. Present among refugees in vicinity.
Mexico:				
Mexico City.....	Apr. 10-23.....	38		
Russia:				
Esthonia.....				Mar. 1-31, 1921: Cases, 55.
Latvia—				
Riga.....	Mar. 1-31.....	385		

**YELLOW FEVER.**

Brazil:				
Bahia.....	Apr. 10-16.....	1	1	
Peru:				
Department—				
Piura.....				June-December, 1919: Cases, 173; deaths, 41. January-August, 1920: Cases, 455, deaths, 111. First period, occurrence in 6 localities; second period, in 12 localities.

**Reports Received from Jan. 1 to June 3, 1921.****CHOLERA.**

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Canton.....	Nov. 1-30.....	7	6	
Changsha.....	Nov. 29.....			Present.
Chungking.....	do.....			Do.
Chosen (Korea).....				Aug. 1-Dec. 2, 1920: Cases, 24,017; deaths, 13,329.
India.....				Sept. 25-Oct. 9, 1920: Deaths, 2,672. Oct. 31-Dec. 11, 1920: Deaths, 7,184. Jan. 2-Feb. 19, 1921: Deaths, 8,465.
Bombay.....	Dec. 5-11.....	2	2	
Do.....	Jan. 16-Feb. 26.....	4	2	
Calcutta.....	Oct. 31-Dec. 25.....	321	283	
Do.....	Dec. 25-Mar. 26.....	876	723	

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

Reports Received from Jan. 1 to June 3, 1921—Continued.

### CHOLERA—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
India—Continued.				
Madras.....	Dec. 12-18.....	77	44	
Do.....	Dec. 26-Apr. 2.....	313	115	
Rangoon.....	Nov. 23-Dec. 25.....	9	8	
Do.....	Dec. 26-Apr. 2.....	32	28	
Indo-China.....				
Saigon.....	Dec. 27-Feb. 27.....	7	4	July 1-31, 1920: Cases, 136; deaths, 98. Including surrounding country.
Japan:				
Taiwan Island (Formosa).....	Nov. 11-Dec. 31.....	219	93	
Do.....	Jan. 1-20.....	2		
Java:				
West Java—				
Bandoeng.....	Oct. 29-Nov. 11.....	2	1	
Batavia.....	Nov. 25-Dec. 1.....	1		
Philippine Islands:				
Manila.....	Nov. 7-Dec. 25.....	9		
Do.....	Jan. 9-Apr. 16.....	22		
Provinces—				
Cagayan.....	Oct. 3-Nov. 20.....	11	9	
Mindoro.....	Jan. 9-15.....	4		
Occidental Negros.....	do.....	1		
Samar.....	Aug. 1-7.....	1	1	
Sorsogon.....	Jan. 2-8.....	1		
Poland.....				
Eastern frontier—				
Bialystok.....	Dec. 16.....			Present.
Galicia.....	Nov. 1-30.....	19	11	Do.
Grodno.....	do.....			Do.
Olitza.....	do.....			Present in Russian prison camp, Mar. 1, 1921: Cases, 31.
Posen.....	do.....			
Stralkowo.....	do.....			
Strelno.....	do.....	1	1	
Warsaw.....	Oct. 1-31.....	2		In district.
Do.....	Dec. 16.....	5		Nov. 1-30, 1920: Cases, 7; deaths, 2.
Russia:				
Lithuania.....				Feb. 19, 1921: Cases reported, 35; mortality, 30 per cent.
Latvia—				
Riga.....	Jan. 22.....			Present.
Siam:				
Bangkok.....	Oct. 9-Nov. 7.....	7	1	
Do.....	Dec. 26-Apr. 2.....	8	2	

### PLAGUE.

Algeria:				
Algiers.....	Nov. 1-Dec. 31.....	3	1	
Do.....	Jan. 1-31.....	3	1	
Oran.....	Mar. 11-20.....	2	1	Dec. 20, 1920: 1 case.
Argentina:				
Rosario.....	Feb. 1-28.....		3	Jan. 1-31, 1921: 3 plague rodents found.
Azores:				
St. Michaels.....				Total, Oct. 1-Dec. 10, 1920: Cases, 149; deaths, 49. In vicinity of Ponta Delgada.
Ponta Delgada.....	Feb. 5-11.....	1		
Brazil:				
Bahia.....	Oct. 31-Dec. 18.....	6	4	
Do.....	Dec. 26-Mar. 12.....	14	4	
Ceara.....	Oct. 17-Feb. 5.....		16	
Pernambuco.....	Oct. 18-Dec. 5.....	1	3	
Porto Alegre.....	Nov. 14-Dec. 11.....		2	
Do.....	Dec. 23-Feb. 19.....		7	
Rio de Janeiro.....	Feb. 15-21.....	1		
British East Africa				
Kenya Colony—				
Kisumu.....	Oct. 31-Dec. 25.....			Outbreak Nov. 8, 1920: Cases reported, 1,067.
Do.....	Dec. 26-Mar. 26.....			Present.
Mombassa.....	Oct. 31-Dec. 25.....	2	2	Do.
Do.....	Dec. 26-Jan. 15.....			Do.
Nairobi.....	Oct. 31-Dec. 25.....	16	11	
Do.....	Jan. 2-Feb. 5.....	19	15	Pneumonic, present.

