PUBLIC HEALTH REPORTS.

VOL. XXVI. FEBRUARY 24, 1911. No. 8.

PELLAGRA AND ITS POSSIBLE RELATION TO MAIZE ACCORDING TO SOME RECENT VIEWS.—A REVIEW.

By Passed Asst. Surg. C. H. LAVINDER, United States Public Health and Marine-Hospital Service.

Raubitschek [1] seems to have been the first to take up, in an experimental way, the question as to the effects of exposure to sunlight upon maize-fed animals in association with the question of a possible relation to the etiology of pellagra. His first communication was apparently of a more or less preliminary character, and quite recently he has published a much more important paper upon the subject.[2]

It is the purpose of the present article to review briefly this paper as well as the papers of two other authors on the same subject, and to add a few details on certain matters germane to the views expressed.

In his last paper, above mentioned, Raubitschek, in his introduction notes the immense mass of literature which has accumulated on the etiology of pellagra, and speaks in the harshest terms of the very questionable kind of work which has been done in this field.

He also comments on the fact that only seldom have the somewhat scanty results of pathologico-anatomical results been employed in attempts to clear up its etiology; and that modern microbiologic, especially serologic technic has never, to any extent, been so used. The work which has been done, he adds, is composed in great part of misinterpreted researches on the feeding of animals, incomplete metabolic investigations, and the piling up of statistical details.

After very briefly mentioning some of the literature, he places the theories of the etiology of pellagra in three groups: The *Bacterial*, the *Toxic*, and the *Autotoxic*. These theories are then briefly reviewed in a general way, and he concludes that not one of them, in its present state, can be considered satisfactory.[3]

Finally he observes that if the real cause of pellagra is unknown, we must not insist too closely upon bringing the disease into strict causal relation with the use of maize as food; and that if any real progress is to be made, the above theories must be tested in a satisfactory experimental way, especially upon pellagrins, before they can be accepted as of real importance.

[1] Wiener klinische Wochenschrift, vol. 23, No. 26, June, 1910.
[2] Centrlblt. f. Bakt., 1 Abt. Originale, Bd. 57, Heft. 3.
[3] It is to be noted that neither here nor elsewhere in his paper has the author taken any cognizance whatever of the more recent ideas of a protozoal or similar origin of pellagra.

He then takes up his own experimental work in several sections, as follows:

BACTERIOLOGIC INVESTIGATIONS.

He found it possible to study only briefly the numerous microorganisms which have been isolated from both good and spoiled maize [1] by various workers, and presented as the cause of pellagra. The numerous molds, which can be especially grown from spoiled corn, met the same fate. Since raw corn is not directly consumed as food, but only products prepared from it, he deemed the bacteriologic investigation of prepared (cooked) food worthy of more consideration than the raw material.

Nevertheless in a preliminary investigation, largely as a matter of orientation, he did take up in a general way the flora of raw maize and compared his results with the literature. He thought certain isolated cultures which exhibited a tolerance to high temperatures were of especial importance in consideration of the cooking of food.

The various bacteria and molds were too numerous for detailed study, so he soon confined himself to work on food prepared from maize, especially since he found that relatively few of the microorganisms withstood a temperature of 100° C. Such microorganisms suggested a line of work looking to the establishment of an infection of the gastro-intestinal tract by food prepared from corn.

With this end in view he prepared polenta and cakes from both good and bad corn. These preparations were opened under sterile precautions, and from the inside cultures were made on suitable media, and grown mostly under aerobic conditions. In a few cases he recovered some species of *Penicillium* and *Aspergillus*, but chiefly the *Bacterium Maydis*. Usually his cultures were sterile.

Next he turned to the bacteriologic investigation of pellagrins themselves, and in this work he kept especially in mind the ideas of Ceni on aspergillary infections as a cause of pellagra.

Blood cultures from an arm vein were made from pellagrins in all stages of the malady (media and details not given), and his results were constantly and invariably negative.

Bacteriologic investigation of the stools of pellagrins (again details not given) convinced him that the intestinal flora of pellagrous persons differed in no essential way from that of healthy individuals. At first there appeared to be an unusual occurrence of the *B. Maydis* in pellagrous stools, but further work showed this bacterium to be, in summer, just as frequent in the stools of healthy persons, possibly as the result of the consumption of such raw foods as salads, etc.

Finally bacteriologic investigation of the organs of pellagrins a few hours after death gave essentially negative results (details not given).

He concluded therefore that there exists no basis for a parasitic etiology of pellagra.

[1] Throughout this article maize, corn, and Indian corn are used interchangeably; likewise the terms bad, spoiled, and damaged, as applied to corn, are used synonomously to express a definite and decided deterioration of the grain under the influence of parasitic growths thereon; by good corn is meant grain which has not undergone this change.

SEROLOGIC-BIOLOGIC INVESTIGATIONS.

Under the idea that pellagra is due to an almost exclusive maize diet he thought the possible appearance of specific antibodies in the blood serum of pellagrins a matter of much importance.

Accordingly he prepared maize extracts (details given), and tried, with proper technic, to obtain a "precipitin" reaction in blood sera collected from numerous pellagrins in all stages of the disease. The results were always positive. In his control work, however, with both healthy persons and animals, he obtained the same result. Hence he concluded that this reaction possesses neither diagnostic nor biologic value. He omitted detailed protocols as useless and unnecessary.[1]

In a similar manner he also made use of the complement-fixation reaction, and here again nothing characteristic could be observed. His controls displayed the same result seen with the sera of pellagrins, viz, absence of hemolysis.[2]

Next he tried experiments for hypersusceptibility in pellagrins and in healthy persons by means of the ophthalmo and cutaneo-reactions with various maize extracts. All of these results were negative.[3]

These experiments, he says, still leave for proof how pellagrins, fed for a short time on a good mixed diet, would react to a suddenly administered maize diet.

It also remains to be shown whether pellagrins, on a long-continued maize diet, may be sensitized from the intestinal tract, and whether they would react from a new supply of maize albumen with important symptoms of hypersensitization, such as vertigo, fever, vomiting, and diarrhea, all of which is important if pellagra have any causal relation with a maize diet.

Still it is evident that both sound persons and pellagrins bear a short exclusive maize diet without reactions.

Further experiments were made upon the phenomena of anaphylaxis in animals to determine the presence of maize antibodies. Pellagrins in all stages of the disease were bled from a vein of the arm, and these sera in various quantities (5 to 10 c. c.) were injected intraperitoneally into guinea pigs. Twenty-four hours later intravenous injections of the same sera (up to 3 c. c.) were made into these pigs. These animals showed reactions not observably different from the controls injected with sera from normal persons.

He concludes from the work of this section that antibodies specific for maize albumens (from good or bad maize) do not occur in the serum of pellagrins. If these negative results do not permit any definite conclusion, still it would appear that from them one may infer that any causal relation between maize diet (good or bad) and pellagra is pure speculation.

TOXINE INVESTIGATIONS.

In these experiments he sought to determine whether maize, naturally or artificially spoiled, would produce deleterious effects upon animals if used in rational doses.

---

[1] In a footnote he states that Italian authors have described this reaction as characteristic of pellagra, but apparently without controlling their work (Riv. Pel. ital., 1909).

[2] He does not state in these experiments whether his controls were upon a diet of maize.

[3] Compare Hirschfelder, Archives Internal Med., vol. 6, No. 5, p. 614, for similar results.

For this purpose he made use of good corn and spoiled corn obtained from pellagrous regions, ground under proper precautions, and extracted for 24 hours in sterile tap water. He also made extracts from a maize porridge or broth which had been inoculated with various pure cultures isolated either from bad maize or pellagrous stools.

The extracts he obtained were variously colored and some possessed a fatty-acid like odor. They were kept a long while in the ice chest under toluol without apparently undergoing further change.

With these extracts he injected rabbits (subcutaneously, intraperitoneally, and intravenously) and mice and guinea pigs (subcutaneously and intraperitoneally). In one series he used large doses, up to 8 c. c.; in another series daily small subcutaneous doses for one to two weeks; in another series various extracts were daily mixed with the food of the animals.

In no case were changes observed which by any means could be brought to show any causal relation between pellagra and a maize diet. Frequently the animals refused the food, and hence lost weight, but in no way did the experiments justify any idea whatever that corn contains a toxic substance which by long use may lead to pellagroid phenomena in animals.

He concluded that the negative results of these experiments are worthy of note, since it would appear from them that not one of the above-mentioned theories is supported by these results, and not one seems to bear comparison with actual facts.

* * * * * * *

The author here begins another part of his paper with a preliminary discussion. He points out that the pellagrous erythema is usually confined to the exposed surfaces of the body, and thinks that from this it may be inferred either that there is a reduced resistance of the entire body surface and hence exposed parts are unduly sensitive to slight noxious influences (sunlight), or that eventually, under the influence of a maize diet, in the body surfaces exposed to sunlight, there is developed a noxious substance (Noxe), which produces not only local morbid changes but also affects the entire organism. This thought is further justified by the usual occurrence of pellagrous skin changes at that season when the field laborer is most exposed to the sun. It is possible, then, that there may be some relation between a maize diet, sunlight, and pellagra. He also refers to the work of Aschoff [1] in support of this view.

He directs attention to the analogy with buckwheat poisoning (fagopyrismus) in animals. In this condition white or spotted animals, exposed to the light, suffer, while the dark animals or white animals kept in the dark, escape. In this condition general as well as local symptoms are noticed.

The active body in the buckwheat is soluble in organic solvents, and seems to be a fat or lipoid, in the wide sense, and is possibly related to the vegetable lipochromes.

All these phenomena stand in near relation to the so-called photodynamy, viz, that under the influence of certain fluorescent color stuffs, the effect of light on exposed body surfaces, in animals, is to

[1] Ueber die Wirkungen des Sonnenlichtes auf den Menschen. Vortrag gehalten in der Naturforschenden Gesellschaft zu Freiburg i. Br. am 5 Marz 1908, Freiburg und Leipzig, 1908; und die Lichtstrahlen als Krankheitsursache (Handb. d. allg. Pathol., herausg. von L. Krehl u. F. Marchand. Bd. I, p. 159) Leipzig.

produce erythema and other skin changes with eventual death of the animal. It would seem, then, that some such idea may be entertained for a similar relation of things in pellagra, for in corn there occurs a fluorescent color stuff, and in bad corn is also found a characteristic red material (Lombroso). This idea opens up a new field for investigation. The author refers to Hausmann's work.[1]

FEEDING EXPERIMENTS WITH MAIZE UNDER THE INFLUENCE OF SUNLIGHT.

These experiments are shown in the tables which follow. These tables do not appear in the author's paper, but are made up from the data given by him in order that his results may be more easily understood.

Certain preliminary explanations are necessary, and these apply to all of the tables unless otherwise stated. The animals used were white and gray mice. They were kept in large, airy, clean cages, under constant weight control, and each individual mouse was marked for identification. In each cage there were placed 25 white and 5 gray mice. Some cages were exposed daily to direct sunlight, some were protected from light by heavy, dark paper; some were kept in almost absolute darkness. The general symptoms displayed by the sick animals were: Great loss in weight, paretic weakness, especially of the hind legs, sometimes apathy, sometimes increased nervous irritability; later emaciation, hyperæmia of noses and ears, sometimes falling of the fur, and finally in many cases cramplike seizures. The foods given were mixed diet composed of wheat bread, cooked turnips, cheese scraps, etc.; good polenta composed of good meal boiled in salt solution; bad polenta composed of spoiled maize prepared in the same way; rice composed of broken rice also cooked in the same way. In some cases the author leaves his results stated in an indefinite way, and this is indicated in the tables by a ?, which means that the statement is not definite, but the inference is justifiable. The + sign in the column marked "Sunlight" means exposure to sunlight; the − sign means kept in a condition of darkness, as described. The + sign in the column marked "Symptoms" means the appearance in the animals of the symptoms described above; the − sign means the animals remained well.

I. SERIES TO TEST EFFECT OF MAIZE DIET AND EXPOSURE TO SUNLIGHT.

[Time, summer.]

Cage.	Sunlight.	Food.	Symptoms (4 weeks and 6 to 8 weeks).	Remarks.
A	+	Mixed	White (−), gray (−)	All (−) animals gained weight. Pathological and bacteriological investigations made in all (+) animals, with negative results.
B	+	Good polenta	White (+), gray (−)	
C	+	Rice	White (+), gray (−)	
a	−	Mixed	White (−), gray (−)	All animals gained in weight.
b	−	Good polenta	White (−), gray (−)	
c	−	Rice	White (−), gray (−)	

[1] Not to work on pellagra, but to several papers on photodynamic substances and their effects. See Wien. Klin. Wchnschr., 1908, No. 44, and 1909, No. 52; also Biochem. zeitschr., Bd. 14, p. 275, and Bd. 15, p. 12.

II. SERIES TO TEST EFFECTS OF QUALITY OF MAIZE.

[Time, summer.]

Cage.	Sunlight.	Food.	Symptoms (4 weeks and 6 to 8 weeks).	Remarks.
A	+	Good polenta	White (+), gray (−)	Animals fed on bad polenta did not relish the food, and hence lost weight. Cage B only some gray mice survived to the end of the experiment.
B	+	Bad polenta	White (+), gray (−)	
C	+	Rice	White (+), gray (−)	
a	−	Good polenta	White (−), gray (−)	Cage b, all animals survived to the end. Cage c, all died of an intercurrent malady which time did not permit to investigate.
b	−	Bad polenta	White (−), gray (−)	
c	−	Rice	White (−), gray (−)	

III SERIES. EFFECTS OF INCREASED INTENSITY OF LIGHT.

[Time, February, March, April, and May. Increased intensity of sunlight began to be apparent in early April. No symptoms previously.]

Cages.	Sunlight.	Food.	Symptoms, February and March.	Symptoms, April.	Remarks.
A.	+	Mixed	All (−)	All (−)	Cage B last of May and first of June, all 5 white died. Cage C same time, all 10 white died. Earlier one gray died from unknown cause. Cage D, same time, all white died?
B.	+	Good polenta	All (−)	All (+) except gray?	
C.	+	Bad polenta	All (−)	All (+) except gray	
D.	+	Rice	All (−)	All (+) except gray	
a.	−	Mixed	All (−)	All (−)?	
b.	−	Good polenta	All (−)	All (−)?	
c.	−	Bad polenta	All (−)	All (−)?	
d.	−	Rice	All (−)	All (−)?	

III SERIES, SECOND PART. TO TEST CHANGE OF DIET AFTER APPEARANCE OF SYMPTOMS.

First days of May transferred.	Symptoms last of May and first of June.	Remarks.
10 white from B to A	All slowly died	Rest in same cage remained well.
10 white from B to b	2 died	All others remained well and gained weight, but not so much as those which had been in cages from the beginning.
15 white from C to c	1 died	

In commenting on the second part of Series III, the author thinks it evident that a simple change in diet perhaps hinders the lethal result of maize feeding under exposure to light, but can not prevent it.

He concludes from these experiments that a diet of maize (good or bad), when administered under the influence of sunlight, is deleterious to white mice, and that in this we have relations closely analogous to what is seen in fagopyrismus. The effect of rice diet he reserves for later comment.

