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THE PLAGUE SITUATION.

Continuing the information contained in last week's issue of the Public Health Reports, no case of plague was reported in Porto Rico July 15. July 16 a positive diagnosis was made of a case in San Juan which had previously been reported as suspicious. July 17 no new cases. July 18, no new cases. July 19, a positive diagnosis was made of a case at Carolina which had been previously reported as suspicious. This makes the second case occurring in Carolina in addition to the one which developed at Loiza, 3 miles from Carolina, in a patient who had undoubtedly contracted the infection in Carolina. July 20, one new case was reported in San Juan and 2 new cases in Santurce. July 21, there were no new cases. This makes a total up to and including July 21 of 42 cases with 23 deaths in Porto Rico, of which 28 cases occurred in the old city of San Juan; 9 cases in Santurce, a residential suburb of San Juan; 2 at Carolina, a town 13 miles from San Juan; 1 at Loiza, a short distance from Carolina; 1 at Arroyo; and 1 at Dorado.

In Habana, July 22, a case which had been considered suspicious was positively diagnosed to be plague. The patient had resided in Baratillo Street in the same house as the second case of plague reported. The patient had been ill for nine days, during which time he had been isolated. Over 3,000 rats have been caught and necropsied in Habana without the finding of any rats that were plague infected.

ADDITIONS TO QUARANTINE REGULATIONS—PRECAUTIONS AGAINST RATS LEAVING VESSELS.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
Washington, July 10, 1912.

To National, State, and local quarantine officers, collectors of customs, shipowners and agents, and others concerned:

In accordance with the act of Congress approved February 15, 1893, and to further prevent the entrance of plague into the United States, the following regulation, in addition to those contained in Quarantine Regulations of the Treasury Department issued October

20, 1910, is hereby promulgated and shall remain in force until otherwise ordered:

Vessels from ports in South America and the West Indies, Africa, Russia, China, India, and the Pacific Islands, while lying in United States ports, shall have all lines or hawsers leading to wharves or shore, protected by rat guards (for description see p. 907, Public Health Reports, June 7, 1912), and all gangplanks shall be raised at night unless men be placed nearby to destroy escaping rats.

FRANKLIN MACVEAGH,
Secretary.

THE TECHNIQUE OF THE LABORATORY EXAMINATION OF RATS FOR PLAGUE.

Being a condensation of an article on "Plague Infection in Rats," by GEORGE W. MCCOY, Passed Assistant Surgeon, Public Health Bulletin No. 30, "The Rat and its Relation to the Public Health."

The clinical manifestations of plague in rats are of little importance. It is generally said that the plague-infected rat staggers about with a drunken gait, loses fear of its natural enemies, and is readily captured. The experience with artificially infected rats indicates that the animals show no marked manifestations of illness until shortly before death when they become quiet, crouch in the corner of the cage, and try to hide.

As plague is a disease that gives rise to such characteristic gross pathological lesions in man and in laboratory animals, it is but reasonable to expect that equally distinctive lesions would be found in the rat, and this we find to be the case.

As to the comparative value of microscopical and macroscopical methods of diagnosis, the Indian Plague Commission (3) states that:

The results of tests carried out for the purpose of comparison make it manifest that the naked eye is markedly superior to the microscopical method as an aid in diagnosis, and as the result of our experience we are prepared to make a diagnosis of plague on the strength of the macroscopical appearances alone, even though the other results of cutaneous inoculation and culture are negative and the animal shows signs of putrefaction.

To one who is acquainted with them, these lesions are as characteristic as those of any infectious disease in man. It is quite true that occasionally atypical cases are encountered where the majority of the gross lesions are wanting, and in such cases it becomes necessary to resort to the inoculation of animals or to cultural investigations in order to make a diagnosis. Such cases are, however, if anything, rarer than are atypical post-mortem findings in pneumonia or in typhoid fever in man.

MODE OF EXAMINATION.

The mode of examining rats for plague infection is as follows:

Rats are immersed in any convenient antiseptic to kill fleas and other ectoparasites that might carry infection from the plague-infected rat. They are then nailed to a shingle by an attendant. Another attendant reads off the address on the tag attached to the rat, puts a check number on the shingle, and records the address and check number on the card shown on page 1187. After being checked, the rats are dissected by reflecting the skin from the whole front of the body and neck so as to expose the cervical, axillary, and inguinal

cavities, and by opening the thoracic cavities with scissors. After examination by the medical officer, they are removed from the shingle and any plague-infected rats burned as soon as the necessary investigation has been made. Careful search for buboes should be made in the regions of the various peripheral lymph glands, and the abdominal and thoracic organs subjected to careful scrutiny. This work should be done in a rat-proof, well-lighted building provided with water, gas, and sewer connections. The utmost care should be taken to avoid any undue risk of infection. The wearing of rubber gloves is not necessary. Everyone who has to handle infected animals must be sufficiently alive to the danger of infection.