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

**Reports Received from Jan. 1 to June 3, 1921—Continued.**

**PLAGUE—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
British East Africa—Contd.				
Uganda.....	Oct. 21-Dec. 25....	111	103	Entire protectorate.
Do.....	July 1-Nov. 5.....	259	63	Do.
Ceylon:				
Colombo.....	Nov. 7-Dec. 18.....	18	60	
Do.....	Jan. 16-Apr. 9.....	121	107	
Chile:				
Antofagasta.....	July 9-Dec. 29.....	15	2	Year 1920: Cases, 24.
Do.....	Dec. 27-Feb. 5.....	3		
China:				
Amoy.....	Apr. 3-9.....	1	1	
Chihli Province.....				Mar. 11, 1921: Present on Tientsin & Pukow R. R., 70 miles east of Tientsin. Pneumonic. Reappearance of plague reported Apr. 12, 1921. Mar. 14, 1921: Reported in 15 localities with 100 fatal cases. Total to Apr. 5, 1921: Deaths, 243.
				In Chinese quarter.
Peking.....	Jan. 25.....		1	
Hongkong.....	Nov. 7-Dec. 18.....	6	6	
Do.....	Jan. 9-Feb. 12.....	6	6	
Hwangsein.....	Feb. 12.....			A few cases reported.
Kwantung Province.....	Dec. 29.....			Reported present in Tapu district Mar. 7, 1921. Recurrence.
Manchuria Province—				
Changchun.....	Feb. 18.....	15		
Harbin.....	Feb. 2-Apr. 9.....	1,319		West of Harbin, Feb. 7, 1921, 400 fatal cases reported. Feb. 14, 1921, fatal cases, 1,200. To Mar. 14, 1921: 4,000 fatal cases. Pneumonic. Fatal cases reported daily, about 40. Apr. 13, improving; east of Harbin, more serious.
				Prevalent.
Mukden.....	Feb. 20-26.....			Present.
Tsitsihar.....	Feb. 2-Mar. 10.....			In northern Shantung Province.
Sang Yuan.....	Mar. 3.....		50	Two plague rats found, Dec. 20 and Dec. 31, 1920.
Shanghai.....				
Ecuador:				
Guayaquil.....	Nov. 16-Dec. 31.....	111	36	
Do.....	Jan. 1-Apr. 30.....	225	77	
Egypt.....				Jan. 1-Dec. 30, 1920: Cases, 462; deaths, 299. Jan. 1-Apr. 30, 1921: Cases, 97; deaths, 50.
Cities—				
Alexandria.....	Jan. 17-Apr. 27.....	22	11	
Port Said.....	Oct. 22-28.....	1	1	
Do.....	Jan. 22.....	1	1	
Suez.....	Nov. 18-27.....	10	3	
Do.....	Jan. 5-Apr. 23.....	19	16	Pneumonic, 6 cases; septicemic, 1 case.
Provinces—				
Assouf.....	Nov. 24.....	3	2	
Gharbiyah.....	Apr. 7-9.....	1		
Qirgeh.....	Mar. 7.....	3		
Minieh.....	Feb. 14-Mar. 3.....	5	1	
France:				
Marseille.....	June-Aug. 31.....	58	20	
Paris.....	June-Oct. 15.....	50	11	In suburbs, June-Nov. 2, 1920: Cases, 38; deaths, 19.
Do.....				Jan. 1-13, 1921: Cases, 3; deaths, 1. (Suspect.)
Great Britain:				
Dublin.....				1 case reported Dec. 15, 1920: date of occurrence Oct. 18, 1920.
Liverpool.....				Plague-infected rat found, period Nov. 28-Dec. 11, 1920.
Greece:				
Kavala.....	Oct. 25-Nov. 7.....	2		
India.....				
Bombay.....	Nov. 28-Dec. 25.....	6	6	
Do.....	Dec. 26-Apr. 2.....	231	166	Oct. 24-Dec. 25, 1920: Cases, 21,378; deaths, 14,874. Jan. 2-Apr. 2, 1921: Cases, 56,066; deaths, 44,738.
Calcutta.....	Nov. 14-20.....	46	44	
Do.....	Jan. 30-Mar. 26.....	2	2	
Karachi.....	Dec. 25-31.....	2	2	
Do.....	Mar. 27-Apr. 16.....	23	30	
Madras.....	Dec. 5-25.....	7	4	
Do.....	Jan. 9-29.....	3	1	

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

**Reports Received from Jan. 1 to June 3, 1921—Continued.**

**PLAGUE—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
India—Continued.				
Madras Presidency.....	Nov. 14–Dec. 25...	4,349	2,991	
Do.....	Dec. 26–Apr. 9.....	10,973	7,976	
Rangoon.....	Oct. 31–Dec. 21.....	30	28	
Do.....	Dec. 26–Apr. 2.....	311	296	
Indo-China.....				July 1–31, 1920: Cases, 98; deaths, 74.
Saigon.....	Dec. 27–Mar. 20.....	9	5	Including surrounding country. Mar. 21–Apr. 8, 1921: Two plague rats.
Java:				
West Java—				
Batavia.....	Nov. 21–Dec. 1.....	3	3	
Do.....	Jan. 13–26.....	1	3	
Jugoslavia:				
Cattaro.....	Feb. 23.....	3		Among French troops.
Madagascar:				
Tamatave.....	Mar. 9.....			Present.
Mesopotamia:				
Bagdad.....	Oct. 1–31.....	25	7	
Do.....	Feb. 1–28.....	1	2	
Mexico:				
Carbonera.....	Dec. 5–20.....	3	1	State of San Luis Potosi. Dec. 1920–Feb. 12, 1921: Cases, 24.
Do.....	Dec. 26–Jan. 8.....	3		State of San Luis Potosi.
Cerritos.....	Dec. 5–20.....	7	8	
Do.....	Dec. 26–Feb. 5.....	5		
Tampico.....	Mar. 23–May 9.....	21	2	Total plague cases, Jan. 1–Apr. 19, 1921: 9.
Vera Cruz.....				Mar. 21–Apr. 10, 1921: 4 plague-infected rodents found. Mar. 14, 1921: Rodent plague present.
Morocco:				
Tangiers.....	Apr. 25.....			Reported present.
Paraguay:				
Asuncion.....	Feb. 4.....	1	1	
Peru.....				July–December, 1920: Cases, 292; deaths, 136. Jan.–Feb. 28, 1921: Cases, 141; deaths, 71.
Departments—				July–December, 1920: Cases, 23; deaths, 10. Jan. 1–31, 1921: Cases, 3; deaths, 2.
Callao–Lima.....				
Callao.....	Feb. 1–15.....	2		
Libertad.....	do.....	1		
Trujillo–Salaverry.....	Dec. 27–Apr. 2.....	35	8	
Lima.....	Feb. 1–15.....	14	4	
Piura.....	do.....	21	10	
Porto Rico:				
Carolina.....	Apr. 17–30.....	2	1	Feb. 17–Mar. 3: Plague rats found, 19. Apr. 17–23, 1921: 2 cases clinically confirmed, 1 at Arecibo, 1 at Carolina: 5 plague rats found at three localities. In addition, 2 plague rats reported found, Apr. 14, 1921.
San Juan.....	Feb. 18–25.....	7	2	
Portugal:				
Lisbon.....	Oct. 2–Nov. 17.....	93	27	
Do.....	Feb. 4.....	1		
Portuguese West Africa:				
Angola—				
Loanda.....				Mar. 18–Apr. 8, 1921: Rat plague present.
Russia:				
Batum.....	Nov. 24–Dec. 3.....	38		Epidemic outbreak.
Siberia—				
Vladivostok.....	Apr. 22.....			Prevalent. A few deaths among Chinese.
Siam:				
Bangkok.....	Dec. 5–11.....	1	1	
Do.....	Mar. 13–Apr. 2.....	11	11	
Straits Settlements:				
Singapore.....	Oct. 31–Nov. 6.....	1	1	
Do.....	Feb. 13–Apr. 9.....	6	7	
Tunis:				
Ben Gardane.....				June–July, 1920: Cases, 6. November–December, 1920: Cases, 10, in surrounding territory.