MAIZE COLOR STUFFS AND MAIZE OIL.

He next undertook certain chemical investigations of maize, with especial reference to color stuffs similar to the lipochromes and soluble in organic solvents. He also paid attention to the fats found in this grain and notes that all previous observers have laid stress on fat-containing cereals.

By a series of chemical procedures, which he gives in more or less detail, he finally obtained the following substances: From good maize, a reddish yellow oily fluid and a waxy yellowish material; from spoiled maize two similar substances but of a more grayish color and possessing a foul odor. Wider researches were not undertaken as unnecessary for his purposes.

This maize oil and this waxy (fatty) substance were used in further experiments given below. For use by injection the substances were taken up in olive oil and heated to body temperature.

Subcutaneous injections in this way were administered to white and black rabbits, colored guinea pigs, and mice under different conditions of light and darkness. The results were of little value beyond showing that these substances were poorly absorbed and locally very irritating.

The following table, compiled as were the previous tables, shows his results with fat-free maize and maize fat. The maize fat seems to be the waxy material already referred to above. By fat-free maize is meant the maize left after extraction with organic solvents, usually hot alcohol.

I SERIES. FEEDING FAT-FREE MAIZE.

Cage.	Sunlight.	Food.	Symptoms (8 weeks).	Symptoms (10 weeks).
A	+	Good polenta	All died except gray	
B	+	Good fat-free maize	Slight loss weight	
C	+	Bad fat-free maize	do	
a	−	Good polenta	Slight loss weight	
b	−	Good fat-free maize	do	
c	−	Bad fat-free maize	do	

II SERIES. FEEDING MAIZE FAT.

A	+	Good polenta	All died (except gray?)	
B	+	Good fat-free maize	All (−)?	All (−)?
C	+	Maize fat		All died (except gray?).
a	−	Good polenta	All (−)?	All (−)?
b	−	Good fat-free maize	do	Do.
c	−	Maize fat		Only slight loss weight.

From these experiments he concluded that by alcoholic extraction of maize meal (removal of fat) the active body is removed, and hence for this reason extracted polenta, free of fat and color stuffs, even under the influence of sunlight, is not directly harmful as a food. He deemed Series II very important in its results.

GENERAL CONCLUSIONS AND REMARKS.

He assembles here the conclusions already stated in the body of the paper. He thinks he has demonstrated the presence of a photodynamic stuff in maize, and that this material is soluble in alcohol. He brings out strongly the effect upon the animals of changing the conditions of light without any modification of diet, and discusses briefly the symptoms displayed by the animals.

He declares that he does not attempt to bring his experimental results into a strict relation with the etiology of pellagra, or to assume

for this disease a photodynamic basis, or even to conclude that pellagra is produced by an almost exclusive diet of maize, good or bad, which displays its harmful effects first under the influence of light. The inference is apparently that his results are very suggestive but not as yet conclusive.

He comments on certain feeding experiments of other workers and points out that the conditions of light under which their animals were kept may explain some of their irregular results.

He notes the effect of rice diet in his animals, and says this cereal also is rich in fat, and by many is held accountable for a disease somewhat analogous to pellagra, viz, beriberi.

Finally he makes brief reference to the work of two other investigators.

A review of the papers of these two authors shows that they have reported experimental work on this phase of pellagra. Their work seems to have been done independently of each other and of Raubitschek, and all at about the same time.

Lode's[1] work seems not to have been published in full, but at a medical meeting at Innsbruck he demonstrated a number of guinea pigs which he had fed on corn and kept exposed to sunlight.

He stated that in his experiments he had found that guinea pigs, on a maize diet, exposed to sunlight, suffered after eight days from falling of the hair. This phenomenon increased up to the seventeenth day. Guinea pigs kept in the dark, on the same diet, displayed no changes. All of the animals lost weight.

In his experiments he made use of a yellow variety of maize, and he suggests an analogy to what is observed in fagopyrismus.

Animals fed upon white maize or alcohol-extracted maize, under sunlight, were negative up to the eighteenth day. They did not lose weight.

His results furnished occasion for suggesting the use of white varieties of maize in the prophylaxis of pellagra.

Horbaczewski,[2] in a long paper, reports similar experimental work with very similar results. He discusses at some length the possibilities involved, and makes suggestions very similar to those of Raubitschek and Lode.

In his experimental work he largely made use of mice, and his results in a general way agree with those obtained by Raubitschek. He made use of a very much smaller number of animals, and the details need hardly be repeated here. He also worked with a color stuff and with fatty materials which he prepared from maize.

The symptoms displayed in his animals were very similar to those of Raubitschek, but the vaso-motor phenomena were much more marked, and autopsies showed frequent inflammatory conditions in the gastro-enteric tract with fatty changes in the abdominal viscera.

In discussing his final conclusions he says that the possibility should be borne in mind that pellagra and pellagroid affections may be due not only to the use of maize as a food, but also to the use of other grains or other plant stuffs which are eaten in various localities. Hence observations at various places and at various times might help to explain the vexed question of a "pellagra without maize."

---

[1] Wien Klin. Wochenschr., No. 31 (Sitzung der wissenschaftl. Aertzegesellsch. in Innsbruck vom 30 Juni 1910).

[2] Oesterr. Sanitätswesen. Beilage zu No. 31 vom 4 August, 1910.

COMMENTS.

This phase of the etiology of pellagra is comparatively new and has as yet attracted little attention in English literature. Raubitschek's first paper is briefly noticed in American literature,[1] and Sambon has also commented upon it.[2] Apparently he does not regard it of great importance and states that it in no way explains the epidemiological relations of pellagra.

The question of *photodynamic substances* and their effects is a large one, with a rather extensive literature. References have been already given to some of this.[3] It may be briefly said in a general way that a great number of fluorescent bodies, both vegetable and animal, which are harmless in the dark, have been shown to possess highly toxic properties in the light, especially direct sunlight. These properties include the power of exerting a deleterious influence on animal body cells and on certain protozoa. In this series of substances are found certain normal constituents of the animal body, such as hematoporphyrin.

Fagopyrismus is an interesting condition which arises in white or white-spotted animals, fed on buckwheat and exposed to the sunlight. It does not develop in dark animals nor in white animals kept away from the light. It is due not only to buckwheat but to other species of *polygonum*, and may arise from the eating not only of the green plant, and especially at the time of flowering, but also of the grains, straw, stubble, and chaff. It occurs especially in lambs and swine, more rarely in cattle, and very rarely in horses. The symptoms will return even three or four weeks after discontinuance of the food if the animal be exposed to strong sunlight. In winter the eruption is restricted to a mere itching and burning.

The symptoms consist of a severe erythema of the skin, or even a severe dermatitis, and there may be an associated disturbance of respiration, with general symptoms referable to the central nervous system, more particularly if the skin around the head be involved. There seems to be some question as to whether the condition is caused by certain irritant products exerting only a local action on the skin, with secondary general manifestations, or whether it is due to some toxic substance produced in the body of the animal under the influence of sunlight.[4]

Experimental work on laboratory animals, however, seems to show clearly that there is developed some toxic substance in the body of the animal. Öhmke[5] fed rabbits, mice, and guinea pigs on buckwheat and death resulted in the white animals exposed to diffused sunlight. The symptoms were loss of hair, paralytic phenomena, and disturbances of respiration. White animals kept in the dark and the gray animals showed no changes.

The chaff as well as the grains gave the same results. Alcoholic extracts of the buckwheat showed a noticeable fluorescence, and proved just as harmful as the buckwheat, while the buckwheat left after extraction was harmless.

---

[1] Pellagra, Marie, trans. by Lavinder and Babcock, Columbia, S. C., 1910.
[2] Journal Trop. Med. and Hyg. 1910, XIII, 23, 363.
[3] An important work on this subject is Die sensibilisierende Wirkung fluorescierender Substanzen by Tappeiner and Jodlbauer, Leipzig, 1907.
[4] Friedberger and Frohner, Veterinary Pathol., trans. by Hayes, 1908, vol. 1, p. 458.
[5] Zentralblatt für Physiologie, 1909, XXII, 22, 685.

Buckwheat poisoning in man seems to have been very rarely noted. Smith [1] reports a case, but the condition in this patient seems to have been different from what is seen in animals. The man exhibited a high degree of hypersusceptibility to buckwheat and displayed the phenomena usual to anaphylaxis. But the question of exposure to light did not come into consideration. It may be said that we really know very little of buckwheat poisoning in man, as the condition seems very rare.

The relation between the pellagrous erythema and exposure to sunlight has always attracted attention among those interested in this disease, and there seems to be no doubt that some such relation does exist. This relation is, however, not always a very definite one. Pellagrous erythemas are not usual, but at the same time are not uncommon, on covered parts of the body; and Neusser long ago observed that in the gypsy children of Roumania, who go about naked, the pellagrous erythema is usually confined to local situations, hands, feet, and face. It is worthy of note also that the dark-skinned races suffer from pellagra and from its erythema, and that the negro of the Southern States exhibits erythemas just as extensive and just as severe as those seen in the whites.

If the coloring matters of corn are of such importance as is implied above, then it is likely that the varieties of corn may be a matter of importance. The Italians, in their prophylactic measures, have come to regard the yellow varieties as less likely to undergo spoiling, and they condemn the use of white varieties. White varieties of corn are rarely seen in Italy. Raubitschek does not state what varieties he used in his work, but they were likely yellow. Lode makes the point clear and Horbeczewski states in several places that he used *cinquantino*, which is a yellow corn.

With regard to beriberi and rice, it is interesting to note that Fraser and Stanton [2] in their experimental work of feeding fowls with rice, state that alcohol-extracted rice produced the same phenomena as the rice before such extraction; and that rice, which had been proved harmless, after being extracted with alcohol, produced typical phenomena in fowls, but that if a quantity of the extract, freed of alcohol, were given at the same time the birds remained well.

Finally it is to be remarked that the results of feeding experiments upon animals are very difficult of interpretation, and conclusions can be drawn therefrom only with the utmost caution. Hunt [3] says in reporting some recent work of this character:

* * * Although there is a vast accumulation of the most accurate knowledge of foods from the dynamic and economic points of view, little is known of the specific action of the various foods.

Feeding experiments with maize, made by workers interested in pellagra, have produced many discordant results, and very varied interpretations. To apply results of this kind to the explanation of a specific disease of man is difficult and uncertain. Such application must be made from wide knowledge, broad experience, and good judgment.

---

[1] Archives of Int. Medicine, 1909, Vol. III, p. 350.
[2] Philip. Jour. Science, 1910, B. Med. Sc., Vol. V, No. 1.
[3] Bulletin No. 69, Hygienic Laboratory, United States Public Health and Marine-Hospital Service, Washington.

UNITED STATES.

REPORTS TO THE SURGEON GENERAL, PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

PLAGUE-PREVENTION WORK.

DISTRIBUTION OF POISON.

In connection with the making of a squirrel-free zone around the cities in California on San Francisco Bay, 119 acres of land in Alameda County were covered with poison during the week ended February 4, 1911.

Record of Plague Infection.

Places.	Date of last case of human plague.	Date of last case of rat plague.	Date of last case of squirrel plague.	Total number of rodents found infected since May, 1907.
California:				
Cities—				
San Francisco	Jan. 30, 1908	Oct. 23, 1908	None	398 rats.
Oakland	Oct. 26, 1909	Dec. 1, 1908	do	126 rats.
Berkeley	Aug. 28, 1907	None recorded	do	None.
Los Angeles	Aug. 11, 1908	None	Aug. 21, 1908	1 squirrel.
Counties—				
Alameda (exclusive of the city of Oakland).	Sept. 26, 1909	Wood rat, Oct. 17, 1909.	Jan. 16, 1911	93 squirrels. 1 wood rat.
Contra Costa	July 21, 1908	None	Sept. 10, 1910	247 squirrels.
Merced	None recorded	do	June 6, 1910	2 squirrels.
Monterey	do	do	do	4 squirrels.
San Benito	June 5, 1910	do	July 11, 1910	20 squirrels.
San Joaquin	None recorded	do	Jan. 9, 1911	11 squirrels.
San Luis Obispo	do	do	Jan. 29, 1910	1 squirrel.
Santa Clara	Aug. 23, 1910	do	Oct. 5, 1910	23 squirrels.
Santa Cruz	None recorded	do	May 17, 1910	3 squirrels.
Stanislaus	do	do	May 21, 1910	5 squirrels.
Washington:				
Seattle	Oct. 30, 1907	Feb. 8, 1910	None	22 rats.

Rats Collected and Examined for Plague Infection.

Places.	Week ended—	Found dead.	Total collected.	Examined.	Found infected.
California:					
Cities—					
Berkeley	Feb. 4	.....	[1] 138	96	.....
Oakland	do	26	[2] 674	583	.....
San Francisco	do	11	[3] 1,534	1,138	.....
County—					
Santa Clara	do	.....	[4] 1	1	.....
Total		37	2,347	1,818	.....

[1] Identified, *Mus norvegicus* 97, *Mus musculus* 41.
[2] Identified, *Mus norvegicus* 618, *Mus rattus* 2, *Mus musculus* 54.
[3] Identified, *Mus norvegicus* 1,050, *Mus rattus* 138, *Mus musculus* 267, *Mus alexandrinus* 79.
[4] Identified, *Mus norvegicus* 1.

Squirrels Collected and Examined for Plague Infection.

Places.	Week ended.	Trapped and shot.	Found dead.	Examined.	Found infected.
California:					
Cities—					
San Francisco	Feb. 4	21		4	
Counties—					
Alameda	do	194		194	
Fresno	do	49		49	
Kern	do	20		20	
Kings	do	16		16	
Imperial	do	14		14	
Los Angeles	do	225		204	
Mariposa	do	90		87	
Merced	do	125		125	
Monterey	do	448		448	
San Diego	do	61		59	
San Joaquin	do	389	2	391	
San Luis Obispo	do	233		226	
Santa Clara	do	70		70	
Stanislaus	do	168		163	
Yolo	do	1		1	
Total		2,124	2	2,071	

Other Animals Collected and Examined.

Places.	Week ended—	Animals collected.	Examined.	Found infected.
California:				
Cities—				
San Francisco	Feb. 4	3 weasels, 2 field mice	3	
Counties—				
Fresno	do	2 rabbits, 2 owls	4	
Imperial	do	30 rabbits	27	
Mariposa	do	1 rabbit	1	
Merced	do	2 rabbits	2	
San Joaquin	do	3 rabbits	3	
San Luis Obispo	do	1 rabbit, 2 gophers	3	
Santa Clara	do	23 gophers, 2 rabbits, 3 wood rats.	28	
Yolo	do	21 rabbits	21	
			92	

SMALLPOX IN THE UNITED STATES.

In the following tables the States indicated by an asterisk are those from which reports of smallpox are received only from certain city, and in some cases, county boards of health. In these States, therefore, the recorded cases and deaths should not be taken as showing the general prevalence of the disease. In the States not marked by an asterisk the reports are received monthly from the State boards of health and include all cases reported throughout the State.