In the extensive work conducted by the Indian Plague Commission (3) attendants were protected with Haffkine's prophylactic. This is undoubtedly a wise precaution and should be taken if possible.

A lead-topped worktable which slopes gently from the sides and ends toward the center, where a drainpipe leading to a vessel containing a disinfectant is attached, is very useful.

The layman of average intelligence readily learns to recognize the gross lesions of rat plague and it is wise to train laboratory attendants to do this. Every rat should be subjected to careful scrutiny by the physician responsible for the work. The majority of rats may be put aside after a cursory examination as entirely beyond suspicion of infection. Probably 8 or 10 per cent of them will require a very careful examination for the gross lesions of plague. A card which has been found useful for keeping records of suspected and infected animals is shown on page 1187.

THE GROSS LESIONS OF NATURAL RAT PLAGUE—ACUTE PLAGUE.

SUBCUTANEOUS INJECTION.

This is the sign which usually first attracts attention. White (4), in discussing plague in rats, states that "the most noticeable post-mortem appearance of the plague rat is the engorgement of the subcutaneous blood vessels, together with a diffuse pink color of the subcutaneous muscles, which have a peculiar dry, waxy translucency." It is frequently the case to have an attendant who is dissecting rats remark that he had found an infected rat after the first incision was made in reflecting the skin. The injection is dark red, and upon close inspection the small vessels are seen uniformly distended with blood. It is usually distributed over the whole surface of the body, but occasionally it is confined to the side of the body on which the primary bubo was found. A bright pink injection is a rather common finding, but it is not likely to be mistaken for the injection of plague infection. Subcutaneous edema, confined to the vicinity of the bubo, is occasionally encountered.

In San Francisco an injection identical in appearance with that found in plague infection was found only twice, and in each case there was associated with it a small discharging subcutaneous abscess. There were no other lesions in either case; and the pus from these abscesses failed to produce plague in guinea pigs.

In a series of 61 consecutive plague rats in San Francisco, injection was present fifty-two times; it was confined to the region of the bubo twice; it was unilateral twice; and was general in distribution forty-eight times. It was slight thirteen times, moderate fifteen times, marked sixteen times, intense eight times.

THE BUBO.

This is the most reliable single sign of plague infection, and when present in typical form is sufficient evidence on which to base a diagnosis which rarely proves erroneous.

The gland involved is usually surrounded by a more marked injection than is present elsewhere, and an infiltration which at times is hemorrhagic. This surrounding hemorrhage which was common in the plague rats described by the Indian Plague Commission was met with very rarely in San Francisco. The gland proper is usually caseous. The contents may be shelled out very readily, though prior to section the gland feels very firm. In the cases seen in San Francisco, the contents of the buboes were recorded as being hemorrhagic four times and as caseous twenty-nine times. Pestlike bacilli were noted as present in 18 cases, in 6 of which the "coccoid" form predominated. They were recorded as absent five times.

Indolent enlargement of the lymph glands is very commonly encountered in rats that are not infected with plague. Among old rats probably 15 per cent will show this. Such glands, however, are tough, elastic, and not surrounded by infiltration. They are not likely to be mistaken for the plague buboes. In the leprosy-like disease of rats, the glands may reach an enormous size.

Observers differ as to the location of the primary bubo. Skschivan (1) states definitely the location of five primary buboes in plague rats seen in Odessa in 1901. Two were in the axilla, two in the inguinal region, and one in the neck. Kitasato (5) says:

To judge from the experience of the past, it can be suggested that in examining rats particular attention should be paid to their submaxillary and cervical glands and to the spleen. These organs, in most cases, show the evidence of infection, if there be any.

From this it would appear that he regarded the neck glands as the most frequent seat of the bubo. It may be remarked here that his experience was derived from plague rats seen in Asia.

There was a marked difference between the experience in San Francisco and that in Bombay. This is demonstrated in the following table, which shows the location in percentage of single buboes in each situation:

	Neck.	Axilla.	Groin.	Pelvis.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Indian Plague Commission, Bombay—2,923 rats (3).....	75	15	6	4
Wherry, Walker, and Howell, San Francisco (6)—8 rats.....	12	12	75	.....
Federal laboratory, San Francisco—32 rats.....	.....	22	72	6

The American figures are too small to be of much significance, but one is struck with the fact that in Bombay three-fourths of the buboes are in the neck, while in San Francisco three-fourths of all found are in the inguinal region. We have records of only three multiple buboes found in rats in San Francisco, and in no case was either of the buboes in the neck; while in Bombay, to quote from the report (3), "Of the rats with multiple buboes, 54.5 per cent had a bubo in the neck." Striking as these figures are, there is further evidence that the inguinal region is the commonest location of the bubo in plague rats in this vicinity.