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

Reports Received from Jan. 1 to June 3, 1921—Continued.

**PLAGUE—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
Tunis—Continued. Zarzis.....	Jan. 25.....	1		Jan. 15, 1921: 19 cases notified in vicinity. (Corrected report received Mar. 30, 1921.) Apr. 26, 1921: Outbreak in vicinity reported. Apr. 23: Cases, 23; deaths, 8.
Turkey: Constantinople.....	Nov. 21-27.....	1	2	
Union of South Africa: Orange Free State— Hoopstad district.....	Nov. 28-Dec. 13....	3	1	1 European, 2 natives. On Vryheid Farm. (Public Health Reports, June 25, 1920, p. 1596.)
Do.....	Jan. 23-Mar. 26....	3	1	European and natives. On farms.
Kroonstad district.....	Jan. 23-Apr. 9.....	14	6	On farms. Three cases, 1 death, European. Plague-infected wild rodents found.
Uruguay: Montevideo.....	Feb. 1-28.....	1	1	
On vessel: S. S. Kronprincessan Victoria.....	Jan. 15.....			At Stockholm, Sweden. Rat plague found. Vessel left Buenos Aires, Argentina, Nov. 17, 1920. Stopped at Goteborg and Malmo, Sweden. Left Malmo Jan. 11, 1921. Rats found dead Jan. 13, 1921, at Stockholm.

**SMALLPOX.**

Algeria: Algiers.....	Jan. 1-31.....	5		
Argentina: Rosario.....	Mar. 1-31.....	1		Aug. 29-Dec. 25, 1920: Cases, 75.
Austria.....				
Azores: Ponta Delgada.....	Dec. 18-24.....	7		
Bolivia: La Paz.....	Oct. 1-Dec. 31.....	19	7	
Brazil: Bahia.....	Oct. 31-Dec. 25.....	6		
Do.....	Jan. 8-15.....	4		
Pernambuco.....	Oct. 18-Dec. 19.....	102	2	
Do.....	Dec. 27-Mar. 27.....	53	1	
Rio de Janeiro.....	Oct. 24-Dec. 25.....	112	26	
Do.....	Dec. 26-Apr. 9.....	26	6	
Sao Paulo.....	Dec. 13-19.....	1	1	
Do.....	Dec. 26-Jan. 2.....		1	
British East Africa: Kenya Colony— Mombasa.....	Jan. 23-29.....	1		May 1-June 20, 1920: Cases, 272.
Uganda.....				
Bulgaria: Sofia.....	Nov. 7-13.....	2		
Canada: Alberta— Calgary.....	Dec. 12-18.....	2		
Do.....	Jan. 2-May 7.....	17		
British Columbia— Fernie.....	Feb. 6-12.....	2		
Vancouver.....	Dec. 5-11.....	1		
Do.....	Dec. 26-Apr. 2.....	32		
Victoria.....	Jan. 30-Mar. 5.....	5		
Manitoba— Winnipeg.....	Jan. 16-Apr. 30.....	30		
New Brunswick: Bonaventure and Gaspe Counties.....	Feb. 1-Mar. 3.....	16		From lumber camp on Canadian Government R. R., Feb. 5, 1921, 5 cases. Present.
Campbellton.....	Jan. 9-15.....			
Charlotte County.....	Apr. 24-May 7.....	7		
Gloucester County.....	Jan. 23-29.....	1		
Madawaska County.....	Jan. 30-Feb. 19.....	2		