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received During Week Ended February 24, 1911.

Places.	Date.	Cases.	Deaths.	Remarks.
*Alabama:				
Mobile	Feb. 14	1		From revenue cutter Winona.
Florida:				
Counties—				
Duval	Feb. 5-11	19		
Gadsden	Feb. 5-11	10		
Jackson	Feb. 5-11	12		
Jefferson	Feb. 5-11	2		
Leon	Feb. 5-11	5		
St. Johns	Feb. 5-11	1		
Volusia	Feb. 5-11	4		
Total for State		53		
Kansas:				
Counties—				
Allen	Dec. 1-31	5		
Atchison	Dec. 1-31	4		
Brown	Dec. 1-31	36		
Butler	Dec. 1-31	1		
Cherokee	Dec. 1-31	1		
Clay	Dec. 1-31	1		
Decatur	Dec. 1-31	1		
Dickinson	Dec. 1-31	5		
Doniphan	Dec. 1-31	1		
Jefferson	Dec. 1-31	1		
Johnson	Dec. 1-31	4		
Kingman	Dec. 1-31	1		
Leavenworth—				
Leavenworth	Dec. 1-31	2		
Marshall	Dec. 1-31	78		
Montgomery	Dec. 1-31	4		
Nemeha	Dec. 1-31	1		
Osage	Dec. 1-31	1		
Reno	Dec. 1-31	1		
Rooks	Dec. 1-31	1	1	
Shawnee	Dec. 1-31	2		
Sumner	Dec. 1-31	6		
Wyandotte, exclusive of Kansas City.	Dec. 1-31	9		
Kansas City	Dec. 1-31	11		
Total for State		177	1	
Louisiana:				
New Orleans	Feb. 5-11	5		
*Missouri:				
St. Joseph	Feb. 5-11	9		
St. Louis	Feb. 5-11	3		
Springfield	Feb. 5-11	10		
Total for State		22		
Montana:				
Counties—				
Beaverhead	Jan. 1-31	1		
Dawson	Jan. 1-31	3		
Deer Lodge	Jan. 1-31	4	1	
Cascade	Jan. 1-31	3		
Chouteau	Jan. 1-31	1		
Custer	Jan. 1-31	1		
Missoula	Jan. 1-31	2		
Powell	Jan. 1-31	1		
Silverbow, exclusive of Butte.	Jan. 1-31	5		
Butte	Jan. 1-31	15		
Teton	Jan. 1-31	1		
Total for State		37	1	
New York:				
Counties—				
Chautauqua	Jan. 1-31	4		
Columbia	Jon. 1-31	1		
Niagara	Jan. 1-31	1		
Onondaga	Jan. 1-31	1		
Total for State		7		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received During Week Ended February 24, 1911.

Places.	Date.	Cases.	Deaths.	Remarks.
North Carolina:				
Counties—				
Alamance	Jan. 1–31	1		
Beaufort	Jan. 1–31	15		
Bertie	Jan. 1–31	1		
Bladen	Jan. 1–31	50		Estimated.
Brunswick	Jan. 1–31	40		
Burke	Jan. 1–31	1		
Caswell	Jan. 1–31	9		
Chatham	Jan. 1–31	35		
Cleveland	Jan. 1–31			Present.
Columbus	Jan. 1–31	17		
Craven	Jan. 1–31	2		
Cumberland	Jan. 1–31	17		
Currituck	Jan. 1–31	2		
Durham	Jan. 1–31	100		
Edgecombe	Jan. 1–31	2		
Granville	Jan. 1–31	14		
Henderson	Jan. 1–31	9		
Johnston	Jan. 1–31			Do.
Jones	Jan. 1–31	6		
Lee	Jan. 1–31	4		
Lenoir	Jan. 1–31	2		
Mecklenburg	Jan. 1–31	5		
New Hanover	Jan. 1–31	319		
Northampton	Jan. 1–31	12		
Onslow	Jan. 1–31	35		Estimated.
Orange	Jan. 1–31	12		
Pender	Jan. 1–31	100		Do.
Person	Jan. 1–31	1		
Pitt	Jan. 1–31	8		
Robeson	Jan. 1–31	45		
Rowan	Jan. 1–31	3		
Sampson	Jan. 1–31	20		
Union	Jan. 1–31	4		
Vance	Jan. 1–31	18		
Wake	Jan. 1–31	2		
Washington	Jan. 1–31	18		
Wayne	Jan. 1–31	3		
Wilkes	Jan. 1–31	1		
Total for State		933		
*Tennessee:				
Chattanooga	Feb. 5–11	1		
Texas:				
Counties—				
Cameron	Jan. 1–31	31		
Cherokee	Jan. 1–31	2		
Collin	Jan. 1–31	20		
El Paso	Jan. 1–31	17	3	
Guadaloupe	Jan. 1–31	5	2	
Henderson	Jan. 1–31	10		
Jones	Jan. 1–31	3		
McLennan—				
Waco	Jan. 1–31	7		
Matagorda	Jan. 1–31	5		
Nueces	Jan. 1–31	1		
Orange	Jan. 1–31	7		
Runnels	Jan. 1–31	1		
Tarrant	Jan. 1–31	2		
Taylor	Jan. 1–31	1		
Uvalde	Jan. 1–31	1		
Van Zandt	Jan. 1–31	4		
Total for State		117	5	
Washington:				
Counties—				
King	Dec. 1–31	20		
Pierce	Dec. 1–31	1		
Skagit	Dec. 1–31	53		
Snohomish	Dec. 1–31	6		
Stevens	Dec. 1–31	1		
Total for State		81		

SMALLPOX IN THE UNITED STATES—Continued.

Mobile, Ala.—Smallpox on Revenue Cutter Winona.

Passed Asst. Surg. von Ezdorf reported, February 16, the removal of a case of smallpox in the person of a steward from the United States revenue cutter *Winona*. The officers and crew were vaccinated, and the vessel was sent to the quarantine station for fumigation of compartments.

Reports Received from December 31, 1910, to February 17, 1911.

[For reports received from June 25, 1910, to Dec. 30, 1910, see Public Health Reports for Dec. 30, 1910. In accordance with custom, the tables of epidemic diseases are terminated semiannually and new tables begun.]

Places.	Date.	Cases.	Deaths.	Remarks.
Alabama:				
Montgomery	Dec. 11–Jan. 28	8		
California:				
Counties—				
Alameda	Dec. 1–31	3		
Imperial	Dec. 1–31	1		
Humboldt	Dec. 1–31	1		
Kern	Dec. 1–31	1		
Los Angeles	Dec. 1–31	1		
San Diego	Dec. 1–31	15		
San Francisco	Dec. 1–31	4		
San Joaquin	Dec. 1–31	2		
Total for State		28		
Colorado:				
Counties—				
Adams	Dec. 1–Jan. 31	6		
Arapahoe	Dec. 1–Jan. 31	15		
Archuleta	Dec. 1–Jan. 31	20		
Boulder	Dec. 1–Jan. 31	21		
Conejos	Dec. 1–31	2		
Costilla	Jan. 1–31	5		
Denver	Dec. 1–Jan. 31	152		
Eagle	Jan. 1–31	1		
El Paso	Dec. 1–31	1		
Fremont	Dec. 1–Jan. 31	8		
Garfield	Jan. 1–31	4		
Gilpin	Jan. 1–31	1		
Grand	Dec. 1–31	2		
Huerfano	Dec. 1–31	13		
Jefferson	Dec. 1–31	5		
Kit Carson	Jan. 1–31	1		
La Plata	Dec. 1–Jan. 31	14		
Larimer	Jan. 1–31	17		
Las Animas	Dec. 1–Jan. 31	37		
Mineral	Jan. 1–31	2		
Montezuma	Dec. 1–31	1		
Montrose	Jan. 1–31	2		
Morgan	Dec. 1–Jan. 31	33		
Pueblo	Dec. 1–31	3	1	
Rio Grande	Jan. 1–31	9		
Saguache	Dec. 1–31	3		
Teller	Jan. 1–31	1		
Total for State		379	1	
Connecticut	Dec. 1–Jan. 31			No cases.
District of Columbia	Jan. 15–21	2		
Florida:				
Counties—				
Alachua	Dec. 18–Feb. 4	40	1	
Baker	Jan. 8–14	1		
Bradford	Jan. 16–Feb. 4	4		
Calhoun	Jan. 29–Feb. 4	20		
Citrus	Jan. 8–14	1		
Dade	Dec. 25–31	1		
Duval	Jan. 1–Feb. 4	54	1	
Escambia	Jan. 1–21	5		
Franklin	Jan. 8–21	4		
Gadsden	Dec. 18–Jan. 28	37		
Hillsboro	Dec. 25–Jan. 21	40		
Jackson	Dec. 25–Feb. 4	38		
Lafayette	Jan. 16–Feb. 4	6		
Lake	Jan. 22–28	6		
Lee	Jan. 8–Feb. 4	12		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from December 31, 1910, to February 17, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
Florida—Continued.				
Counties—Continued.				
Leon	Dec. 18-Feb. 4	59	1	
Levy	Jan. 29-Feb. 4	2		
Madison	Dec. 18-Jan. 21	19		
Nassau	Jan. 16-21	2		
Orange	Jan. 16-21	1		
Osceola	Dec. 18-24	1		
Polk	Dec. 18-Jan. 21	5		
St. John	Jan. 22-28	1		
Santa Rosa	Jan. 8-Feb. 4	2		
Suwanee	Jan. 16-21	1		
Taylor	Jan. 8-Feb. 4	140		
Volusia	Jan. 22-28	8		
Walton	Dec. 25-31	1		
Washington	Jan. 8-14	4		
Total for State		515	3	
Indiana:				
Counties—				
Dekalb		5		
Elkhart	Dec. 1-31	5		
Howard	Dec. 1-31	1		
Madison	Dec. 1-31	32		
Montgomery	Dec. 1-31	1		
Total for State		44		
Iowa:				
Counties—				
Benton	Jan. 1-31	1		
Buena Vista	Dec. 1-31	1		
Guthrie	Jan. 1-31	2		
Hancock	Jan. 1-31	3		
Jefferson			1	Year 1910, in delinquent report received after Jan. 1, 1911.
Johnson	Jan. 1-31	1		
Lee	Dec. 1-31	1		
Linn	Dec. 1-Jan. 31	37		
Lucas	Jan. 1-31	1		
Lyon	Dec. 1-31	3		
Marshall	Dec. 1-Jan. 31	8		
Page	Dec. 1-Jan. 31	22	1	
Polk	Dec. 1-Jan. 31	6		
Pottawattamie	Jan. 1-31	3		
Scott	Dec. 1-Jan. 31	4		
Taylor	Dec. 1-31	64		
Union	Jan. 1-31	1		
Warren	Dec. 1-31	1		
Webster	Dec. 1-31	10		
Winnebago	Jan. 1-31	1		
Woodbury	Dec. 1-Jan. 31	11		
Total for State		181	2	
Kansas:				
Counties—				
Pawnee	Nov. 1-30	1		Not previously reported.
Reno	Nov. 1-30	1		Do.
Total for State		2		
* **Kentucky:**				
Paducah	Jan. 23-Feb. 4	12		
Louisiana:				
Parishes—				
Ascension	Dec. 1-31	1		
East Baton Rouge	Dec. 1-31	25		
East Feliciana	Dec. 1-31	30		
Iberville	Dec. 1-31	6		
Orleans—				
New Orleans	Dec. 18-Feb. 4	107	1	
Rapides	Dec. 1-31	1		
St. Charles	Dec. 1-31	4		
St. John	Dec. 1-31	1		
Tangipahoa	Nov. 1-Dec. 31	22		
Tensas	Dec. 1-31	9		
Washington	Dec. 1-31	1		
Total for State		207	1	