Particular care was taken to look for cervical buboes, as it seemed rather inconsistent to find the other lesions so fully in accord with those found in India, yet to have the location of the bubo to differ so radically. We have not encountered a mesenteric bubo in our work in San Francisco. The Indian Plague Commission found none in over 5,000 naturally infected plague rats. As mesenteric buboes are very commonly encountered in plague infection brought about by feeding, they conclude that the absence of these buboes in naturally infected rats is strong evidence that the infection does not enter by the alimentary canal.

THE GRANULAR LIVER.

Two lesions of the liver are encountered in plague rats. The one most frequently observed is spoken of by the Indian Plague Commission as "fatty" change, though it is explained that this term refers to the naked eye appearance, as microscopically the lesion is found to be due to a necrosis of the liver tissue. When this change is present the organ is found to be rather yellowish in color and is studded with an enormous number of yellowish white granules which are about the size of a pin head. This lesion, which was very common in the San Francisco cases, is very readily recognized.

The other lesion is a marking of the organ with grayish white spots; "they are typically of the size of a pin's point, and give the surface of the organ a stippled appearance as if dusted over with gray pepper" (3, p. 331). This appearance, which is less frequently encountered than is the preceding one, is more difficult to recognize; indeed the most careful scrutiny is necessary to avoid overlooking it.

Rats that have been fed with certain biological preparations used to destroy rodents (Danysz's virus and similar preparations) often present lesions in the liver resembling those due to plague infection. The granules are, however, larger and more distinct. In these cases the spleen is enlarged and generally granular, but rarely dark and friable, as in plague infection.

THE SPLEEN.

The size of the spleen of healthy rats of the same weight varies so greatly that often one can not be sure as to what constitutes an enlargement of this organ.

In plague rats this organ is markedly enlarged, firm, friable, rather dark in color, and occasionally presents small granules under the capsule. As Skschivan (1) pointed out, these granules are not encountered as often as are granules in the liver. At times the organ presents a very distinctly mottled appearance. This latter appearance is much more frequently seen in artificially inoculated rats than in those found infected in nature. The organ is occasionally distinctly slate colored.

PLEURAL EFFUSION.

This sign of rat plague is of great importance when associated with other suspicious lesions. The effusion is bilateral, and is serous in character, usually clear, though it is occasionally bloodstained. Pleural effusion is rarely found in rats other than those that are

plague infected. The following table shows in percentage the frequency of the various macroscopical lesions of acute natural rat plague, as observed in Bombay and in San Francisco:

	Subcutaneous injection.	Bubo.	Granular liver.	Large dark spleen.	Pleural effusion.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Indian Plague Commission, Bombay—4,000 rats.....	69	85	58	.....	72
Wherry, Walker, and Howell, San Francisco—88 rats.....	59	14	14	68	71
Federal laboratory, San Francisco—62 rats.....	85	57	87	74	59

It is recognized that the data from the San Francisco records is so much smaller than that from the Indian report that perhaps no just comparison is to be made. However, the figures are quite similar, except for the small percentage of buboes and of liver lesions in the work of Wherry, Walker, and Howell. The work of these observers was done in the early part of the epizootic in San Francisco while the other figures from that city are drawn from records later in the campaign. No single sign is pathognomonic.

It is a combination of two or more of the signs that is of moment. The subcutaneous injection with a typical liver or these signs associated with a typical spleen afford good grounds for a diagnosis. A rat showing a typical liver associated with a pleural effusion will usually prove to be plague infected, and if a large, dark, firm spleen is also found a diagnosis may be considered as practically established.

As has been pointed out by several writers gross lesions of plague may be distinguished even in rats that are badly decomposed.

CHRONIC PLAGUE.

No case of natural chronic plague has been encountered in San Francisco. Only one case was found among the many hundreds of plague rats examined by the Indian Plague Commission (3, p. 457) in Bombay. However, this commission encountered a considerable number of cases among *Mus rattus* in the Punjab villages of Kasel and Dhand. The lesions were purulent, or caseous foci. They classify these cases as follows: Chronic plague of the visceral type, which is further subdivided into splenic nodules and abscesses, and mesenteric abscesses; chronic plague of the peripheral type in which abscesses are situated in the regions of the peripheral lymph glands.

Plague bacilli were either absent or very scanty upon microscopical examination. They were, however, quite frequently recovered by cultural methods, and in the great majority of the cases the organisms were fully virulent. No evidence was forthcoming to show that this chronic rat plague had anything to do with the recurrence of acute plague among the rats.