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

**Reports Received from Jan. 1 to June 3, 1921—Continued.**

**SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Canada—Continued.</b>				
<b>New Brunswick—Contd.</b>				
Northumberland County	Mar. 6-12.....	1		
Restigouche County	Dec. 12-18.....	1		
Do	Feb. 6-19.....	2		
St. Stephen	Feb. 27-Mar. 5.....	1		
York County	do.....	6		
<b>Nova Scotia—</b>				
Sydney	Feb. 13-Apr. 16.....	18		
Yarmouth	Jan. 9-Mar. 26.....	9		
<b>Ontario</b>				
Hamilton	Dec. 19-31.....	9		November-December, 1920: Cases, 992; deaths, 5. Jan. 1-31, 1921: Cases, 902; deaths, 3.
Do	Jan. 2-May 14.....	76		
Kingston	Dec. 26-Apr. 23.....	15		
London	Jan. 2-May 7.....	38		
Montreal	Jan. 2-Apr. 23.....	15		
Niagara Falls	Dec. 12-18.....	1		
North Bay	Dec. 12-25.....	4		
Do	Jan. 2-May 7.....	36		
Ottawa	Dec. 12-25.....	75	1	
Do	Dec. 26-May 14.....	814	3	
Peterborough	Dec. 26-Apr. 30.....	7	1	
Prescott	Apr. 3-9.....	1		
Sarnia	Feb. 20-Mar. 5.....	2		
Sault Ste. Marie	Jan. 9-Feb. 12.....	48		Mar. 27-Apr. 23, 1921: Present. Four reported cases.
Toronto	Dec. 12-25.....	7		
Do	Dec. 26-May 14.....	77		
<b>Quebec—</b>				
Quebec	Jan. 23-Feb. 19.....	2		
<b>Saskatchewan—</b>				
Moose Jaw	Dec. 19-25.....	1		
Do	Jan. 2-Apr. 30.....	16		
Regina	Dec. 12-25.....	11		
Do	Jan. 2-May 7.....	77		
Saskatoon	Dec. 16-22.....	20		
Do	Jan. 9-Mar. 26.....	28		
<b>Ceylon:</b>				
Colombo	Nov. 21-Dec. 25.....	18	7	
Do	Dec. 26-Feb. 19.....	5	2	
<b>Chile:</b>				
Antofagasta	Mar. 21-Apr. 11.....	7	2	Epidemic with high mortality.
Iquique				
Coquimbo	Feb. 13-19.....	2		
<b>China:</b>				
Amoy	Nov. 7-Dec. 25.....		7	
Do	Dec. 26-Apr. 2.....		11	
Antung	Dec. 20-26.....	1		
Do	Jan. 10-Mar. 6.....	3	3	
Canton	Dec. 1-31.....			Present.
Do	Jan. 1-Feb. 23.....			
Chungking	Nov. 7-Dec. 25.....			Do.
Do	Dec. 26-Apr. 16.....			Do.
Foochow	Nov. 7-Dec. 25.....			Do.
Do	Dec. 26-Mar. 26.....			Do.
Hangkow	Jan. 2-22.....	2	1	
Hongkong	Jan. 16-Feb. 19.....	11	6	
<b>Manchuria Province—</b>				
Dairen	Nov. 16-Dec. 20.....	12	3	
Do	Dec. 23-Mar. 6.....	375	55	
Mukden	Dec. 12-18.....			Prevalent.
Do	Jan. 14-Mar. 26.....			
Nanking	Nov. 14-Dec. 18.....			Present.
Do	Dec. 26-Apr. 23.....			Do.
Shanghai	Feb. 7-Apr. 24.....	3	2	Do.
Tientsin	Nov. 14-Dec. 4.....	2		Dec. 12-25, 1920: Cases, 160; in camp for famine refugees.
Do	Dec. 26-Mar. 26.....	12		
Tsinanfu	Oct. 31-Nov. 12.....	20		In camp for famine refugees, 477 Statistics of Shantung Christian Hospital.
Tsingtau	Jan. 3-Mar. 27.....	6	2	
<b>Chosen (Korea):</b>				
Chemulpo	Dec. 1-31.....	1		
Fusan	Nov. 1-30.....	1		
Do	Jan. 1-Mar. 31.....	7	2	
Gensan	Dec. 1-31.....	15	12	
Do	Jan. 1-Mar. 31.....	45	24	
Seoul	Mar. 1-31.....	1		

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

Reports Received from Jan. 1 to June 3, 1921—Continued.

**SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Colombia:</b>				
Barranquilla.....	Jan. 16-Mar. 12.....			Present.
Santa Marta.....	Dec. 5-25.....			Do.
Do.....	Dec. 26-May 7.....			Do.
<b>Cuba:</b>				
Antilla.....	Dec. 7-27.....	10		For port of Preston. May 7-14:
Do.....	Jan. 2-May 14.....	96		1 case from Baracoa.
Camaguey Province.....				Reported seriously prevalent
				during January, 1921. Mar. 17,
				1921: 386 cases reported.
Cienfuegos.....	Mar. 13-Apr. 2.....	3		1 from Jatibonico, Cuba; 1 from
Habana.....	Dec. 31-Feb. 16.....	11		Jamaica.
Lugareno.....	Mar. 7-13.....	2		Vicinity of Nuevitas. Dec. 6-12,
Matanzas.....	Jan. 2-29.....	6		1920; 1 case. Apr. 25-May 1,
Nuevitas.....	Dec. 6-19.....	2		1921: Present.
Do.....	Jan. 3-May 8.....	82		And vicinity.
Oriente Province.....				Mar. 17, 1921: 394 cases reported.
Santiago.....	Nov. 20-Dec. 10.....	26		
Do.....	Feb. 1-Apr. 30.....	364	1	"Alastrim" reported present.
				Estimated, Mar. 1-20, 1921:
				Cases, 1,000.
<b>Czechoslovakia.....</b>				July 11-Aug. 14, 1920: Cases, 141;
				deaths, 29.
Danzig.....	Dec. 5-18.....	2		Nov. 15-Dec. 25, 1920: Cases, 9;
				occurring in 4 localities.
<b>Dominican Republic:</b>				
Santo Domingo.....	Jan. 9-Feb. 19.....	13	1	
<b>Ecuador:</b>				
Guayaquil.....	Nov. 16-Dec. 31.....	33	2	
Do.....	Jan. 1-Apr. 30.....	88		
<b>Egypt:</b>				
Alexandria.....	Dec. 17-31.....	3	1	
Do.....	Jan. 1-Apr. 8.....	11	2	
Cairo.....	Oct. 1-Dec. 9.....	3		
Do.....	Jan. 8-Feb. 25.....	2	1	
Port Said.....	Nov. 19-Dec. 31.....	1	1	
Do.....	Jan. 8-14.....		1	
<b>France:</b>				
Paris.....	Nov. 1-30.....	2	1	
Do.....	Jan. 1-31.....	7	1	
Rouen.....	Nov. 21-Dec. 31.....	7	2	
Do.....	Feb. 13-Mar. 19.....	4	1	
St. Etienne.....	Dec. 3-15.....	2	1	
Do.....	Jan. 23-Feb. 12.....	3		
<b>Germany.....</b>				Aug. 29-Nov. 6, 1920: Cases, 40.
<b>Great Britain:</b>				
Glasgow.....	Dec. 25.....	11	2	
Do.....	Jan. 2-Mar. 19.....	23	8	
Liverpool.....	Jan. 30-Feb. 5.....	1		
London.....	Dec. 26-Jan. 1.....	1		
<b>Greece:</b>				
Patras.....	Apr. 4-10.....		1	
Saloniki.....	Nov. 15-Dec. 26.....	39	14	In surrounding country: Cases,
Do.....	Dec. 27-Apr. 3.....	50	22	21; deaths, 2. Cases reported
				Mar. 14-Apr. 3, 1921, were
				among Russians. Feb. 11-20,
				1921: Cases, 1; deaths, 2.
<b>Haiti:</b>				
Cape Haitien.....	Feb. 13-May 7.....	219		
Port au Prince.....	Sept. 22-Dec. 2.....	480	2	In 3 interior towns, 20 cases. In
				one locality, 18 cases. In coun-
				try districts, vicinity of Port au
				Prince, cases numerous. From
				date of outbreak, Sept. 22, 1920,
				to Apr. 21, 1921: Cases, 3,166,
				deaths, 297.
<b>Honduras:</b>				
Celba.....	Feb. 13-Mar. 5.....	4		
<b>India.....</b>				
Bombay.....	Nov. 7-Dec. 25.....	11	3	Sept. 26-Oct. 9, 1920: Deaths,
Do.....	Dec. 24-Apr. 2.....	431	168	250. Oct. 31-Dec. 11, 1920:
Calcutta.....	Dec. -11.....	2	2	Deaths, 3,902. Dec. 19-25,
Do.....	Jan. -Ma 26.....	28	18	1920: Deaths, 353. Dec. 28,
				1920-Feb. 19, 1921: Deaths,
				4,091.
Karachi.....	Jan. 16-Apr. 16.....	52	2	
Madras.....	Nov. 14-Dec. 18.....	7	5	
Do.....	Dec. 26-Apr. 9.....	114	23	
Rangoon.....	Nov. 21-Dec. 25.....	5	1	
Do.....	Jan. 2-Apr. 2.....	42	5	

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

### Reports Received from Jan. 1 to June 3, 1921—Continued.

#### SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Indo-China.....				July 1-21, 1920: Cases, 107; deaths, 24.
Italy:				
Saigon.....	Mar. 13-20.....	1		
Catania.....	Nov. 29-Dec. 5.....	1		In Province, Nov. 29-Dec. 26, 1920: Cases, 43. Jan. 3-10, 1921: Cases, 32. Jan. 17-Apr. 24, 1921: Cases, 106.
Do.....	Feb. 14-Mar. 12.....	11		
Genoa.....	Feb. 7-13.....	3		
Messina (city and Province).....	Jan. 3-Apr. 27.....	61	11	Dec. 5, 1920-Jan. 2, 1921: Cases, 15.
Palermo.....	Oct. 30-Dec. 27.....	410	124	
Do.....	Jan. 26-Apr. 19.....	282	38	
Japan:				
Kobe.....	Mar. 16-Apr. 30.....	9	1	
Nagasaki.....	Mar. 27-Apr. 13.....	7	2	Apr. 28: Present.
Java:				
West Java.....				Nov. 12-Dec. 29, 1920: Cases, 72; deaths, 6. Jan. 6-12, 1921: 1 case, 1 death.
Bandoeng.....	Nov. 19-25.....	1	1	
Do.....	Feb. 3-Mar. 30.....	2	1	
Batavia.....	Nov. 12-Dec. 25.....	10	5	
Do.....	Jan. 27-Mar. 30.....	12	3	
Buitenzorg.....	Feb. 10-23.....	14	2	
Garoet.....	Jan. 27-Mar. 2.....	2		
Indramayoe.....	Nov. 12-Dec. 29.....	1		
Krawang.....	do.....	1		
Do.....	Jan. 13-Mar. 30.....	69	9	
Lebak.....	do.....	33	12	
Paudeglang.....	Jan. 27-Mar. 30.....	24	6	
Jugoslavia.....	July 25-Aug. 28.....	128	42	Feb. 7-13, 1920: Cases, 122; deaths, 27.
Belgrade.....	Feb. 27-Mar. 5.....	1		
Zagreb.....	Jan. 9-Mar. 26.....	7	1	
Luxemburg.....	Dec. 15-Jan. 1.....	1		
Madagascar:				
Tananarive.....	Jan. 17-23.....		2	
Madeira:				
Funchal.....	Dec. 5-18.....		2	
Do.....	Dec. 26-Mar. 19.....		9	
Mesopotamia:				
Bagdad.....	Nov. 1-Dec. 31.....	2		
Do.....	Jan. 1-31.....	1	2	
Mexico:				
Chihuahua.....	Dec. 6-26.....	11	3	
Do.....	Dec. 27-Apr. 3.....		16	
Ciudad Juarez.....	Mar. 21-27.....		1	
Guadalajara.....	Dec. 1-31.....	1		
Do.....	Jan. 1-Mar. 31.....	3		
Mexico City.....	Nov. 14-Dec. 25.....	17		Including municipalities in the Federal district.
Do.....	Jan. 2-Apr. 9.....	250		Do.
Monterey.....	Mar. 29-Apr. 4.....		4	
Salina Cruz.....	Jan. 1-Apr. 30.....	5	3	
Saltillo.....	Apr. 17-23.....		7	
San Luis Potosi.....	Feb. 6-Apr. 30.....		2	
Tecate.....	Jan. 17.....	3		
Torreon.....	Jan. 1-Feb. 28.....	6	3	
Newfoundland:				
Bonne Bay.....	Mar. 20-Apr. 1.....	1		
Grand Falls.....	Mar. 12-18.....	1		
Lewispport.....	Apr. 2-8.....			Present.
St. Johns.....	Jan. 22-May 13.....	5		
Norway:				
Stavanger.....	Jan. 23-29.....	3		
Panama:				
Colon.....	Jan. 5-May 10.....	125		
Poland:				
Warsaw.....	Sept. 1-30.....	3		Sept.-Oct., 1920: Cases, 173; deaths, 37.
Portugal:				
Lisbon.....	Nov. 28-Dec. 18.....		5	
Do.....	Dec. 26-Apr. 16.....		24	
Portuguese East Africa:				
Chai-Chai.....	Jan. 9-Feb. 12.....			Present. One death reported.
Chinde.....	Jan. 2-8.....			Present.
Gaza district.....	Dec. 18-23.....			Do.
Inhambane district.....	Dec. 26-Mar. 26.....			Do.
Lourenco Merques.....	Oct. 24-Dec. 11.....	10		Reported present in interior of Chai-Chai district.
Do.....	Mar. 20-Apr. 9.....	3	1	
Quelimane.....	Oct. 24-Dec. 11.....	3		
Rumania:				
Bessarabia Province.....	Jan. 1-27.....	202		
Bucharest.....	Nov. 1-30.....	1		