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from December 31, 1910, to February 17, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
Maine (entire State)	Dec. 1-31			No cases.
Maryland:				
County—				
Garrett	Jan. 1-31	8		Dec. 1-31, no cases.
Massachusetts	Dec. 1-31			No cases.
Michigan:				
Counties—				
Alcona	Dec. 1-31	1		
Alger	Dec. 1-31	1		
Alpena	Jan. 1-31	1		
Antrim	Jan. 1-31	1		
Arenac	Dec. 1-Jan. 31	7		
Bay	Dec. 1-Jan. 31	2		
Calhoun	Dec. 1-Jan. 31	13	1	
Charlevoix	Dec. 1-Jan. 31	5		
Cheboygan	Dec. 1-Jan. 31	26		
Clare	Jan. 1-31	8		
Clinton	Dec. 1-31	3		
Crawford	Dec. 1-Jan. 31	6		
Eaton	Dec. 1-Jan. 31	6		
Emmet	Jan. 1-31	30		
Genesee	Dec. 1-Jan. 31	9	1	
Gladwin	Dec. 1-31		1	Case reported in November.
Grand Traverse	Dec. 1-31	1		
Gratiot	Dec. 1-Jan. 31	7		
Huron	Jan. 1-31	8		
Ingham	Dec. 1-31	2		
Ionia	Jan. 1-31	3		
Isabella	Dec. 1-Jan. 31	10		
Kalamazoo	Dec. 1-Jan. 31	6		
Keweenaw	Dec. 1-Jan. 31	12		
Lake	Dec. 1-31	3		
Lapeer	Dec. 1-31	1		
Leelanau	Jan. 1-31	2		
Marquette	Dec. 1-Jan. 31	10		
Midland	Dec. 1-31	3		
Missaukee	Dec. 1-31	3		
Monroe	Dec. 1-31	2		
Muskegon	Jan. 1-31	1		
Newaygo	Jan. 1-31	3		
Presque Isle	Dec. 1-31	1		
Saginaw	Dec. 1-31	3	3	
Salinac	Jan. 1-31	3		
St. Clair	Dec. 1-Jan. 31	2		
Washtenaw	Dec. 1-Jan. 31	3		
Wayne	Dec. 1-31	1		
Wexford	Dec. 1-31	5		
Total for State		214	6	
Minnesota:				
Counties—				
Beltrami	Dec. 19-Jan. 16	2		
Bigstone	Dec. 26-Jan. 1	1		
Blue Earth	Dec. 19-25	1		
Douglas	Dec. 5-Jan. 1	3		
Fillmore	Nov. 27-Dec. 4	1		
Hennepin	Dec. 3-Jan. 30	32		
Kandiyohi	Jan. 24-30	1		
Koochiching	Dec. 5-Jan. 23	11		
Lac qui Parle	Jan. 10-16	1		
Le Sueur	Dec. 26-Jan. 1	3		
Murray	Jan. 17-23	3		
Nobles	Dec. 5-25	3		
Norman	Dec. 12-Jan. 30	16		
Olmstead	Jan. 10-16	1		
Pipestone	Jan. 10-16	3		
Pope	Jan. 3-9	3		
Ramsey	Dec. 5-Jan. 16	86		
St. Louis	Nov. 27-Dec. 4	8		
Sibley	Dec. 26-Jan. 16	2		
Todd	Dec. 5-Jan. 30	22		
Wabasha	Dec. 26-Jan. 1	1		
Wadena	Dec. 26-Jan. 2	2		
Winona	Jan. 17-23	1		
Total for State		207		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from December 31, 1910, to February 17, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
*Missouri:				
Kansas City	Nov. 1-Dec. 31	77		
St. Louis	Dec. 18-Feb. 4	11	1	
Total for State		88	1	
Montana:				
Counties—				
Cascade	Dec. 1-31	3		
Custer	Dec. 1-31	1		
Dawson	Nov. 1-30	1		
Deerlodge—				
Anaconda	Nov. 1-30	9		
Ravalli	Dec. 1-31	3		
Silverbow, exclusive of Butte—	Nov. 1-Dec. 31	24		
Butte	Nov. 1-Dec. 31	26		
Total for State		67		
New Jersey:				
County—				
Bergen	Dec. 1-31	2		
New York:				
Counties—				
Allegany	Nov. 1-30	1		
Tioga	Dec. 1-31	1		
Tompkins	Nov. 1-30	1		
Total for State		3		
North Carolina:				
Counties—				
Beaufort	Dec. 1-31	20		
Bladen	Nov. 1-Dec. 31	13		
Brunswick	Dec. 1-31	9		
Carteret	Nov. 1-Dec. 31	4		
Chatham	Dec. 1-31	5		
Columbus	Nov. 1-Dec. 31	46		
Cumberland	Nov. 1-Dec. 31	15		
Duplin	Dec. 1-31	20		
Durham	Nov. 1-Dec. 31	340		
Edgecombe	Nov. 4-Dec. 31	5		
Franklin	Nov. 1-30	1		
Granville	Dec. 1-31	1		
Henderson	Dec. 1-31	1		
Hertford	Dec. 1-31	1		
Johnston	Dec. 1-31	3		
Lee	Dec. 1-31	3		
Martin	Nov. 1-Dec. 31	17		
Nash	Nov. 1-30	6		
New Hanover	Nov. 1-Dec. 31	278		
Onslow	Dec. 1-31	30		
Pasquotank	Nov. 1-30	1		
Pender	Nov. 1-Dec. 31	27		
Pitt	Nov. 1-Dec. 31	18		
Robeson	Nov. 1-Dec. 31	115		
Rowan	Dec. 1-31	1		
Sampson	Dec. 1-31	1		
Union	Nov. 1-30	1		
Wake	Nov. 1-30	1		
Wayne	Dec. 1-31	1		
Total for State		984		
North Dakota:				
Counties—				
Cass	Dec. 1-31	1		
Grand Forks	Jan. 1-31	1		
Morton	Dec. 1-31	1		
Ramsey	Jan. 1-31	1		
Steele	Dec. 1-Jan. 31	19		
Stutsman	Jan. 1-31	1		
Total for State		24		
Ohio:				
Counties—				
Franklin	Dec. 1-31	7		
Hamilton	Dec. 1-31	2		
Lorain	Dec. 1-31	2		
Portage	Dec. 1-31	1		
Total for State		12		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from December 31, 1910, to February 17, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
Oklahoma:				
Counties—				
Adair	Nov. 1-30	1		
Atoka	Dec. 1-31	1		
Beckham	Nov. 1-Dec. 31	20		
Blaine	Nov. 1-Dec. 31	2		
Bryan	Nov. 1-Dec. 31	16		
Caddo	Nov. 1-30	3		
Canadian	Nov. 1-Dec. 31	27		
Custer	Dec. 1-31	4		
Garfield	Dec. 1-31	1		
Grady	Nov. 1-Dec. 31	3	1	
Green	Nov. 1-30	1		
Hughes	Nov. 1-Dec. 31	12		
Kay	Dec. 1-31	1		
Latimer	Dec. 1-31	1		
McIntosh	Nov. 1-Dec. 31	12		
Major	Dec. 1-31	4		
Marshall	Nov. 1-30	8		
Oklahoma	Dec. 1-31	1		
Osage	Dec. 1-31	1		
Pittsburg	Dec. 1-31	1		
Seminole	Dec. 1-31	4		
Stephens	Dec. 1-31	1		
Tulsa	Nov. 1-Dec. 31	2		
Washington	Dec. 1-31	1		
Washita	Nov. 1-30	1		
Woods	Dec. 1-31	10		
Total for State		139	1	
Pennsylvania, entire State	Oct. 1-31			No cases.
	Nov. 1-30	1		
South Carolina:				
Camden	Jan. 15-21	1		
*Tennessee:				
Counties—				
Davidson—				
Nashville	Jan. 8-Feb. 4	2	2	
Hamilton—				
Chattanooga	Jan. 1-28	5		
Knox—				
Knoxville	Jan. 22-Feb. 4	2		
Shelby	Nov. 1-Dec. 31	138	2	
Total for State		147	4	
Texas:				
Counties—				
Cameron	Nov. 1-Dec. 31	35		
Dallas	Dec. 1-31	24		
Grimes	Nov. 1-30	4		
Henderson	Nov. 1-30	3		
Hidalgo	Dec. 1-31	1		
McLennan	Nov. 1-Dec. 31	4		
Marion	Dec. 1-31	3		
Swisher	Dec. 1-31	2		
Tarrant	Dec. 1-31	1		
Van Zant—				
Willis Point	Nov. 1-30	4	1	
Total for State		81	1	
Utah:				
Counties—				
Beaver	Nov. 1-Dec. 31	86		
Cache	Nov. 1-30	8		
Davis	Dec. 1-31	2		
Iron	Nov. 1-Dec. 31	62		
Juab	Nov. 1-30	5		
Millard	Nov. 1-Dec. 31	11		
Salt Lake	Nov. 1-Dec. 31	42		
Sanpete	Dec. 1-31	1		
Sevier	Dec. 1-31	30		
Washington	Nov. 1-Dec. 31	47		
Weber	Nov. 1-Dec. 31	9		
Total for State		303		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from December 31, 1910, to February 17, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
Washington:				
Counties—				
Skagit	Nov. 1–30	40		
Spokane	Nov. 1–30	1		
Total for State		41		
Wisconsin:				
Counties—				
Ashland	Jan. 1–31	1		
Barron	Jan. 1–31	3		
Chippewa	Dec. 1–Jan. 31	4		
Dane	Jan. 1–31	2		
Dunn	Dec. 1–Jan. 31	8		
Green	Jan. 1–31	2		
Iowa	Dec. 1–Jan. 31	30		
Jefferson	Dec. 1–Jan. 31	10		
Lafayette	Dec. 1–Jan. 31	8		
La Crosse	Dec. 1–Jan. 31	3		
Milwaukee	Dec. 1–Jan. 31	8		
Oneida	Dec. 1–Jan. 31	3		
St. Croix	Dec. 1–Jan. 31	4		
Vernon	Jan. 1–31	4		
Vilas	Dec. 1–31	1		
Walworth	Jan. 1–31	1		
Washington	Dec. 1–31	1		
Total for State		93		
Grand total for the United States		3,793	20	

MORBIDITY AND MORTALITY.

MORBIDITY AND MORTALITY TABLE, CITIES OF THE UNITED STATES, FOR WEEK ENDED FEBRUARY 4, 1911.

Cities.	Population, United States, census 1910.	Total deaths, from all causes.	Diphtheria.		Measles.		Scarlet fever.		Smallpox.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Cities having over 500,000 inhabitants.														
Baltimore, Md	558,485	210	19	....	122	2	29	3	....	....	48	29	8	....
Boston, Mass	670,585	220	49	2	133	1	44	5	....	....	52	17	4	....
Chicago, Ill	2,185,283	650	160	28	100	2	189	6	2	....	130	73	16	3
Cleveland, Ohio	560,663	165	36	....	41	....	81	1	1	....	29	12	8	2
New York, N. Y	4,766,883	1,464	347	27	390	15	453	19	....	....	532	172	33	6
Philadelphia, Pa	1,549,008	526	96	18	512	10	47	7	2	....	90	59	17	3
Pittsburg, Pa	533,905	185	15	....	45	2	22	8	....	....	25	15	13	4
St. Louis, Mo	687,029	256	52	1	290	3	96	7	1	....	53	25	4	1
Cities having from 500,000 to 500,000 inhabitants.														
Buffalo, N. Y	423,715	138	22	1	4	....	25	1	....	....	23	10	8	1
Cincinnati, Ohio	364,463	139	9	2	14	....	33	....	....	....	18	20	6	....
Detroit, Mich	465,766	156	17	2	....	....	19	....	....	....	16	13	....	1
Los Angeles, Cal	319,198	.....	7	....	8	....	18	1	....	....	6	12	4	....
Milwaukee, Wis	373,857	.....	20	....	4	2	40	1	2	....	10	6	9	....
Newark, N. J	347,469	110	37	....	....	....	39	....	....	....	16	15	2	....
New Orleans, La	339,075	122	8	....	55	1	17	....	19	....	34	17	3	1
San Francisco, Cal	416,912	.....	....	....	....	....	....	....	....	....	....	....	....	....
Washington, D. C	331,069	120	16	1	13	....	10	....	....	....	28	11	5	1

MORBIDITY AND MORTALITY—Continued.

Morbidity and mortality table, cities of the United States, for week ended February 4, 1911—Continued.

Cities.	Population, United States, census 1910.	Total deaths, from all causes.	Diphtheria.		Measles.		Scarlet fever.		Smallpox.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Cities having from 200,000 to 300,000 inhabitants.														
Jersey City, N. J.	267,779	85	19	1	119	....	10	1	....	....	6	7	....	....
Providence, R. I.	224,326	64	20	2	....	....	15	....	....	....	10	5	....	....
Seattle, Wash.	237,194	51	9	....	51	....	3	....	11	....	4	7	3	....
Cities having from 100,000 to 200,000 inhabitants.														
Bridgeport, Conn.	102,054	34	4	....	....	....	2	....	....	....	3	3	1	....
Cambridge, Mass.	104,839	22	12	1	19	....	4	....	....	....	12	2	1	....
Columbus, Ohio.	181,548	56	3	1	2	....	1	....	1	....	7	4	....	....
Dayton, Ohio.	116,577	47	3	....	2	....	2	....	....	....	3	4	1	....
Fall River, Mass.	119,295	38	1	....	7	....	5	....	....	....	7	2	....	....
Grand Rapids, Mich.	112,571	.....	3	2	186	....	12	1	....	....	2	1	1	1
Lowell, Mass.	106,294	42	10	....	....	....	5	....	....	....	3	2	1	....
Nashville, Tenn.	110,364	46	2	....	68	3	3	1	....	2	....	....	....	....
Oakland, Cal.	150,174	50	3	....	....	....	2	....	....	....	....	5	....	....
Spokane, Wash.	104,402	27	4	....	14	....	5	....	....	....	....	1	1	1
Toledo, Ohio.	168,497	64	4	2	3	....	2	1	....	....	....	4	1	1
Worcester, Mass.	145,986	55	7	....	2	....	5	....	....	....	2	5	....	....
Cities having from 50,000 to 100,000 inhabitants.														
Allentown, Pa.	51,913	20	4	....	2	....	....	....	....	....	1	1	1	....
Altoona, Pa.	52,127	6	4	....	....	....	....	....	....	....	....	....	....	....
Bayonne, N. J.	55,545	.....	11	1	8	....	....	....	....	....	....	1	....	....
Brockton, Mass.	56,878	19	2	....	3	....	5	....	....	....	....	....	1	....
Camden, N. J.	94,538	.....	5	....	28	1	....	....	....	....	1	....	....	....
Canton, Ohio.	50,217	9	....	....	....	....	6	....	....	....	....	1	....	....
Des Moines, Iowa.	86,368	.....	1	....	....	....	1	....	....	....	....	....	....	....
Duluth, Minn.	78,466	20	4	2	3	....	4	1	1	....	3	1	1	....
Elizabeth, N. J.	73,409	16	5	....	7	....	15	....	....	....	....	1	....	....
Erie, Pa.	66,525	32	3	1	....	....	8	1	....	....	....	2	126	4
Evansville, Ind.	69,647	29	4	....	....	....	....	....	....	....	1	5	1	....
Fort Wayne, Ind.	63,933	.....	....	....	....	....	....	....	....	....	....	....	....	....
Hartford, Conn.	98.915	34	7	....	....	....	7	....	....	....	3	3	....	....
Hoboken, N. J.	70,324	.....	1	1	14	....	4	....	....	....	1	....	....	....
Houston, Tex.	78,800	27	....	....	....	....	....	....	2	....	....	1	....	1
Jacksonville, Fla.	57,699	13	....	....	21	....	2	1	21	....	2	....	1	....
Johnstown, Pa.	55,482	16	1	1	....	....	....	....	....	....	6	1	....	....
Kansas City, Kans.	82,331	34	....	....	3	....	8	....	2	....	1	7	4	2
Lawrence, Mass.	85,892	35	5	1	12	4	3	....	....	....	....	....	1	3
Lynn, Mass.	89,336	23	1	....	25	....	2	....	....	....	5	1	....	....
Manchester, N. H.	70,063	24	2	1	....	....	2	1	....	....	1	1	1	1
New Bedford, Mass.	96,652	29	6	....	2	....	3	....	....	....	4	2	....	....
Oklahoma, Okla.	64,205	22	....	....	1	....	1	....	....	....	2	....	....	....
Passaic, N. J.	54,773	.....	3	....	12	3	1	....	....	....	3	....	....	....
Portland, Me.	58.571	17	7	....	28	....	2	....	....	....	....	2	1	....
Reading, Pa.	96,071	28	2	....	25	....	7	....	....	....	....	2	2	....
Saginaw, Mich.	50,510	15	5	1	1	....	....	....	....	....	....	....	1	....
St. Joseph, Mo.	77,403	.....	1	....	4	....	3	....	14	....	....	....	1	....
Salt Lake City, Utah.	92,777	20	8	1	167	....	7	....	5	....	....	....	....	1
San Antonio, Tex.	96,614	.....	2	....	....	....	....	....	1	....	....	8	2	....
Schenectady, N. Y.	72,826	23	2	....	....	....	2	1	....	....	5	2	....	....
Somerville, Mass.	77,236	19	9	....	5	....	6	....	....	....	....	2	1	....
South Bend, Ind.	53,684	15	....	....	2	....	4	....	....	....	....	2	4	....
Springfield, Ill.	51,678	.....	4	....	....	....	30	....	....	....	....	....	....	....
Springfield, Mass.	88,926	33	1	....	6	....	6	....	....	....	3	2	....	....
Tacoma, Wash.	83.743	18	3	....	....	....	3	....	4	....	....	....	1	1
Terre Haute, Ind.	58.157	15	1	....	4	....	5	....	6	....	....	3	....	....
Trenton, N. J.	96,815	.....	3	....	....	....	6	....	....	....	3	4	5	....
Utica, N. Y.	74,419	.....	18	3	12	....	10	....	....	....	1	1	1	....
Wichita, Kans.	52,450	17	1	....	2	....	3	1	1	....	....	1	....	....
Wilkes-Barre, Pa.	67,105	20	5	....	1	....	4	....	....	....	2	2	....	....
Wilmington, Del.	87,411	25	....	....	....	....	....	....	....	....	....	4	....	....
Yonkers, N. Y.	79,803	.....	2	1	5	....	16	....	....	....	6	1	2	1
Youngstown, Ohio.	79,066	27	4	1	3	....	4	....	....	....	....	5	3	1

MORBIDITY AND MORTALITY—Continued.