We have diligently sought for chronic plague among the rats in San Francisco, but, as we said above, without success, although a considerable number of lesions that correspond perfectly to the description of chronic plague have been submitted to the guinea-pig inoculation test, but invariably with a negative result. An account of the lesions of chronic plague as observed among inoculated rats is given in another part of this paper.

Pound (7) believes that recovery from plague in rats is shown by the presence of pigmented lymphatic glands. Kister and Schumacher (2) mention pigment deposits in the inguinal region, but remarked that they are not characteristic of plague, a view which McCoy believed was correct, as he frequently saw them in San Francisco among the older rats, in which there was no reason to suspect previous plague infection, and they were almost uniformly absent in rats that were experimentally infected with plague.

RAT PLAGUE WITHOUT GROSS LESIONS.

Plague infection may be present in a rat without bringing about any recognizable gross lesions. For example: Dunbar and Kister (8) mention a rat, which came from a ship on which plague rats had been found, that had no lesions, and cultures were negative; but a guinea pig cutaneously inoculated died of plague.

Among a considerable number of inoculated rats perhaps once or twice in a hundred cases there was found nothing at the post-mortem examination that would suggest plague infection, yet cultures or inoculation of guinea pigs would demonstrate the presence of *B. pestis*. Such cases are very infrequent, but it should be kept in mind that they do occur. When a large number of rats are to be examined it would be impracticable to inoculate a guinea pig from each rat; and even if one did this the occasionally resistant guinea pig would introduce a larger error than exists by placing dependence upon the gross lesions for a diagnosis.

MICROSCOPICAL EXAMINATION.

The exact weight to be given to the morphology of the organisms found in smears from the organs of a rat suspected of being plague infected is a matter of individual judgment. Smears from a bubo and from the spleen may show no organisms at all, or none even remotely resembling *B. pestis*, and yet by culture and inoculation methods we may be able to demonstrate that the animal is plague infected. Attention has been called to this point by several observers and every worker in this field has the experience sooner or later.

In other cases the smears will show such numbers of perfectly typical bipolar bacilli and "involution" (coccoid) forms as to leave scarcely any doubt as to the nature of the organism. But even here cases that are not plague are encountered that will deceive even the most experienced. We have been accustomed to put great dependence on the "coccoid" forms of the organism, but late in the San Francisco experience smears from a splenic nodule that was not regarded as due to plague showed perfectly typical "involution" ("coccoid") forms. Animal inoculations and cultures showed that the tissues contained no plague bacilli.

In addition to these two classes of cases we have a third, where smears show a few typically shaped bacilli, or where a considerable number of typical-looking bacilli are found along with many other bacterial forms. There is no safe rule for reaching a conclusion in these cases, and one must resort to culture or to inoculation methods, or both. In any such case it is always a good plan to let the macroscopical findings have more weight than the microscopical.

The bipolar appearance of *B. pestis* is so largely dependent upon the technique of staining, fixing, length of time the stain is allowed to act, and the length of the washing that it should never be given great weight. Here, as elsewhere in bacteriology, many errors are to be avoided by not depending too much upon the morphology of the organism under investigation.

BACTERIOLOGICAL DIAGNOSIS OF RAT PLAGUE.

While the gross lesions of rat plague are often sufficiently characteristic to justify a positive diagnosis, and the gross lesions in conjunction with the microscopical examination will in other cases enable us to say definitely that a rat is plague infected, still a certain number of cases occur in which it is necessary to resort to other methods, and there are circumstances, such as the first case in a community, that make a complete bacteriological confirmation of a diagnosis necessary.

B. pestis may often be isolated in culture from the tissues (bubo, liver, spleen, or heart's blood) of an infected rat. Unless the tissues are badly contaminated with other organisms, plate or stroke culture will yield a growth of *B. pestis* in pure culture, or isolated pestlike colonies may be transferred to other media.

It is unwise, however, to trust to cultural methods alone. In the majority of doubtful cases it is advisable to inoculate guinea pigs or white rats. The lesions of plague in these animals are quite characteristic, and *B. pestis* may readily be recovered from their tissues if cultures are made at once after death.

A pure culture of the organism under suspicion is obtained from the naturally infected animal or from a laboratory animal inoculated from the one under suspicion. This culture is studied in regard to its morphology; first, on agar, where it grows as a short rod, or often in the shape of a coccus; second, in broth, where it often grows in streptococcuslike chains; third, on agar containing 3 per cent sodium chloride, where most extraordinary alterations in morphology occur, giving large balloon-shaped bodies, objects resembling gigantic cocci and enormous trypanosome-shaped forms, the so-called "involution" forms. These involution forms must not be confused with the so-called "involution" (coccoïd) forms of the organism found in smears from animal tissues.