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

Reports Received from Jan. 1 to June 3, 1921—Continued.

**SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Romania—Continued.</b>				
Cernowitz.....	Jan. 1-31.....	5	1	
Galatz.....	Dec. 1-31.....	1		
Jassy.....	Nov. 1-Dec. 31.....	7	1	
Kiseneff.....	Jan. 1-Mar. 18.....	18		District.
<b>Russia:</b>				
<b>Esthonia Province</b>				
Reval.....	Oct. 1-Nov. 30.....	28		Dec. 1-31, 1920: Cases, 17. Jan. 1-Feb. 28, 1921: Cases, 50, not including cases in military hospitals.
<b>Latvia—</b>				
Riga.....	Nov. 1-Dec. 31.....	17		
Do.....	Feb. 1-28.....	21		
<b>Siberia—</b>				
Vladivostok.....	Oct. 1-Dec. 31.....	3	1	
Do.....	Feb. 1-28.....	1		
<b>Senegal:</b>				
Dakar.....	Mar. 1-31.....			Present.
<b>Siam:</b>				
Bangkok.....	Feb. 13-Apr. 2.....	2		
<b>Sierra Leone:</b>				
Freetown.....	May 2.....			Do.
<b>Spain:</b>				
Barcelona.....	Nov. 18-Dec. 29.....		13	
Do.....	Jan. 13-Apr. 6.....		32	
Corunna.....	Dec. 12-18.....		1	
Madrid.....	Nov. 1-30.....		1	Year ended Dec. 31, 1920; Deaths, 9.
Do.....	Feb. 6-13.....		1	
Malaga.....	Oct. 1-Dec. 31.....		77	
Do.....	Jan. 1-Mar. 31.....		48	
Tarragona.....	Jan. 30-Feb. 19.....		2	
Valencia.....	Dec. 5-25.....	3		
Do.....	Dec. 26-Apr. 30.....	27	4	
<b>Switzerland:</b>				
Basel.....	Mar. 30-Apr. 2.....	5		
<b>Syria:</b>				
Aleppo.....	Nov. 14-Dec. 4.....			Dec. 12-25, 1920: Present.
Do.....	Jan. 16-Feb. 5.....			Present.
<b>Tunis:</b>				
Tunis.....	Nov. 30-Dec. 28.....	10	18	
Do.....	Jan. 8-Apr. 29.....	63	48	
<b>Turkey:</b>				
Constantinople.....	Nov. 21-Dec. 11.....	4		
Do.....	Jan. 2-Apr. 23.....	33	2	
<b>Union of South Africa:</b>				
<b>Cape Province</b>				
Natal.....	Jan. 23-Apr. 9.....			Fresh outbreaks, Cape Province, Natal, Orange Free State, and Transvaal. Outbreaks. Feb. 13-19, 1921: Present in rural areas.
Durban district.....	Jan. 23-Feb. 5.....			Outbreak.
Orange Free State.....	Jan. 23-Apr. 9.....			Outbreaks. Feb. 13-19, 1921: Present in rural areas.
<b>Transvaal</b>				
Johannesburg.....	Oct. 1-3.....	1		Jan. 23-Apr. 9, 1921: Outbreaks.
Do.....	Jan. 23-Apr. 9.....	2		From Portuguese East Africa.
<b>Uruguay:</b>				
Montevideo.....	Dec. 1-31.....	6	2	
Do.....	Jan. 1-Feb. 28.....	7	1	
<b>Venezuela:</b>				
Puerto Cabello.....	Apr. 3-9.....		1	
<b>On vessels:</b>				
S. S. Alfonso XIII.....	Dec. 27.....	1		At Habana, Cuba, from ports in northern Spain.
S. S. Cadiz.....	Jan. 5.....	1		At Habana, Cuba, from Mediterranean ports.
U. S. S. Mississippi.....	Feb. 18-20.....	22		In Canal Zone.
S. S. Ohioan.....	Jan. 4.....	1		At San Pedro, Calif., from New York, via Balboa, Canal Zone.
S. S. Ventura.....	Jan. 18.....	1		At Sydney, Australia, from San Francisco, Calif., via Honolulu, and Pago Pago, Samoa.
S. S. _____.....	Mar. 27-Apr. 2.....	2	1	At quarantine, St. John, New Brunswick. From Europe.

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

Reports Received from Jan. 1 to June 3, 1921—Continued.