Morbidity and mortality table, cities of the United States, for week ended February 4, 1911—Continued.

Cities.	Population, United States, census 1910.	Total deaths, from all causes.	Diphtheria.		Measles.		Scarlet fever.		Smallpox.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Cities having from 25,000 to 50,000 inhabitants.														
Atlantic City, N. J.	46,150				1			1			2	2		
Auburn, N. Y.	34,668													
Aurora, Ill.	29,807	11	2									1		
Bay City, Mich.	45,166		1		2		3						10	
Berkeley, Cal.	40,434				5									
Binghamton, N. Y.	48,443		1		64						4	3		
Bloomington, Ill.	25,678						5							
Brookline, Mass.	27,792				1									
Charlotte, N. C.	34,014													
Chattanooga, Tenn.	44,604		1	1					1		1			
Chelsea, Mass.	32,452	8	4		2		4				2		1	
Chicopee, Mass.	25,401	15			1							1	2	
Council Bluffs, Iowa.	29,292		1				7		2			1		
Danville, Ill.	27,871													
Decatur, Ill.	31,140													
Dubuque, Iowa.	38,494						2							
Elmira, N. Y.	37,176	5									11		1	
El Paso, Tex.	39,279	31	2				4		4		9	11		
Everett, Mass.	33,484	7	2		1		3					1		
Frankfort, Ind.	26,672													
Haverhill, Mass.	44,115		7				8	1				1		
Hazleton, Pa.	25,452		4		1									
Kalamazoo, Mich.	39,437	20			64	2	2				1			
Kingston, N. Y.	25,908													
Knoxville, Tenn.	36,346	12	3		86				1					1
La Crosse, Wis.	30,417	6			3		11				2	1		
Lancaster, Pa.	47,227	17	1								4	3		
Lexington, Ky.	35,099	15	1		8							2		
Lynchburg, Va.	29,494		4		3		1				2			
McKeesport, Pa.	42,694													
Malden, Mass.	44,404	20			5		3	2			3	1	1	
Montgomery, Ala.	38,136	11	1		10									
Mount Vernon, N. Y.	30,919	7	2				5				1	1		
Newcastle, Pa.	36,280	18	3				1				3		6	
Newport, Ky.	30,309	7	2				1				4	4		
Newport, R. I.	27,149	6									2	1		
Newton, Mass.	39,806	6	2		8		2							
Niagara Falls, N. Y.	30,445				1							1	9	1
Norristown, Pa.	27,875	9	4		4		2				9		6	1
Northampton, Mass.	19,431	7	1				1				2	1		
Orange, N. J.	29,630	14	1				1				1			
Pittsfield, Mass.	32,121	7			16		1							
Portsmouth, Va.	33,190													
Roanoke, Va.	34,874	9			2		1				1		1	1
Sacramento, Cal.	44,696													
Sioux City, Iowa.	47,828		1	1			3		2					
Springfield, Ohio.	46,921						1		2				1	
Superior, Wis.	40,384	9	3				2							2
Taunton, Mass.	34,259	18	3	1			2					1		
Topeka, Kans.	43,684													
Waltham, Mass.	27,834	12	1								1			
Wheeling, W. Va.	41,641	14	2				1	1			4		2	
Williamsport, Pa.	31,860	12	1	1			1						2	
York, Pa.	44,750		10	2	1						1		1	
Cities having less than 25,000 inhabitants.														
Ann Arbor, Mich.	14,817	4			12						2			
Ashtabula, Ohio.	18,266	4												
Beaver Falls, Pa.	12,191	0											2	
Bennington, Vt.		4			1									
Biddeford, Me.	17,079	1												
Braddock, Pa.	19,357	3	3		3									
Butler, Pa.	20,728													
Cambridge, Ohio.	11,327	6	1											
Camden, S. C.		2												
Carbondale, Pa.	17,040	4					1							

MORBIDITY AND MORTALITY—Continued.

Morbidity and mortality table, cities of the United States, for week ended February 4, 1911—Continued.

Cities.	Population, United States, census 1910.	Total deaths, from all causes.	Diphtheria.		Measles.		Scarlet fever.		Smallpox.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
***Cities having less than 25,000 inhabitants*—Con.**														
Clinton, Mass.	13,075	1												
Coffeyville, Kans.	12,687	5									2	2		
Columbus, Ga.	20,554	5												
Columbus, Ind.		1					1							
Concord, N. H.	21,497	10	4		1									
Cumberland, Md.	21,839	8											2	
Dunkirk, N. Y.		6			1								1	
Freeport, Ill.	17,567	8												
Galesburg, Ill.	22,089	4			7									
Gloucester, Mass.	24,398	6												
Greensboro, N. C.	15,895	4												
Harrison, N. J.	14,498	4	1								1			
Hyde Park, Mass.	15,507	4			4									
Kearny, N. J.	18,659	7	2		1		3				1			
Kokomo, Ind.	17,010													
La Fayette, Ind.	20,081	3												
Lebanon, Pa.	19,240	7		1								1		
Manistee, Mich.	12,381	0	1				1							
Manitowoc, Wis.	13,027	1												
Marinette, Wis.	14,610	3										1		
Marlboro, Mass.	14,579	5					1					1		
Massillon, Ohio	13,879	2			2		1							
Medford, Mass.	23,150	8	4				1							
Melrose, Mass.	15,715	3			4									
Moline, Ill.	24,199	18	3		3		3					1		1
Montclair, N. J.	21,550	7	2		6							1		
Morristown, N. J.	12,507													
Nanticoke, Pa.	18,877	8					1							
Newburyport, Mass.	14,949	5			2						1			
North Adams, Mass.	22,019	7	1		6						1	1		
Northampton, Mass.	19,431													
Ottumwa, Iowa.	22,012	8										1		
Paducah, Ky.	22,760	8	1	1	2		1		8					
Palmer, Mass.		1	2											
Peekskill, N. Y.		4		1			5							1
Plainfield, N. J.	20,550	3												
Portsmouth, N. H.	11,209				11									
Portsmouth, Va.	33,190	14	1		2		1		1					
Pottstown, Pa.	15,599	7			1									
Rock Island, Ill.		7	1		9	1								
Rutland, Vt.	13,546	5			1									
Saratoga Springs, N. Y.		15	1				1					1		
South Bethlehem, Pa.	19,973	7	1											
Steelton, Pa.	14,246	2			1						5			
Warren, Ohio	11,081	3			1									
Wilkinsburg, Pa.	18,924	7					2				2		2	
Woburn, Mass.	15,308	3												
Zanesville, Ohio		7			2								9	

STATISTICAL REPORTS OF MORBIDITY AND MORTALITY, STATES AND CITIES OF THE UNITED STATES (untabulated).

FLORIDA.—Week ended February 4, 1911. Reports from the State board of health show diphtheria present in 1 locality, Tampa, with 1 case, smallpox in 11 counties with 72 cases, malaria in 1 locality, Tampa, with 22 cases, tuberculosis in 6 localities with 9 cases, typhoid fever in 2 localities with 4 cases.

INDIANA—*Muncie.*—Month of January, 1911. Population, 24,005. Total number of deaths from all causes 28, including tuberculosis 1. Cases reported: Diphtheria 1, scarlet fever 4.

KANSAS—*Independence.*—Year 1910. Population 10,480. Total number of deaths from all causes 310, including diphtheria 1, measles 7, smallpox 2, tuberculosis 20, typhoid fever 10. Measles and smallpox were prevalent during the year.

LOUISIANA—*Shreveport.*—Month of January, 1911. Population 28,015. Total number of deaths from all causes 74, including tuberculosis 6, typhoid fever 1.

MICHIGAN.—Month of December, 1910. Reports from the State department of health show diphtheria present in 71 localities with 285 cases, measles in 20 localities with 1,192 cases, scarlet fever in 113 localities with 371 cases, smallpox in 41 localities with 130 cases, tuberculosis 129 new cases, typhoid fever in 63 localities with 131 cases.

MINNESOTA—*St. Paul.*—Month of November, 1910. Population 214,744. Total number of deaths from all causes 195, including diphtheria 18, tuberculosis 33, typhoid fever 5. Cases reported: Diphtheria 172, measles 3, scarlet fever 53, smallpox 20.

Month of December, 1910. Total number of deaths from all causes 215, including diphtheria 9, scarlet fever 3, tuberculosis 18, typhoid fever 3. Cases reported: Diphtheria 117, measles 5, scarlet fever 75, smallpox 62.

OKLAHOMA.—Month of December, 1910. Population 1,657,155. Total number of deaths from all causes 823, including diphtheria 30, scarlet fever 11, tuberculosis 55, typhoid fever 38. Cases reported: Diphtheria 145, scarlet fever 215, smallpox 91, tuberculosis 91, typhoid fever 253.

TEXAS—*Fort Worth.*—Month of December, 1910. Population 73,312. Total number of deaths from all causes 103, including diphtheria 1, scarlet fever 1, tuberculosis 9. Cases reported: Diphtheria 9, measles 17, scarlet fever 3, smallpox 2, tuberculosis 11, typhoid fever 3.

VIRGINIA—*Petersburg.*—Month of January, 1911. Population 30,000. Total number of deaths from all causes 43, including tuberculosis 3. Cases reported: Diphtheria 5, scarlet fever 3, smallpox 1, tuberculosis 4.

FOREIGN AND INSULAR.

ARABIA.

Smallpox at Bulhar, Zeila, and Berbera.

Consul Moser at Aden reports January 25:

Smallpox is epidemic at Bulhar, Zeila, and Berbera and vessels from those ports are subject to strict quarantine at Aden.

The port of Aden has been declared free from smallpox, no new cases having occurred there since January 20.

BULGARIA.

Cholera.

Chargé d'Affaires Harvey at Bucharest, Roumania, reports, January 23:

Official information from the Bulgarian Government dated January 12, shows the occurrence of 2 cases of cholera with 1 death at Tartar-Pazardjik. The patients were a man and his wife. They sickened January 1, and were removed to hospital January 4. One case ended fatally January 6. The cases were bacteriologically verified. All possible contacts, 23 in number, were isolated, and no further cases have developed. The source of the infection has not been determined

CHINA.

Chefoo—Plague.

The American consul reported February 14, to the Department of State that 300 deaths from plague had been reported in Chefoo to date and that 1,000 deaths had occurred in the Province of Shantung, in which Chefoo is situated.

Mukden—Plague.

Consul Fisher reports, January 4:

Information has been received from the Japanese consul general of the occurrence of a case of plague on a train on the South Manchuria Railroad which left Changchung December 31, 1910. The patient was a Chinese third-class passenger. When the train reached Kunchuling the car was sent back to Changchung. A second case developed en route, also in a Chinese. Both cases ended fatally. The train was disinfected at Changchung and Mukden, and train employees suspected of possible contact with the cases were sent to hospital.

Consul Fisher further reports, January 7:

A case of plague at Mukden was discovered January 2. The patient stated that he came from the north. Six suspect cases, all fatal, have occurred in various sections of the city among recent arrivals from Harbin. The localities in which these cases occurred

have been isolated by police cordon and all possible contacts are held under observation in hospital. The Japanese consul general stated January 6 that the car in which the cases occurred December 31, 1910, is being held at Changchung with its passengers. Medical officials are on duty on every train coming from Changchung.

Newchwang—Train Inspection.

Consul Kent reports, January 13:

The Chinese authorities have instituted an inspection of passengers arriving by train at Newchwang with a view to excluding or isolating suspect cases of plague. This action is taken on account of the alarming prevalence of plague in the cities and towns of north Manchuria and of the unexplained rise in the death rate at Newchwang during the past week. No recognized case of plague has occurred at Newchwang.

CUBA.

Transmissible Diseases in the Island.

Acting Asst. Surg. Villoldo, at Habana, reports February 7.

The following statement of transmissible diseases in the island of Cuba was issued by the national department of sanitation:

January 1–10, 1911.

Diseases.	Cases.	Deaths.	Remaining under treatment.
Tuberculosis	67	93	2,579
Leprosy	2	.....	344
Malaria	52	3	170
Typhoid fever	19	7	44
Diphtheria	24	1	15
Scarlet fever	7	1	15
Measles	112	6	238
Varicella	17	.....	23
Tetanus in the new-born	6	5	1
Filariasis	.....	.....	1

No quarantinable diseases were reported in the island during the week ended February 4, 1911.

GERMAN EMPIRE.

Bremen—Emigrant Inspection.

The following report by the sanitary inspector of Bremen was forwarded January 21 by Consul Fee:

During the month of December, 1910, 7,081 emigrants were inspected and passed after being vaccinated; 3,555 of these were Russians who had been subjected to quarantine for full five days from the day of passing the German frontier until embarkation. Two cases of smallpox occurred and were quarantined in hospital; 150 emigrants who had been stationed with them were also detained in quarantine and under daily medical observation for a period of 14 days.

During the month of January, 1911, 5,333 emigrants were inspected, passed, and vaccinated, of whom 1,976 were Russians, and whose medical certificates showed that they had been in quarantine for at least five days before embarking.

No quarantinable disease was discovered among them.

As according to the latest official reports the cases of cholera in Russia have considerably diminished, the Prussian secretary for educational, religious, and public-health affairs and the secretary of the interior have authorized the presidents of the provincial governments, under date of January 23, to discontinue compulsory disinfection and bathing adopted for Russian emigrants at the control stations at the German frontier.

HAWAII.

Record of Plague Infection.

Last case of human plague at Honolulu occurred July 12, 1910.

The last plague-infected rat was found at Aiea, 9 miles from Honolulu, April 12, 1910.

At Hilo the last case of human plague occurred March 23, 1910. A fatal case occurred at Honokaa, 60 miles from Hilo, December 17, 1910, and 2 fatal cases were reported January 31, 1911.

The last plague-infected rat was found at Honokaa, December 20, 1910.

Passed Asst. Surg. Ramus reports in regard to plague-prevention work, February 1:

HONOLULU.

Week ended January 28, 1911.

Total rats and mongoose taken	599
Rats trapped	594
Mongoose trapped	4
Rats found dead (*Mus norvegicus*)	1
Examined bacteriologically	513
Classification of rats trapped:	
Mus alexandrinus	87
Mus musculus	166
Mus norvegicus	65
Mus rattus	276
Average number of traps set daily	1,720

Smallpox on Steamship Chiyo Maru.

Dr. Ramus reported February 17 a case of smallpox on the steamship *Chiyo Maru* from Yokohama.

INDIA.

Calcutta—Cholera, Plague, and Smallpox.

Acting Asst. Surg. Allan reports January 19:

During the week ended December 31, 1910, there were reported at Calcutta 14 deaths from cholera, 8 from plague, and 1 from smallpox; in all Bengal, 1,482 cases of plague with 1,258 deaths; in all India, 11,485 cases of plague with 8,892 deaths.

ITALY.

Status of Cholera.