The great diagnostic value of involution forms developed when *Bacillus pestis* is grown on salt agar should be noted. No other organism gives forms that are at all likely to be mistaken for those of *Bacillus pestis*, except *B. mallei*, and of course the other points of difference would at once serve to distinguish the latter organism.

B. pestis is Gram negative, though this point is of no great value except to distinguish the "coccoïd" forms from pus cocci.

The appearance and character of the culture should be as follows:

Agar.—Smooth, glistening, round, whitish colonies, which are found to be sticky when touched with an inoculating needle.

Broth.—A scanty surface growth which falls, often in globular masses, when the tube is gently agitated; and a fine flocculent precipitate.

Litmus milk.—Generally rendered slightly acid.

Glucose broth.—Rendered slightly acid. Gas is not formed.

Lactose broth.—Unchanged in reaction. Gas is not formed.

The other cultural reactions are of no material assistance in the identification. In routine work the appearance of the growth on agar and in broth, together with the involution forms on salt agar, is sufficient for identifying the organism.

The plague bacillus is a nonmotile organism, a point worth bearing in mind.

A culture answering the above description when rubbed into the shaven skin of a guinea pig or a white rat should cause the death of either of these animals of plague within 10 days, and an organism must be isolated from their tissues after death corresponding to the one inoculated.

If one wishes to be doubly certain, one may inoculate a series of laboratory animals, giving to half of them a sufficient dose of anti-pest serum. The protected animals should recover, or markedly outlive the controls, which should die in the usual time.

As to the virulence of cultures of the bacillus from cases of rat plague Klein (17) states "that *B. pestis* bred in the rat is of decidedly less virulence than that bred in the human subject; moreover, the former is liable, outside the animal body, to a much greater extent to rapidly lose its virulence." It is evident that in any given epidemic it will be very difficult to say just which strain, rat or human, one is dealing with.

In the case of the strains of *B. pestis* recovered from rats in San Francisco we have seen nothing to justify such an opinion as Klein expresses. The cultures are all highly virulent and retain their virulence under artificial cultivation.

The value of inoculation by the cutaneous method to demonstrate the presence of plague infection in putrefying tissue is well known.

Kolle and Martini (9) compares the cutaneous method of inoculation to the use of an agar plate in separating plague bacilli from other organisms, and so regularly does *B. pestis* penetrate the skin and infect the animal, and so rarely do other organisms do this, that it offers a certain and accurate method of "filtering out" *B. pestis* from any badly decomposed tissue.

The technique of the cutaneous method of inoculation, or "vaccination," as it is sometimes called, is very simple. An area about an inch square is shaven on an animal's belly, taking care to abrade the epithelium slightly. The culture or suspected tissue is rubbed on this shaven area with a platinum loop or a dressing forceps. Guinea pigs when inoculated in this manner generally die before the seventh day; white rats die a day or two earlier.

Kister (10) uses a drop of juice from an organ rich in bacilli for agglutination experiments with anti-pest serum. This would appear in many cases to be of very material assistance, and the objection that it is difficult to form a uniform emulsion of the bacteria would be avoided. The well-known tendency of *B. pestis* to grow in clumps in culture is the main reason why agglutination reactions have not been more extensively used in plague work.

Skschivan (1) makes use of Pfeiffer's phenomenon in establishing the identity of a given organism as *B. pestis*.

To assist in the early diagnosis of plague, Dunbar and Kister (8) practiced intraperitoneal inoculation of laboratory animals and used a parallel series of immunized animals. As is well known, intra-

peritoneal inoculation with plague cultures or infected material leads to the early death of the inoculated animal, and it is evident that the survival of the immunized animal would afford considerable evidence that the material used for inoculation contains *B. pestis*.

PEST-LIKE BACTERIA FOUND IN RATS.

The somewhat general impression that there are a considerable number of organisms that are readily mistaken for *Bacillus pestis* is not justified, provided one gives attention to cultural and inoculation investigations. It is quite true that there are a considerable number of organisms which in smears from tissues are scarcely to be distinguished *morphologically* from *B. pestis*. The similarity, however, usually ends there. A few resemble plague somewhat closely in cultural reactions, and especially *B. pseudotuberculosis rodentium* (Pfeiffer) should be mentioned here; but these differ in pathogenicity. For example, the above-named organism is not pathogenic for rats.

Neumans (11) reviews the subject of pest-like organisms pathogenic for rats, and describes an organism belonging to this group which he isolated from the body of a rat. His work clearly shows that none of the organisms that have been described should cause any serious difficulty in the hands of a careful investigator.