### TYPHUS FEVER.

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Algeria:</b>				
Algiers.....	Jan. 1-Mar. 31.....	24	4	
Oran.....	Mar. 11-Apr. 30.....	172	42	
<b>Bolivia:</b>				
La Paz.....	Dec. 1-31.....	13	0	
<b>Brazil:</b>				
Ceara.....	Oct. 17-Dec. 26.....		3	
Do.....	Jan. 2-29.....		5	
<b>Bulgaria:</b>				
Sofia.....	Jan. 2-Apr. 16.....	13	1	
<b>Chile:</b>				
Arica.....	Feb. 16-Mar. 25.....	12	1	Among laborers arriving from the arid region by way of Iquique, Chile, Feb. 16, 1921.
Concepcion.....	Nov. 1-Dec. 27.....		23	
Do.....	Dec. 28-Mar. 28.....		16	Present in vicinity. Year 1920, in public hospital, 89 cases, 13 deaths.
Coquimbo.....	Dec. 1-7.....		1	
Valparaiso.....	Oct. 25-Nov. 27.....		13	
Do.....	Jan. 30-Mar. 19.....		14	
<b>China:</b>				
<b>Manchuria Province—</b>				
Harbin.....	Nov. 22-28.....	1		On Chinese Eastern Railway.
Do.....	Jan. 3-9.....	1		
Manchuria Station.....	Nov. 22-28.....	2		Do.
Do.....	Jan. 10-16.....	1		
<b>Chosen (Korea):</b>				
Chemulpo.....	Feb. 1-28.....	1	1	
Seoul.....	Dec. 1-31.....	1		
Do.....	Jan. 1-Mar. 31.....	2		
<b>Colombia:</b>				
Barranquilla.....	Mar. 13-19.....		1	
<b>Czechoslovakia:</b>				
Prague.....	Feb. 1-21.....	2		July 11-Aug. 23, 1920: Cases, 138; deaths, 18. Reported present, Feb. 10, 1921.
<b>Danzig:</b>				
Do.....	Dec. 20.....	1		In emigrant from Brest-Litovsk, with 2 weeks' stay at Warsaw.
Do.....	Jan. 16-Feb. 5.....	3	1	
<b>Egypt:</b>				
Alexandria.....	Nov. 19-Dec. 31.....	13	6	
Do.....	Jan. 1-Apr. 15.....	32	15	
Cairo.....	Oct. 1-Dec. 28.....	44	32	
Do.....	Jan. 1-Feb. 25.....	34	21	
Port Said.....	Feb. 19-25.....	1		
<b>Germany.....</b>				
				Sept. 12-Dec. 25, 1920: Cases, 259, including 11 in a camp. Dec. 26, 1920-Jan. 8, 1921: Cases, 7.
<b>Great Britain:</b>				
Belfast.....	Dec. 5-25.....	13		
Do.....	Jan. 9-Mar. 19.....	8	1	
Dublin.....	Nov. 28-Dec. 18.....	4	3	
Do.....	Jan. 9-Apr. 9.....	13	2	
<b>Greece:</b>				
Drama.....	Nov. 22-28.....	1		
Do.....	Feb. 28-Mar. 6.....	1		
Kavalla.....	do.....	2		
Patras.....	Nov. 29-Dec. 5.....		1	
Saloniki.....	Oct. 25-Dec. 26.....	34	9	
Do.....	Jan. 10-Apr. 3.....	984	58	Among refugees from Russia. Present among Caucasian refugees in vicinity. Feb. 7-27, 1921: Cases, 246; deaths, 11. In population: Cases, 8; deaths, 10. Among Russian refugees: Cases, 238; deaths, 1. At other localities, Feb. 28-Mar. 13, 1921: Cases, 27; deaths, 2.
Serres.....	Nov. 8-14.....	1		
<b>Guatemala:</b>				
Guatemala City.....	Mar. 1-31.....		1	Feb. 1-Mar. 12, 1921: Present in highland departments. In vicinity of Guatemala City, Mar. 1-31, 1921: Several cases.
<b>Hungary.....</b>				
Budapest.....	Nov. 8-Dec. 5.....	2		Aug. 3-Dec. 5, 1920: Cases, 38.
<b>Indo-China:</b>				
Seigon.....	Mar. 27-Apr. 8.....	1	1	