Surg. Geddings, at Naples, reports February 6:

During the week ended February 4 cholera was reported in Italy as follows:

Provinces.	Cases.	Deaths.
Bari:		
Castellane	1	
Lecce:		
Taranto	3	

NAPLES—Examination of Emigrants—Smallpox.

Dr. Geddings further reports:

Vessels inspected at Naples and Palermo, week ended February 4.

NAPLES.

Date.	Names of ships.	Destination.	Steerage passengers inspected and passed.	Pieces of baggage inspected and passed.	Pieces of baggage disinfected.
Jan. 29	Berlin	New York	982	155	1,180
Feb. 1	Venezia	do	153	30	280
2	Duca degli Abruzzi	do	316	75	490
3	Carmania	do			
3	Re d'Italia	do	244	18	320
4	Cedric	do	673	120	1,150
	Total		2,368	398	3,420

PALERMO.

Feb. 3	Duca degli Abruzzi	New York	129	200	150
4	Re d'Italia	do	173	330	125
	Total		302	530	275

Rejections recommended.

NAPLES.

Date.	Name of ship.	Trachoma.	Favus.	Suspected trachoma.	Other causes.	Total.
Jan. 29	Berlin	36	4	14	8	62
Feb. 1	Venezia	2		4		6
2	Duca degli Abruzzi	18	3	4	1	26
3	Carmania					
3	Re d'Italia	11	8		1	20
4	Cedric	20	2	9	4	35
	Total	87	17	31	14	149

PALERMO.

Feb. 3	Duca degli Abruzzi	21	1	14	4	40
4	Re d'Italia	15	1	7	2	25
	Total	36	2	21	6	65

Smallpox in Naples.—During the week ended February 4 there were reported at the health office of the city of Naples 24 cases of smallpox.

Italy Declared Free from Cholera.

The Italian Ambassador at Washington stated to the Department of State in a communication dated February 12 that the whole of Italy has been officially declared free from cholera since January 30.

NEW ZEALAND.

Smallpox on Steamship.

Consul General Prickett at Auckland reports January 9:

A communication received from the minister of public health, dated December 31, 1910, states that the steamship *Knight of the Garter* arrived at Lyttleton from Karotzu, Japan, December 31, 1910, with a case of smallpox on board in the person of an officer of the vessel. All on board were vaccinated and the vessel was quarantined and no communication with the shore allowed.

PHILIPPINE ISLANDS.

Health Conditions—Status of Cholera.

Chief Quarantine Officer Heiser at Manila reports January 11:

HEALTH OF THE PHILIPPINES.

At the beginning of the year 1911 the health of the Philippines is much more satisfactory than at any time during the past 10 years, which makes it possible to begin the work of the new year under more favorable auspices than has been the case heretofore. There have been no cases of plague for over three years; smallpox is less prevalent; cholera is only known to exist in a sporadic form at Naujan, Mindoro, and upon the Island of Catanduanes; malaria prevails to a lesser extent; there is less beriberi, and a smaller number of cases of intestinal diseases than ordinarily. If this favorable condition of affairs should continue, there would be an opportunity to commence work upon a foundation upon which a sanitary superstructure might be erected which would make outbreaks of diseases like those enumerated above much less likely to occur in the future.

This satisfactory state of affairs makes it more incumbent than ever upon the service to exercise the greatest vigilance in preventing the introduction of quarantinable diseases. The Philippines are seriously threatened by the plague which exists at Shanghai and by the frequent recurrent outbreaks of both plague and cholera in Japan. The great shortage which exists in the rice crop of the Philippines will also no doubt increase the number of rice-laden vessels which arrive from Indo-China and Siam, and, as there are ports in these countries which are infected, special precautions will be necessary in dealing with such vessels.

During the week ended January 7 no case of quarantinable disease was reported in Manila. During the same period 8 cases of cholera with 8 deaths were reported in Albay Province.

RUSSIA.

Libau—Smallpox—Examination of Emigrants.

Acting Asst. Surg. De Forest reports January 23:

During the week ended January 21 there was reported at Libau 1 case of smallpox with 1 death.

For the steamship *Estonia* sailing January 24 for New York there have been examined 706 passengers. No quarantinable diseases were found. There were examined for foodstuff 600 pieces of baggage.

VENEZUELA.

La Guaira—Yellow Fever.

Acting Asst. Surg. Goldthwaite reports January 28:

A death from yellow fever occurred at La Guaira January 27.

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX.

Reports Received During Week Ended February 24, 1911.

[These tables include cases and deaths recorded in reports received by the Surgeon General, Public Health and Marine-Hospital Service from American consuls, through the Department of State, and from other sources.]

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Bajil	To Jan. 17	47	38	
India:				
Calcutta	Dec. 25–31	.....	14	
Italy:				
Provinces—				
Bari	Jan. 29–Feb. 4	1	.....	
Lecce	Jan. 29–Feb. 4	3	.....	
Java:				
Batavia	Jan. 1–7	1	.....	
Samarang	Nov. 11–30	[1] 95	88	
Soerabaya	Dec. 4–17	4	3	
Philippine Islands:				
Provinces—				
Albay	Jan. 1–7	8	8	
Straits Settlements:				
Singapore	Dec. 25–31	1	1	
Turkey in Asia:				
Mekka	Jan. 23–28	10	10	
Smyrna	Jan. 23–28	79	36	
Zongouldak	Dec. 10–16	1	2	

YELLOW FEVER.

Brazil:				
Manaos	Jan. 15–21	.....	6	
Para	Jan. 22–28	3	1	
Venezuela:				
Caracas	Jan. 22–31	6	4	
La Guaira	Jan. 22–27	1	1	In Canton, suburb.

PLAGUE.

China:				
Shangtung, province	Jan. 15–Feb. 15	1,000	.....	
Chefoo	Jan. 15–Feb. 15	.....	300	
India:				
Calcutta	Dec. 25–31	.....	8	
Kurrachee	Jan. 8–14	26	25	
Peru:				
Salaverry	Jan. 18–31	3	1	
Russia:				
Astrakhan Government—				
Kirghiz Steppe	Dec. 27–Jan. 7	17	[1] 10	

[1] From the Veröffentlichungen des Kaiserlichen Gesundheitsamtes, Feb. 8, 1911.

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

Reports Received During Week Ended February 24, 1911.

SMALLPOX.

Place.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Bulhar	Jan. 25			Present.
Zeila	Jan. 25			Do.
Australia:				
Adelaide				Sept., 1910, one case on s. s. Kazembe from Singapore.
Brazil:				
Para	Jan. 22–28	2	1	
Canada:				
Moncton	Feb. 5–11	1		
Newcastle	Feb. 5–11	1		
Sydney	Feb. 5–11	1		
Victoria	Jan. 29–Feb. 11	12		
Ceylon:				
Colombo	Jan. 1–7	1		
Chile:				
Coquimbo Province	Dec. 13–30			Present in two localities.
China:				
Hongkong	Jan. 1–7	2		
Shanghai	Jan. 9–15	4	21	Deaths among natives.
Tsingtau	Jan. 8–14	9		
Egypt:				
Alexandria	Dec. 1–31	1	1	
France:				
Paris	Jan. 22–28	2		
Germany				Total for Jan. 29–Feb. 4, 2 cases.
Great Britain:				
Dublin	Jan. 15–21	1		
Liverpool	Jan. 29–Feb. 4	1		
Hawaii:				
Honolulu	Feb. 18	1		On s. s. Chiyo Maru from Yokohama.
India:				
Calcutta	Dec. 25–31		1	
Italy:				
Naples	Jan. 29–Feb. 4	24		
Palermo	Jan. 22–28	3	1	
Java:				
Batavia	Jan. 1–7	1		
Malta:				
Valetta	Jan. 22–28	1		
Mexico:				
Aguascalientes	Jan. 14–Feb. 14		9	
Chihuahua	Jan. 30–Feb. 5	1	1	
Guadalajara	Jan. 29–Feb. 4	1	1	
New Zealand:				
Lyttelton	Dec. 30	1		On s. s. Knight of the Garter from Karotzu, Japan.
Netherlands:				
Rotterdam	Jan. 22–28	1		
Peru:				
Salaverry	Jan. 25–31	1		
Portugal:				
Lisbon	Jan. 15–28	34		
Russia:				
Moscow	Jan. 1–14	17	8	
Odessa	Jan. 15–21	2		
Riga	Jan. 22–28	5		
St. Petersburg	Dec. 29–Jan. 14	44	12	
Warsaw	Nov. 27–Dec. 3		1	
Spain:				
Valencia	Jan. 22–28	2		
Straits Settlements:				
Penang	Dec. 25–Jan. 7	14	4	
Singapore	Dec. 25–Jan. 7	4	2	
Turkey in Asia:				
Beirut	Jan. 15–28	5		

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

Reports Received from December 31, 1910, to February 17, 1911.

[For reports received from June 25, 1910, to Dec. 30, 1910, see PUBLIC HEALTH REPORTS for Dec. 30, 1910. In accordance with custom, the tables of epidemic diseases are terminated semiannually and new tables begun.]

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Bajil	Jan. 18			Present.
Hodeida	Jan. 23			Do.
Perim	Jan. 23			Do.
Maskat	Nov. 20-30	7	7	
Austria-Hungary	Aug. 3-Nov. 7			Two deaths not previously reported.
Croatia and Slavonia	Dec. 4-17	5	2	
Maren	Oct. 1-9	3		
Hungary				Total for Hungary, Nov. 27-Dec. 17: Cases, 9; deaths, 3.
Bulgaria:				
Tartar-Pazardjik	Jan. 10	2	2	
Varna	Nov. 29	2		From steamship Bulgarie, 3 fatal cases having been reported on p. 1936, Vol. XXV.
Ceylon:				
Colombo	Dec. 11-24	4	3	
China:				
Niuchwang	Aug. 1-Nov. 22			Occasional cases.
Shanghai	Aug. 1-31		1	Reported out of date.
Formosa	Nov. 20-Dec. 17	11	6	Mainly in Kelung and Taihoku.
India:				
Bombay	Nov. 23-Jan. 14		78	
Calcutta	Nov. 13-Dec. 24		203	
Madras	Nov. 27-Jan. 14		4	
Rangoon	Jan. 1-7		2	
Indo-China:				
Saigon	Dec. 12-18	1	1	
Italy				Total for Italy, Dec. 27-Jan. 28: Cases, 102; deaths, 15.
Provinces—				
Aquila	Dec. 4-17	4	1	
Bari	Dec. 27-Jan. 6	4	2	
Caltanisetta	Dec. 4-10	1		
Caserta	Dec. 4-Jan. 14	15	3	
Catanzaro	Dec. 27-Jan. 6	2	2	
Lecce	Dec. 11-Jan. 28	108	13	
Palermo—				
Palermo	Dec. 4-10	16	6	
Insane asylum	Dec. 4-Jan. 6	24	6	
Rome	Dec. 4-Jan. 6	10	7	
Salerno	Dec. 11-Jan. 6	10		
Japan				Total for Japan, Sept. 14-Nov. 30: Cases, 2,770; deaths, 1,923; including cases and deaths appearing on p. 1937, Vol. XXV.
Aichi ken	Oct. 16-Nov. 30	3	3	
Ehime ken	Sept. 23-Nov. 30	27	19	
Fukuoka ken	Sept. 30-Nov. 30	234	165	
Hiogo ken, Kobe	Sept. 12-Nov. 30	607	396	
Hiroshima ken	Sept. 25-Nov. 30	58	30	
Kagawa ken	Oct. 2-Nov. 30	293	201	
Kagoshima ken	Oct. 28-Nov. 30	4	3	
Kochi ken	Oct. 18-Nov. 30	70	42	
Kyoto fu	Sept. 30-Nov. 30	143	119	
Kumamoto ken	Oct. 18-Nov. 30	19	11	
Miye ken	Oct. 11-Nov. 30	8	5	
Nagasaki ken	Oct. 16-Nov. 30	26	11	Dec. 12-25, 5 cases, 1 death.
Nara ken	Oct. 3-Nov. 30	31	23	
Oita ken	Oct. 10-Nov. 30	2	1	
Okayama ken	Sept. 29-Nov. 30	71	49	
Osaka fu	Sept. 17-Nov. 30	951	692	
Saga ken	Oct. 4-Nov. 30	51	31	
Shiga ken	Nov. 20-30	7	6	
Shimane ken	Oct. 24-Nov. 30	7	5	
Tokushima ken	Oct. 3-Nov. 30	59	37	
Tokyo fu	Oct. 18-Nov. 30	1	1	
Wakayama ken	Oct. 6-Nov. 30	57	44	
Yamaguchi ken	Oct. 12-Nov. 30	41	29	
Java:				
Batavia	Nov. 13-Dec. 31	15	4	Among natives.
Samarang	Sept. 11-Nov. 10	486	410	
Soerobaya	Oct. 23-Dec. 3	15	10	
Korea:				
Seoul	Oct. 26-Nov. 5	1	1	

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

Reports Received from December 31, 1910, to February 17, 1911.

CHOLERA—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Madeira				Total for Madeira, Nov. 16-Jan. 12: Cases, 1,646; deaths, 525; including report, page 1938, Volume XXV. Funchal district, Nov. 16-Dec. 31: Cases 495; deaths, 140. Rural districts: Cases, 828; deaths, 267.
Funchal	Nov. 16-Dec. 8	126	36	
Calheta	Dec. 9-31	1		
Camara dos Lobos	Nov. 16-Dec. 8	112	32	
Ponto do Sol	Nov. 16-Dec. 8	54	20	
Santa Cruz	Nov. 16-Dec. 8	15	8	
Machico	Nov. 16-Dec. 8	31	5	
Porto Santo Island	Nov. 10-Dec. 8	7	3	
Persia:				
Assadabad	Oct. 5-Nov. 8		61	
Birjend	Nov. 10			Present.
Enzeli	Nov. 8-25	9	11	Present in vicinity and in Pire-Bazar.
Hamadan	Oct. 6-Dec. 3	42	22	
Kasri-Churine	Oct. 13-20		5	
Kerman	Nov. 22-30	67	25	
Kermanchah	Nov. 5-10		6	
Mohammerah	Nov. 13-Dec. 5	11	3	
Resht	Nov. 19-Dec. 3	48	42	Present in all villages in vicinity.
Mollag-Ali	Nov. 20	6		
Turbat-i-Hidari	Oct. 10-Nov. 15	66	25	
Philippine Islands:				
Manila	Nov. 6-Dec. 31	9	6	Third quarter, 1910: Cases, 195; deaths, 141.
Provinces				Third quarter, 1910: Cases, 5,657; deaths, 4,089.
Albay	Dec. 24-31	1	1	
Bulacan	Nov. 6-19	4	3	
Ilocos Sur	Nov. 6-Dec. 17	58	38	
Mindoro	Nov. 6-Dec. 10	24	17	
Rizal	Nov. 6-Dec. 3	4	1	
Union	Nov. 6-12	3	1	
Russia				Total for Russia, Nov. 20-Jan. 12: Cases, 1,221; deaths, 294. From May 8-Jan. 5: Cases, 216,780; deaths, 100,971.
Baku government—				
Baku	Nov. 6-Dec. 17	6	2	
Batum	Dec. 4-10	2	1	
Don territory	Nov. 6-19	6	2	
Erivan government	Nov. 6-Dec. 10	4	4	
Ferghana territory	Nov. 6-19	6	6	
Kharkov government	Nov. 6-12	2		
Kazan government	Nov. 6-12	1		
Kherson government	Nov. 6-Dec. 3	4	4	
Kief government	Nov. 6-Dec. 17	39	14	
Kuban territory	Nov. 6-13	4	4	
Lublin government	Nov. 20-26	31	13	
Mohiley government	Nov. 6-19	2	1	
Orenburg government	Nov. 13-24	15	6	
Oufa government	Nov. 6-12	2	1	
Perm government	Nov. 20-26	1		
Podolia government	Nov. 13-24	7	1	
Rjasan government	Nov. 6-12	2		
St. Petersburg government—	Nov. 6-12	2		
St. Petersburg	Nov. 6-Dec. 31	32	16	
Samara government	Nov. 6-19	6		
Saratov government	Nov. 13-26	8	6	
Siberia, eastern	Nov. 6-19	12	3	Vladivostok, Oct. 29-Nov. 13: Cases, 4; deaths, 17.
Syr Darya territory	Nov. 6-19	7	4	
Taurida government—				
Sebastopol	Nov. 13-Dec. 3	7	4	
Tambov government	Nov. 13-Dec. 10	86	34	
Tiflis government	Nov. 6-26	2		
Vitebsk government	Nov. 6-19	3	2	
Veronesch government	Nov. 6-12	2		
Yekaterinoslav government.	Nov. 6-Dec. 31	60	31	
Siam:				
Bangkok	Nov. 6-Dec. 3	136	131	

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

Reports Received from December 31, 1910, to February 17, 1911.