Kister and Schmidt (12) describe an organism closely resembling *B. pestis* in many respects, and with which guinea pigs could be successfully infected by the cutaneous method. This organism, which was also pathogenic for rats and mice, belongs to the hemorrhagic septicemic group. It differed from *B. pestis* in that it gave no involution forms when grown upon salt agar and was much more rapidly fatal to laboratory animals.

Augeszky (13) observed an epidemic among gray rats in his laboratory which was due to a pest-like organism belonging to the Friedlander group. The animals died after a couple of days of illness. At the post-mortem examination the spleen was found large, soft, and congested. There was a hyperemia of the intestines, lungs, and liver. In the spleen were found many, and in the heart's blood few, capsulated bacilli, some of which resembled *B. pestis*. The cultural reactions were in nowise similar to those of *B. pestis*. He found that inoculation of rats with a pure culture of this organism sometimes killed in as short a time as 24 hours, sometimes as late as two or three weeks, and in some cases the lesions were not very unlike those sometimes produced by *B. pestis*. However, this organism by its different cultural reactions, and the fact that the capsule is usually easily demonstrated, would probably never be a source of any confusion.

ARTIFICIAL INFECTION OF RATS WITH PLAGUE.

For laboratory purposes in general it is customary to use tame white rats, and in plague work they are especially satisfactory, as they are easily handled, rarely harbor fleas, are very susceptible to the infection, and finally and most important, they frequently die a day or two earlier than guinea pigs. At times it may be necessary to use wild rats on account of a failure in the supply of white rats or for the sake of economy. This may be done very satisfactorily, if one bears in mind the fact that a considerable number of wild rats are more or

less immune to plague infection, especially when the infectious material is introduced by Kölle's (cutaneous) method. Therefore it is always advisable to use three or four wild rats where one white rat would be sufficient. They should be kept in a container of such design that there is no possibility of their escaping. The inoculation is best conducted with the animal under the influence of ether.

MODES OF INFECTION.

Rats may be infected experimentally by the ingestion of contaminated material and by the application of virulent plague bacilli to a mucous or a cutaneous surface or by subcutaneous injection of the organism.

Practically we may confine our study to inoculation by the cutaneous method and to subcutaneous inoculation when the material is injected in the ordinary manner. A useful modification of the latter method is to make a small pocket under the skin of the abdomen and thrust the suspected material into this pocket. This avoids the necessity of making an emulsion of infectious matter, such as the organs of an animal. The time that elapses between the inoculation of a rat with virulent culture of plague bacilli and its death varies somewhat with the size of the dose and with the mode of inoculation.

The *lesions* found, when an artificially inoculated rat is examined after death, are in a general way similar to those found in naturally infected rats with certain differences to be mentioned later.

LOCAL REACTION.

The most striking difference between natural and artificial plague in rats is the presence of a reaction at the site of inoculation in the majority of cases where the organism is introduced subcutaneously, and in about a third of the cases where the infectious material is rubbed on the shaven skin (cutaneous inoculation). The local reaction may exist only as a yellowish-brown crust overlying a granulating surface, and associated with a trifling thickening of the skin and subcutaneous tissue. It may appear as one or more firm papules 3 or 4 millimeters in diameter. The most frequent appearance is a brawny edematous and blood-stained reaction, which extends over an area perhaps an inch in diameter; at times purulent change may be well advanced. Very rarely one finds so extensive an edema as to cause the lesion to somewhat resemble the widespread gelatinous reaction seen so commonly in the guinea pig. Occasionally an extensive slough has been seen at the site of inoculation.

BUBO.

It is very exceptional that one finds in cases of induced plague the typical, firm, caseous bubo surrounded by an infiltrated area, as is so commonly seen in natural infection in rats. The glands are sometimes enlarged and injected without other changes. The commonest lesion, however, is a markedly enlarged gland which upon close inspection is seen to have a number of yellowish points just under the capsule. These points are especially well seen when a section is made through the gland. The gland may be squeezed out of the capsule, and it breaks down readily enough when pressure is made upon it, but the uniform necrotic process that one sees so often in natural rat plague is absent.

LIVER.

Granular lesions precisely like those found in natural infections are very common. If the rat has died on the sixth day or later, the ordinary lesions are apt to be replaced by necrotic foci that may be as much as 2 millimeters in diameter.

SPLEEN.

This organ is found mottled more frequently than in natural plague infection, and large granules are much more common.

The subcutaneous injection is rarely so well marked as it is in natural infections.

Pleural effusion of the same nature as that found in natural plague is common. Hemorrhagic foci are not rare in the lungs, and occasionally the organs are partly consolidated.