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

**Reports Received from Jan. 1 to June 3, 1921—Continued.**

**TYPHUS FEVER—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
Italy:				
Naples.....	Feb. 23.....	2		
Trieste.....	Feb. 14.....	30		Among emigrants intending to come to United States.
Japan:				
Nagasaki.....	Nov. 15-Dec. 26.....	10	1	
Do.....	Dec. 27-Apr. 17.....	33	7	
Jugoslavia.....	July 25-Aug. 28.....	27	5	Feb. 7-13, 1920: Cases, 84; deaths, 2. Dec. 12-25, 1920: Cases, 112. 114 remaining cases.
Belgrade.....	Jan. 9-Mar. 26.....	5		
Medjumurju Province.....	Jan. 2-8.....	73		51 remaining cases.
Do.....	Feb. 13-19.....	42		
Zagreb.....	Dec. 12-23.....	27		City and county.
Do.....	Dec. 26-Feb. 21.....	41	6	
Malta.....	Dec. 1-31.....	1		
Mesopotamia:				
Bagdad.....	Nov. 1-30.....	1	1	
Do.....	Feb. 1-28.....	1	1	
Mexico:				
Guadalajara.....	Dec. 1-31.....	11		Including municipalities in the Federal district.
Do.....	Jan. 1-Mar. 31.....	11	5	
Mexico City.....	Nov. 14-Dec. 25.....	67		Do. Present. Five deaths reported.
Do.....	Dec. 26-Apr. 9.....	209		
San Luis Potosi.....	Dec. 5-31.....			Present. Present. Five deaths reported.
Do.....	Jan. 16-May 14.....			
Netherlands:				
Rotterdam.....	Jan. 23-29.....	1		
Poland.....				Sept.-Oct., 1920: Cases, 3,845; deaths, 371. Nov. 1-30, 1920: Cases, 3,059; deaths, 350. Dec. 1-31, 1920: Cases 4,644; deaths, 550. Jan. 1-31, 1921: Cases, 5,308; deaths, 597. Year 1920: Cases, 161,846.
District—				
Galicja.....	Nov. 1-30.....	1,192	286	
Kielce.....	do.....	279	15	
Lodz.....	do.....	83	6	
Lublin.....	do.....	403	20	
Posen.....	do.....	17		
Silesia.....	do.....	6		
Warsaw.....	do.....	191	15	
Warsaw city.....	Nov. 1-Dec. 16.....	96	8	
District—				
Bialystok.....	Jan. 1-31.....	321	33	
Galicja.....	do.....	3,427	457	
Kielce.....	do.....	426	42	
Lodz.....	do.....	200	14	
Lublin.....	do.....	353	18	
Posen.....	do.....	13		
Silesia.....	do.....	1		
Warsaw.....	do.....	340	16	
Warsaw city.....	do.....	197	17	
Portugal:				
Oporto.....	Nov. 28-Dec. 4.....	1		
Do.....	Dec. 26-Apr. 18.....	6	3	
Rumania:				
Cities—				
Bucharest.....	Nov. 1-Dec. 31.....	9	1	
Do.....	Jan. 1-31.....	7		
Cahul district.....	Feb. 1-28.....	13		
Constanza.....	Dec. 1-31.....	9		
Provinces—				
Bessarabia.....				Nov. 30, 1920: Cases, 101.
Do.....	Jan. 1-Feb. 27.....	426		
Bukowina.....				Jan. 29, 1921: Cases, 103.
Transylvania.....	Dec. 1-31.....	81		Including Banat.
Do.....	Jan. 1-Feb. 14.....	41		In the old Kingdom of Rumania on Dec. 31, 1920, 119 cases reported present.
Russia:				Sept. 1-Dec. 31, 1920: Cases, 455. Jan. 1-Feb. 28, 1921: Cases, 314.
Province—				
Esthonia.....				
Latvia—				
Riga.....	Nov. 1-Dec. 31.....	185		
Do.....	Jan. 1-Feb. 23.....	394		
Lithuania.....				Feb. 19, 1921: Cases, 175; mortality, 5 to 6 per cent.
Ruthenia.....				Feb. 19, 1921: Occurrence of about 5 fatal cases daily. Mar. 5, 1921, 200 fatal cases previously unreported.
Ukraine.....				Feb. 19, 1921: Occurrence of about 5 fatal cases daily.

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

Reports Received from Jan. 1 to June 3, 1921—Continued.

### TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Russia—Continued.				
Province—Continued.				
Siberia:				
Vladivostok.....	Jan. 1-Feb. 28.....		9	Dec. 1-31, 1920: Cases, 11; deaths, 6.
Syria:				
Beirut.....	Apr. 10-20.....	2		
Tunis:				
Tunis.....	Apr. 17-29.....	2	1	
Turkey:				
Constantinople.....	Nov. 21-Dec. 25.....	25	1	
Do.....	Jan. 2-Apr. 23.....	56	2	
Union of South Africa.....				September - November, 1920: Cases, 5,144; deaths, 915. Of these, 30 cases, 3 deaths were among whites; remainder among natives and colored.
Do.....	Feb. 27-Mar. 12.....			Outbreaks reported in Cape Province and Transvaal.
Cape Province.....				Feb. 13-19, 1921: Outbreaks reported. Mar. 12-Apr. 9: Outbreak.
Cape Town.....	Dec. 20-26.....	16	5	
East London.....	Jan. 29-Feb. 12.....	5	3	
Port Elizabeth.....	Jan. 30-Feb. 5.....	1		
Natal.....	Feb. 13-19.....			Outbreak.
Orange Free State.....	Jan. 23-Feb. 5.....			Outbreaks.
Transvaal.....				Mar. 27-Apr. 9, 1921: Outbreaks.
Johannesburg.....	Jan. 23-Feb. 5.....	1		Disirict.
On vessels:				
S. S. Presidente Wilson.....	Feb. 1-6.....	15		At New York. From Trieste, Italy, Jan. 15; Naples, Jan. 18; and Algiers, Jan. 22, 1921.
S. S. San Giusto.....	Feb. 10-Mar. 3.....	22		At New York. From Trieste, Jan. 22, and Naples, Jan. 26, 1921.

### YELLOW FEVER.

Brazil:				
Pernambuco.....	Nov. 14-21.....	1	1	
Mexico:				
Orizaba.....	Dec. 5-18.....	2	1	
Papantla.....	do.....	8	2	
Do.....	Jan. 9-15.....		1	
Tampico.....	Dec. 12-18.....	1	1	
Tuxpam.....	Dec. 5-18.....	9	4	
Do.....	Dec. 26-Jan. 1.....	5	1	May 18, 1921: One case, stated to have come from point 40 miles distant.
Vera Cruz.....	Dec. 5-26.....	8	3	
Do.....	Dec. 26-Mar. 20.....	6	1	
Zamora.....	Dec. 12-18.....	1	1	Also called Gutierrez, State of Vera Cruz.
Peru:				
Department—				
Lambayeque.....				Outbreak reported Jan. 22, 1921.
Chiclayo.....	Feb. 1-28.....	18	6	
Eten.....	do.....	7	2	
Ferrenafe.....	Jan. 1-31.....	18	17	
Do.....	Feb. 1-28.....	44	19	
Lambayeque.....	Jan. 1-30.....	2	1	
Do.....	Feb. 1-28.....	4		
Monsefu.....	Feb. 16-28.....	2		
Libertad—				
Trujillo.....	Apr. 28.....			Present.
On vessel:				
S. S. Savoia.....	Jan. 11-15.....	4		At Habana, Cuba, from Vera Cruz, Mexico. Vessel arrived Habana, Jan. 10, 1921, with three cases sickness on board. Two cases confirmed. Two cases developed later on board; confirmed Jan. 15. Savoia left Vera Cruz Jan. 6, 1921.