CHOLERA—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Sumatra:				
Bambel	Dec. 29			Present.
Biagmoeti	Nov. 14			Do.
Keretan	Dec. 29			Do.
Pengoeloedjahar	Nov. 14			Do.
Tripoli:				
Tripoli	Nov. 15–Dec. 8	37	37	
Turkey:				
Adrianople vilayet	Nov. 21–Dec. 15	60	70	94 cases and 34 deaths reported, p. 1940, Vol. XXV.
Constantinople	Nov. 22–Jan. 16	841	529	Total from Sept. 13–Jan. 16: Cases, 1,318; deaths, 793.
Saloniki vilayet	Dec. 11–31	50	25	
Turkey in Asia:				
Bagdad vilayet	Nov. 20–Dec. 11	119	115	Total, Oct. 16–Jan. 16: Cases, 819; deaths, 723.
Basra	Nov. 6–26	10	9	
Damascus	Feb. 3			Present.
Mekka	Dec. 26–Jan. 22	143	132	
Samsoun	Nov. 20–Dec. 3	6	6	
Smyrna	Nov. 20–Jan. 22	242	163	
Trebizond	Nov. 20–Dec. 18	107	42	And vicinity.
Yembo	Jan. 7–12	24	21	
Zongouldak	Nov. 20–Dec. 9	8	4	

YELLOW FEVER.

Brazil:				
Manaos	Dec. 4–Jan. 14		37	
Para	Nov. 27–Jan. 14	151	64	
Ecuador:				
Guayaquil	Nov. 1–Jan. 15	54	22	
Honduras:				
Puerto Cortez	Jan. 21–29			One fatal case on U. S. S. Marietta.
Venezuela:				
Caracas	Dec. 4–Jan. 21	42	6	Nov. 22–Dec. 3, 5 deaths.
La Guaira	Dec. 1–15	1	1	
Macuto	Dec. 1–7	1		
Maiquetia	Nov. 29	1		

PLAGUE.

Azores:				
Terceira	Dec. 24			Present.
Brazil:				
Bahia	Oct. 29–Nov. 25	12	12	
Pernambuco	July 1–Oct. 15		12	
Rio de Janeiro	Nov. 1–27	12	5	
Chile:				
Arica	Dec. 28–Jan. 12			Do.
Iquique	Jan. 1–7	2		
China:				
Amoy	Jan. 23			Do.
Changchung	Jan. 1–7			Do.
Chefoo	Jan. 21			Do.
Paoting-fu	Jan. 24			Do.
Peking	Jan. 24	2		
Sioke	Dec. 6–Jan. 4			Present; in the interior 60 miles from Amoy.
Tientsin	Jan. 21		4	Among Chinese.
Manchuria				Total for Manchuria, Oct. 25–Dec. 31: Cases, 522 Chinese, 11 Russians; deaths, 520 Chinese, 10 Russians.
Buhedu	Oct. 30	3	3	
Chang Chuen	Jan. 7			Present.
Dalny	Jan. 11–Feb. 8	66	60	
Fuchiatien	Nov. 8–Dec. 31		182	
Hailar	Dec. 6	1	1	
Harbin	Nov. 11–Dec. 31		78	
Hulan	Dec. 31			Do.
Kirin	Jan. 7			Do.
Manchuria, station	Dec. 7–26	85	95	

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

Reports Received from December 31, 1910, to February 17, 1911.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
China—Continued.				
Manchuria—Continued.				
Mukden	Jan. 2-Jan. 14	.....	30	Present.
Tieling	Jan. 14	.....	1	
Tchjalainarskiy	Nov. 11-Dec. 3	104	106	Cases previously reported 14; deaths, 12.
Tchjalantum	Nov. 21-Jan. 14	.....	42	
Turchiha	Oct. 30	4	4	
Ecuador:				
Babahoyo	Dec. 16-Jan. 15	16	4	
Duran	Dec. 16-Jan. 15	8	3	
Guayaquil	Nov. 1-Jan. 15	177	74	
Milagro	Jan. 1-15	4	3	
Egypt:				
Alexandria	Nov. 29-Jan. 15	6	2	
Provinces—				
Assiout	Dec. 1-Jan. 18	76	35	
Behera	Jan. 1-17	3	.....	
Galioubeeh	Nov. 22-Dec. 2	1	1	
Kena	Jan. 14-18	7	4	
Menouf	Dec. 2-Jan. 17	31	16	
Hawaii:				
Honokaa	Jan. 31	2	2	
India:				
Bombay	Nov. 23-Jan. 14	.....	74	
Calcutta	Nov. 13-Dec. 24	.....	75	
Kurrachee	Nov. 19-Jan. 14	88	86	
Madras	Dec. 11-17	.....	1	
Rangoon	Nov. 20-Jan. 7	.....	13	
Bombay Presidency and Sind.	Oct. 29-Dec. 31.	13,828	9,321	
Madras Presidency	Oct. 29-Dec. 31	4,012	3,194	
Bengal	Oct. 29-Dec. 31	6,712	5,222	
United Provinces	Oct. 29-Dec. 31	24,858	20,883	
Punjab	Oct. 29-Dec. 31	11,725	8,752	
Burma	Oct. 29-Dec. 31	801	745	
Central Provinces	Oct. 29-Dec. 31	8,821	6,677	
Coorg	Oct. 29-Dec. 31	16	7	
Mysore State	Oct. 29-Dec. 31	5,561	3,936	
Hyderabad State	Oct. 29-Dec. 31	3,536	2,997	
Central India	Oct. 29-Dec. 31	2,299	1,839	
Rajputana and Ajmer-Merwara.	Oct. 29-Dec. 31	5,966	4,525	
Kashmir	Nov. 6-Dec. 31	36	24	
North West Province	Dec. 10-31	38	33	
Grand total		88,209	68,157	
Indo-China:				
Saigon	Nov. 14-20	1	1	
Mauritius	Sept. 30-Dec. 1	351	200	
New Caledonia:				
Noumea	Sept. 17	.....	.....	Present.
Peru:				
Arequipa Department	Nov. 1-30	4	2	
Mollendo	.....	.....	.....	Dec. 17-Jan. 13, 9 cases, 3 deaths.
Callao Department	Nov. 1-30	1	.....	Callao, Jan. 1-14, 1 case.
Lambayeque Department	Nov. 1-30	2	.....	
Libertad Department	Nov. 1-30	41	15	Dec. 10, still present in Chicama Valley, near Truxillo. Salaverry, Jan. 1-14, 2 cases, 1 death.
Lima Department	Nov. 1-30	2	1	At Lima Dec. 11-Jan. 14, 10 cases, 2 deaths.
Piura Department	Nov. 1-30	13	7	
Russia:				
Odessa	Jan. 1	1	.....	
Astrakhan Government—				
Abil-Isken	Nov. 22-29	4	4	
Kirghiz Steppe	Dec. 17-26	36	27	
Kolden	Dec. 6-13	8	3	
Kolybai	Dec. 10-13	5	1	
Kulken Island	Oct. 13-Nov. 4	5	5	
Nauraali-Tchaygal	Nov. 23-29	5	5	
Neuren	Nov. 17-21	1	1	
Trans-Caucasia	.....	.....	.....	Total from Oct. 23-Nov. 24: Cases, 28; deaths, 5.
Petrovosk	Nov. 23	1	1	
Sanitza-Olivianna	Nov. 22	1	1	

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

Reports Received from December 31, 1910, to February 17, 1911.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Russia—Continued.				
Baku	Dec. 17	1	1	
Batum	Dec. 17	1	1	
Odessa	Nov. 26–Dec. 9		1	
Siam:				
Bangkok	Nov. 27–Dec. 3	1	1	
Straits Settlements:				
Singapore	Nov. 13–Dec. 3	1	1	
Trinidad	Feb. 8		1	
Turkey in Asia:				
Jiddah	Jan. 15	1		
Venezuela:				
Caracas	Nov. 9			Present.

SMALLPOX.

Abyssinia:				
Adis Abada	Nov. 20–Jan. 21			Present.
Arabia:				
Aden	Jan. 9–16	11	3	
Berbera	Dec. 9–Jan. 9			Epidemic.
Maskat	Jan. 1–14	2		
Argentina:				
Buenos Aires	Oct. 1–Nov. 30		9	
Rosario	Oct. 1–Nov. 31		7	
Barbados:				
Bridgetown	Jan. 14	1		From steamship Cara from Rio de Janeiro.
Brazil:				
Bahia	Oct. 29–Nov. 25	34	18	
Para	Nov. 27–Jan. 21	32	7	
Pernambuco	July 1–Oct. 31		573	
Rio de Janeiro	Nov. 14–27	3		
Canada:				
British Columbia—				
Victoria	Dec. 11–Jan. 28	43		
New Brunswick—				
Moncton	Jan. 29–Feb. 4	14		
New Castle	Dec. 18–Jan. 7	7		Jan. 14–28, in vicinity.
Nova Scotia—				
Halifax	Jan. 1–14	3		
Louisburg	Dec. 25–Jan. 21	8		
Sydney	Jan. 22–28	1		
Ontario—				
Cornwall	Jan. 1–21	3		
Ottawa	Dec. 18–Jan. 28	5		
Ceylon:				
Colombo	Nov. 13–Dec. 31	24	6	
Chile:				
Iquique	Nov. 13–19		1	
Punta Arenas	Nov. 1–30	1		
Talcahuano	Nov. 13–Dec. 17	23		
Valparaiso	Nov. 20–Jan. 14	393		Deaths not generally reported. Jan. 8–14 two deaths.
China:				
Canton	Dec. 11–17	26	3	
Chefoo	Dec. 11–17			Present among natives.
Chungking	Nov. 13–Dec. 17			Present.
Hongkong	Dec. 4–31	5	3	
Nanking	Nov. 20–Dec. 31			Do.
Shanghai	Nov. 21–Jan. 8	23	80	Deaths among natives.
Swatow	Jan. 1–7			Present 25 miles inland.
Egypt:				
Alexandria	Nov. 1–30		1	
Cairo	Dec. 3–Jan. 7	6	3	
Port Said	Dec. 17–23	1		
France:				
Paris	Dec. 3–Jan. 21	31		
Germany				Total for Germany, Dec. 4–Jan. 7, cases 11.
Gibraltar	Jan. 16–22	2		
Great Britain:				
Leith	Dec. 11–17	2		From a steamship from Oporto.

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

Reports Received from December 31, 1910, to February 17, 1911.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Hawaii:				
Honolulu	Jan. 3	3		On s. s. Kiho Maru from Manzanillo.
Maui—				
Puuene	Jan. 24	39		
Waikapu	Jan. 31	1		
India:				
Bombay	Dec. 6–Jan. 14		17	
Calcutta	Nov. 6–Dec. 10		3	
Madras	Nov. 20–Jan. 14	72	33	
Rangoon	Nov. 20–Jan. 2		7	
Indo-China:				
Saigon	Nov. 14–Jan. 1	21	7	
Italy:				
Naples	Dec. 4–Jan. 28	161	136	
Palermo	Jan. 8–21	20	6	
Turin	Jan. 8–14	1		
Japan:				
Kobe	Dec. 26–Jan. 1	2		From s. s. Shimosa from New York via ports.
Java:				
Batavia	Dec. 26–31	1		
Malta:				
Valetta	Dec. 4–17	2		
Manchuria:				
Dalny	Nov. 27–Dec. 3	1		
Mexico:				
Aguascalientes	Dec. 25–Jan. 7		6	
Mexico	Dec. 11–31	10	2	
Monterey	Dec. 19–25		1	
San Luis Potosi	Nov. 13–Jan. 14	63	36	Jan. 26, present in the interior of the State.
Tampico	Dec. 20–Jan. 31	46	11	Present in Dona Cecilia, La Barra, and Tancol.
Netherlands:				
Rotterdam	Dec. 11–21	3		
Peru:				
Salaverry	Jan. 10–16			Present.
Truxillo	Dec. 19		2	Dec. 19–Jan. 7 present in vicinity.
Philippine Islands				Third quarter, 1910: Cases 11, deaths 0.
Portugal:				
Lisbon	Dec. 3–Jan. 14	107		Deaths, Oct. 30–Dec. 3, 31.
Russia:				
Libau	Dec. 5–Jan. 15	5	4	
Moscow	Nov. 13–Dec. 31	52	28	
Odessa	Nov. 20–Jan. 14	8		
Riga	Dec. 11–Jan. 21	36		Oct. 1–Nov. 30, 58 deaths.
St. Petersburg	Nov. 13–Dec. 31	191	53	
Warsaw	Oct. 9–29		9	
Siberia:				
Vladivostok	Nov. 22–Dec. 28	8		
Spain:				
Barcelona	Dec. 5–Jan. 8		2	
Madrid	Nov. 1–Dec. 31		13	
Valencia	Nov. 27–Jan. 21	9		
Straits Settlements:				
Penang	Nov. 6–Dec. 24	261	116	
Singapore	Nov. 13–Dec. 17	18	7	
Switzerland:				
Bern, Canton	Dec. 12–Jan. 14	7		
Turkey:				
Constantinople	Dec. 19–25		1	
Turkey in Asia:				
Beirut	Dec. 4–Jan. 14	8		
Smyrna	Dec. 18–24	1		
Uruguay:				
Montevideo	Oct. 1–Nov. 30	25	6	
Zanzibar:				
Zanzibar	Oct. 31–Dec. 18	45	34	

MORTALITY.