CHRONIC PLAGUE DUE TO ARTIFICIAL INOCULATION.

Occasionally a rat that has been inoculated but has survived a week or longer, will show, when killed, only an abscess at the site of the injection. Stained smear preparations may show a large variety of bacterial forms. We have not been able to demonstrate the presence of *B. pestis* in these lesions, yet there is no doubt but that the lesion is the result of the inoculation.

A lesion more frequently found is a caseous or a purulent lymphatic gland. If the inoculated rat has been killed about 10 days after the inoculation, in some cases one or more of the peripheral lymph glands will be found to be surrounded by an infiltration, and the gland itself will be purulent or less frequently caseous. Such lesions are occasionally met with in rats in which there is no suspicion of plague infection; but they are seen so frequently among rats that have survived artificial inoculation with *B. pestis*, there is no doubt but that in these cases they are the result of the inoculation. In several such cases pestlike organisms have been demonstrated in smears, and acute plague has been produced in guinea pigs by inoculation with the pus found in these lesions. Not infrequently in these cases the spleen will be found enlarged and looking very much like the organ in acute plague, but cultures from this organ in such cases have in my experience remained sterile.

In other cases the only lesions will be found in the spleen. The organ is enlarged and contains a number of caseous nodules. These nodules vary in number from 4 or 5 to 30 or 40 and in size from the head of a pin to a lesion 0.3 centimeter in diameter. In a number of such cases the nature of the lesion has been demonstrated by animal inoculation. For example, in a series of experiments carried out to determine the susceptibility of San Francisco rats to plague infection a large *Mus rattus* died on the eleventh day after inoculation. The post-mortem examination showed nothing except an enlarged spleen which contained about a dozen caseous nodules, the largest of which was not over 2 millimeters in diameter. The nodules were very firm and the capsule smooth, so that they were held with difficulty with dressing forceps. Cultures from the liver and the spleen remained sterile, but a piece of the spleen was placed beneath the skin of a guinea pig. This animal died of acute plague, and a pure culture of *B. pestis* was isolated from its liver. In some of these

cases the liver will show large, distinct, whitish caseous foci. In another case a small *Mus norvegicus* was killed on the twelfth day after a cutaneous inoculation from an artificially infected squirrel. No lesion was found except in the spleen which was not materially enlarged, but which presented two small whitish caseous granules on the surface, neither being over 1 millimeter in diameter. A piece of the spleen containing one of these granules was put under the skin of the belly of a guinea pig. The guinea pig died on the fourth day with the usual lesions of acute plague. Occasionally in these cases of chronic plague punctate hemorrhages or even areas of consolidation are found in the lungs.

THE HISTOLOGY OF RAT PLAGUE.

Recent and satisfactory work on this subject is that of Ledingham (14), who has studied the lesions of both natural and induced plague in rats. The following is a very brief abstract of his work. The reader is referred to the original for a full study of the subject.

NATURAL RAT PLAGUE.

Two groups of cases are distinguished. First, those in which a large number of *B. pestis* are found in the liver and in the spleen. In the spleen this is accompanied by hemorrhages and congestion of the pulp sinuses and in the liver with congestion of the capillaries. These are early cases.

In the second group, or the later cases, there are extensive reaction changes in the tissues. In the spleen this leads at times to distinct abscess formation, but more frequently to a walling off of the foci of necrosis. In the liver more or less focal necrosis is found; sometimes the areas of "necrosis" may be so extensive that little healthy liver tissue remains. Bacilli are usually to be demonstrated in these areas of necrosis. Giant cells of the Langhans type may be found in the neighborhood of these foci.

The granular appearance of the liver is attributed to "hemorrhages and the focal necroses, together with the fatty changes in the liver cells. It must be understood, however, that a peculiar honeycomb-like vacuolar degeneration of the liver-cell protoplasm was far more frequent than any actual, coarse, fatty infiltration. The granular appearance of the spleen is due partly to endothelial catarrh and partly to subcapsular changes."

In experimental rat plague Ledingham found the lesions to resemble those of the first group of cases referred to above. There is usually marked bacteremia; focal necroses of the liver are scanty.

In a chronic case, minute abscesses were found scattered through the spleen. In the center of the abscesses were found clumps of degenerated bacilli. The areas were walled off by epithelioid and spindle cells and numerous giant cells of the tubercular type.

IMMUNITY OF RATS.