WEEKLY MORTALITY TABLE, FOREIGN AND INSULAR CITIES.

Cities.	Week ended—	Estimated population.	Total deaths from all causes.	Deaths from—										
				Tuberculosis.	Plague.	Cholera.	Yellow fever.	Smallpox.	Typhus fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Aguascalientes	Jan. 1–Feb. 4	40,000	80	6	....	....	....	9	4	....	....	1	....	2
Amsterdam	Jan. 22	573,984	173	27	....	....	....	....	....	....	....	....	5	2
Do	Jan. 28	.....	173	17	....	....	....	....	....	....	....	1	1	2
Athens	Jan. 28	175,430	125	17	....	....	....	....	....	....	....	....	1	....
Barcelona	Jan. 30	591,272	210	48	....	....	....	....	....	8	....	8	10	1
Barmen	Jan. 21	169,101	53	6	....	....	....	....	....	....	....	3	....	1
Barranquilla	Jan. 28	40,000	18	3	....	....	....	....	....	1	....	....	....	....
Beirut	Jan. 21	80,000	22	....	....	....	....	....	....	4	....	....	....	....
Do	Jan. 28	.....	20	....	....	....	....	....	....	3	....	....	....	....
Belfast	Jan. 28	398,421	.....	17	....	....	....	....	....	....	....	2	....	1
Do	Feb. 4	.....	128	14	....	....	....	....	....	....	....	1	....	1
Belgrade	Jan. 28	80,000	29	....	....	....	....	....	....	....	2	1	1	....
Bergen	Jan. 28	87,749	21	2	....	....	....	....	....	....	....	2	....	....
Berlin	Jan. 14	2,067,921	613	93	....	....	....	....	....	1	3	19	4	3
Do	Jan. 21	.....	631	85	....	....	....	....	....	....	4	16	3	7
Birmingham	Jan. 4	575,545	164	....	....	....	....	....	....	....	3	4	11	....
Bradford	Jan. 14	279,780	93	7	....	....	....	....	....	....	....	1	....	2
Do	Jan. 21	.....	76	3	....	....	....	....	....	....	....	1	....	3
Do	Jan. 28	.....	101	12	....	....	....	....	....	3	....	....	1	3
Do	Feb. 4	297,780	84	10	....	....	....	....	....	....	1	....	....	6
Bremen	Jan. 28	246,827	67	11	....	....	....	....	....	....	....	2	....	....
Bristol	Feb. 4	387,511	128	6	....	....	....	....	....	....	....	1	1	5
Brussels	Jan. 7	562,895	197	27	....	....	....	....	....	1	....	2	....	....
Do	Jan. 21	720,030	214	24	....	....	....	....	....	....	....	3	....	....
Do	Jan. 28	562,895	239	22	....	....	....	....	....	....	1	1	1	....
Cairo	Jan. 7	682,953	410	26	....	....	....	....	2	1	....	12	3	....
Do	Jan. 14	.....	431	21	....	....	....	....	....	3	....	8	1	....
Calcutta	Dec. 31	847,796	583	....	8	14	....	1	....	....	....	....	2	....
Cardiff	Jan. 21	203,107	49	9	....	....	....	....	....	....	2	3	....	....
Do	Jan. 28	.....	51	4	....	....	....	....	....	....	2	....	....	....
Catania	Jan. 28	210,000	69	2	....	....	....	....	1	....	....	....	....	....
Chihuahua	Jan. 29	39,000	21	....	....	....	....	....	....	2	....	....	....	....
Do	Feb. 5	.....	29	....	....	....	....	1	....	3	....	....	....	....
Christiania	Jan. 28	245,000	47	6	....	....	....	....	....	....	....	2	2	2
Colombo	Jan. 7	191,310	134	22	....	....	....	....	3	....	....	....	....	....
Constantinople	Jan. 29	1,000,000	356	34	....	....	....	....	....	6	1	2	....	....
Copenhagen	Jan. 21	455,000	133	7	....	....	....	....	....	....	3	2	....	1
Dublin	Jan. 21	402,928	190	36	....	....	....	....	....	....	....	4	6	6
Do	Jan. 28	.....	228	35	....	....	....	....	....	2	1	1	2	10
Dundee	Feb. 4	171,006	77	4	....	....	....	....	....	1	1	1	....	1
Durango	Jan. 29	75,000	17	....	....	....	....	....	....	....	....	....	1	1
Edinburgh	Jan. 28	365,253	112	16	....	....	....	....	....	....	1	1	1	1
Do	Feb. 4	.....	120	13	....	....	....	....	....	....	1	2	4	2
Christiania	Feb. 4	245,000	67	10	....	....	....	....	....	....	....	1	2	1
Frankfort-on-Main	Jan. 21	441,800	108	....	....	....	....	....	....	....	....	1	....	....
Ghent	Jan. 28	165,965	54	2	....	....	....	....	....	....	....	1	....	....
Glasgow	Feb. 3	897,178	274	....	....	....	....	....	....	2	4	2	....	5
Do	Feb. 10	.....	340	....	....	....	....	....	....	1	5	4	....	16
Gothenberg	Jan. 28	165,400	47	10	....	....	....	....	....	....	1	3	1	....
Guadalahara	Feb. 4	118,799	67	....	....	....	....	1	....	....	1	....	....	....
Hamburg	Jan. 28	932,000	227	22	....	....	....	....	....	1	1	9	....	....
Havre	Jan. 28	132,430	75	13	....	....	....	....	....	1	....	....	....	....
Hongkong	Dec. 31	336,488	.....	....	....	....	....	2	....	....	....	....	....	....
Hull	Jan. 28	284,502	77	....	....	....	....	....	....	....	....	....	2	3
Do	Feb. 4	.....	87	....	....	....	....	....	....	1	....	2	6	....
Kingston	Jan. 28	48,504	.....	....	....	....	....	....	....	2	....	....	....	....
Kobe	Jan. 22	400,147	165	....	....	....	....	....	....	1	....	1	....	....
Konigsberg	Jan. 14	249,308	81	12	....	....	....	....	....	....	....	2	....	3
Do	Jan. 21	.....	95	8	....	....	....	....	....	....	....	....	....	1
Kurrachi	Jan. 14	130,000	105	....	25	....	....	....	....	....	....	....	3	....
Do	Jan. 21	.....	107	....	29	....	....	....	....	....	....	....	....	....
Leeds	Feb. 4	498,027	154	15	....	....	....	....	....	1	1	7	2	2
Leith	Jan. 28	87,826	31	....	....	....	....	....	....	....	....	2	....	4
Liege	Jan. 21	176,189	64	7	....	....	....	....	....	....	1	....	1	....
Leipzig	Jan. 28	585,743	185	29	....	....	....	....	....	1	....	2	1	2
Libau	Jan. 29	60,000	.....	....	....	....	....	....	....	....	....	1	....	2
Liverpool	Feb. 4	774,951	295	33	....	....	....	....	....	....	2	4	11	....

MORTALITY—Continued.

Weekly mortality table, foreign and insular cities—Continued.

Cities.	Week ended—	Estimated population.	Total deaths from all causes.	Deaths from—									
				Tuberculosis.	Plague.	Cholera.	Yellow fever.	Smallpox.	Typhus fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
London	Jan. 28	7,645,716	1,538	....	....	....	....	....	....	29	5	17	104	49
Do	Feb. 4	.....	2,213	....	....	....	....	....	....	24	10	16	122	66
Magdeburg	Jan. 21	277,931	109	7	....	....	....	....	....	....	1	1	....	....
Manaos	Jan. 21	52,000	45	2	....	....	6	....	....	....	....	....	....	....
Manchester	Jan. 28	631,533	222	24	....	....	....	....	....	3	....	2	3	2
Do	Feb. 4	.....	243	29	....	....	....	....	....	1	1	1	5	3
Monterey	Feb. 5	100,000	48	6	....	....	....	....	....	....	1	2	....	....
Montreal	Feb. 11	450,000	153	12	....	....	....	....	....	1	1	3	5	2
Moscow	Jan. 7	1,500,000	753	91	....	....	....	6	16	6	24	30	11	3
Do	Jan. 14	.....	848	104	....	....	....	2	31	3	28	40	13	1
Naples	Feb. 5	593,729	.....	9	....	....	....	....	....	....	....	1	....	....
Newcastle-on-Tyne	Jan. 28	290,360	105	7	....	....	....	....	....	....	1	....	8	4
Do	Feb. 4	.....	100	10	....	....	....	....	....	....	....	....	3	1
Nottingham	Jan. 28	260,000	87	....	....	....	....	....	....	....	....	1	....	2
Odessa	Jan. 21	546,000	187	20	....	....	....	....	2	2	6	3	....	....
Ottawa	Feb. 11	86,000	39	5	....	....	....	....	....	6	....	....	....	....
Para	Jan. 28	185,000	79	14	....	....	1	1	....	....	....	....	....	....
Palermo	...do....	360,000	169	5	....	....	....	1	....	2	1	....	....	....
Paris	...do....	2,776,393	1,183	219	....	....	....	....	....	7	1	11	4	7
Penang	Dec. 31	103,852	73	10	....	....	....	2	....	1	....	....	....	....
Do	Jan. 7	.....	10	....	....	....	....	2	....	....	....	....	....	....
Piræus	Jan. 28	74,580	26	5	....	....	....	....	....	....	....	....	1	....
Port Elizabeth	Jan. 14	32,248	19	4	....	....	....	....	....	1	....	....	....	....
Port Said	...do....	682,953	20	1	....	....	....	....	....	1	....	....	....	....
Prague	...do....	235,556	80	12	....	....	....	....	....	....	1	....	....	....
Do	Jan. 21	.....	82	16	....	....	....	....	....	....	1	1	....	....
St. Petersburg	Jan. 5	1,678,000	761	120	....	....	....	12	....	8	20	16	12	4
Do	Jan. 14	.....	862	136	....	....	....	10	....	10	25	16	17	5
Salaverry	Jan. 24	1,500	.....	1	1	....	....	....	....	....	....	....	....	....
Santa Cruz de Teneriffe	Jan. 28	46,000	20	2	....	....	....	....	....	1	....	....	....	....
Sheffield	Jan. 21	472,000	188	17	....	....	....	....	....	1	1	2	23	3
Do	Jan. 28	.....	183	10	....	....	....	....	....	....	....	1	27	3
Singapore	Dec. 31	271,060	159	20	....	1	....	1	....	1	....	....	....	....
Do	Jan. 7	.....	194	25	....	....	....	1	....	1	....	....	....	....
Stettin	Jan. 28	234,033	74	5	....	....	....	....	....	....	....	2	....	....
Stockholm	Jan. 21	341,816	87	15	....	....	....	....	....	....	1	....	....	....
Tarragona	Jan. 28	20,400	8	1	....	....	....	....	....	1	....	....	....	....
Valencia	...do....	.....	150	7	....	....	....	....	....	1	....	....	1	....
Venice	Dec. 31	183,224	72	6	....	....	....	....	....	....	....	1	....	....
Veracruz	Jan. 28	32,000	9	32	....	....	....	....	....	....	....	....	1	....
Victoria	Feb. 4	40,000	11	1	....	....	....	....	....	....	....	....	....	....
Vienna	Jan. 28	2,030,834	812	134	....	....	....	....	....	1	3	5	3	2
Warsaw	Dec. 3	781,179	257	36	....	....	....	1	....	....	4	11	3	4
West Hartlepool	Jan. 28	66,750	28	....	....	....	....	....	....	....	....	2	....	....
Winnipeg	Feb. 11	135,000	51	3	....	....	....	....	....	1	7	1	....	....

MORTALITY—FOREIGN AND INSULAR—COUNTRIES AND CITIES (untabulated).

ALGERIA — *Algiers.*—Month of December, 1910. Population 157,000. Total number of deaths from all causes 278, including diphtheria 2, tuberculosis 24, typhoid fever 8.

AZORES—*St. Michaels.*—Month of November, 1910. Population 131,183. Total number of deaths from all causes 198, including diphtheria 4, tuberculosis 6, typhoid fever 3.

CANADA—*Dawson.*—Month of December, 1910. Population 5,000. Total number of deaths from all causes 10, including diphtheria 1, tuberculosis 5.

CUBA—*Santiago.*—Month of January, 1911. Population 43,090. Total number of deaths from all causes 110, including measles 2, tuberculosis, pulmonary, 19, typhoid fever 1.

FRANCE—*St. Etienne.*—Two weeks ended January 15, 1911. Population 150,000. Total number of deaths from all causes 146, including diphtheria 1, measles 1, scarlet fever 1, tuberculosis 15, typhoid fever 1.

FORMOSA—Two weeks ended January 7, 1911. Population 3,290,186. Total number of deaths from all causes not reported. Deaths from contagious diseases include diphtheria 2, typhoid fever 7.

GREAT BRITAIN.—Week ended January 21, 1911.

England and Wales.—The deaths registered in 77 great towns correspond to an annual rate of 16.4 per 1,000 of the population which is estimated at 17,160,256.

Ireland.—Week ended January 7, 1911. The deaths registered in 21 principal town districts correspond to an annual rate of 19.4 per 1,000 of the population which is estimated at 1,163,596. The lowest rate was recorded at Newry, viz, 4.2 and the highest at Dundalk, viz, 43.9 per 1,000.

Week ended January 14, 1911. Annual rate 19.9 per 1,000. Lowest rate recorded at Lisburn, viz, 4.5 and the highest at Queenstown, viz, 33.

Week ended January 21, 1911. Annual rate 19.3 per 1,000. Lowest rate recorded at Armagh, viz, 6.9 and the highest at Kilkenny, viz, 34.3 per 1,000.

Scotland.—Week ended January 21, 1911. The deaths registered in 8 principal towns correspond to an annual rate of 14.8 per 1,000 of the population which is estimated at 1,917,875. The lowest rate was recorded at Paisley, viz, 11.5 and the highest at Dundee, viz, 17.7 per 1,000. The total number of deaths from all causes was 544. including diphtheria 6, scarlet fever 2, typhoid fever 2.

ITALY—*Genoa.*—Two weeks ended January 15, 1911. Population, 279,163. Total number of deaths from all causes 323, including measles 7, tuberculosis 31.

MALTA.—Two weeks ended January 14, 1911. Population 215,879. Total number of deaths from all causes 209, including tuberculosis 5, typhoid fever 1.

NEW ZEALAND.—Month of November, 1910.

Auckland.—Estimated population, 78,849. Total number of deaths 57.

Christchurch.—Estimated population, 78,605. Total number of deaths 40, including tuberculosis 2.

Dunedin.—Estimated population, 62,584. Total number of deaths 49, including tuberculosis 1.

Wellington.—Estimated population, 76,390. Total number of deaths 53, including tuberculosis, pulmonary 7.

TURKS ISLANDS.—Month of January, 1911. Population, 1,800. Total number of deaths from all causes 3. No contagious diseases.

By authority of the Secretary of the Treasury:

WALTER WYMAN,
Surgeon General,
United States Public Health and Marine-Hospital Service.

20