Contrary to the general impression the wild rat is not an animal especially susceptible to plague infection. The Indian Plague Commission (19) found that when rats are inoculated by the cutaneous method from the spleen of infected rats 59 per cent are immune to infection. A series of experiments conducted in the Federal laboratory

in San Francisco showed that when inoculated with highly virulent cultures of *B. pestis* there is an immunity which is, however, more frequent among the large rats. When inoculated cutaneously with tissue containing large numbers of *B. pestis* from plague-infected human beings, rats, or squirrels, about 15 per cent of small rats and about 50 per cent of large ones were found to be immune. There is no good reason for believing that this immunity of San Francisco rats was due to a previous attack of the disease. Indeed, it was known beyond a doubt that some of the immune rats had never had an opportunity of becoming infected with plague in nature and thereby establishing an acquired immunity. We may mention here the fact that has been observed by many workers, and which we have amply confirmed, that rats are readily immunized by antiplague serum.

The subject of the transfer of infection directly from rat to rat by cutaneous or subcutaneous inoculation through a series of the animals is one that is evidently intimately associated with the preceding subject, as it is quite evident that an immune rat or several of them might terminate a series without any actual diminution in the virulence of the organism transferred. It is quite plain that the success of such an experiment would depend largely upon the number of rats used in each transfer. The Indian Plague Commission (19) had no difficulty in carrying infection through 26 transfers, using from 6 to 50 rats in each transfer.

Pound (7) in a series of eight experiments, was never able to convey the infection successfully beyond the sixth rat, using but one rat for each transfer. There was no apparent lessening of the virulence of the organism and each series appears to have been terminated abruptly by encountering an immune rat.

Baxter-Tyrie (15) says:

It is probable that under certain natural circumstances a reduction in the virulence of the organism is effected and a comparative immunity is conferred on the rats. The infection of immigrant rats is, however, severe, and their arrival is heralded by a heavy mortality. In the same manner an infected rat imported into a fresh locality produces a similar result. This attenuation of virulence is responsible for the condition known as chronic rat plague.

Several experiments conducted in San Francisco to determine this point have given results that are regarded as showing merely the presence of a considerable percentage of immunity among the rats. It was observed that in each case certain of the rats died of acute plague even in the last transfer. It was very evident that had certain combinations of immune rats been encountered the experiment might have terminated at any point. On the other hand, by being especially fortunate in using nonimmune rats, the experiments might have given a much higher percentage of cases of acute plague. Unfortunately it was necessary to terminate these experiments in each instance before they could be regarded as completed.

The reason for the natural subsidence of plague among rats in any community is a point about which much more evidence must be obtained before we can speak with any degree of certainty. It may be due to the lack of susceptible material, possibly to a loss of virulence of the organism; but it seems more probable that it is due to a change in the number or relations of the ecto-parasites of the rat.

Adequate measures of rat extermination, while they may never bring about the ideal condition of a community that is free from rats, are, as is shown by the recent experience in San Francisco, of the utmost value in shortening the epizootic.

REFERENCES.

- (1) Skschivan (Centralblatt für Bacter., etc., 1903, Vol. XXXIII, No. 4, p. 260).
- (2) Kister & Schumacher (Zeit. für Hyg. u. inf. Krank., Vol. LI, 1905).
- (3) Indian Plague Commission (Journal of Hygiene, 1907, Vol. VII, No. 3).
- (4) White (Medical Record, vol. 67, No. 4, Jan. 23, 1905)..
- (5) Kitasato (Philippine Journal of Science, Vol. I, No. 5, 1906).
- (6) Wherry, Walker & Howell (Journal Am. Med. Assn., April 11, 1908, Vol. L, No. 15).
- (7) Pound (1907, Report on Plague in Queensland, B. B. Ham, p. 134).
- (8) Dunbar & Kister (1904, Centralblatt für Bact., etc., Vol. XXXVI, No. 1, p. 127).
- (9) Kolle & Martini (Deut. Med. Woch., Jan. 2, 1902, Vol. XXVIII).
- (10) Kister (Centralblatt für Bact., etc., July 24, 1906, Vol. XLI, No. 7).
- (11) Neumans (1903, Zeit. f. Hyg. u. inf. Krank., Vol. XLV, No. 3, p. 451).
- (12) Kister & Schmidt (1904, Centralblatt für Bact., etc., Vol. XXXVI, No. 3, p. 454).
- (13) Aujeszy (1904, Centralblatt für Bact., etc., Vol. XXXVI, No. 5, p. 603).
- (14) Ledingham (Journal of Hygiene, 1907, Vol. VII, No. 3).
- (15) Baxter-Tyrie (Journ. of Hygiene, Vol. V, 1905, p. 315).
- (14) Ledingham (Journal of Hygiene, 1907, Vol. VII, No. 3).
- (15) Baxter-Tyrie (Journ. of Hygiene, Vol. V, 1905, p. 315).
- (16) Wherry (The Journal of Infect. Diseases, Dec. 18, 1908, Vol. V, No. 5).
- (17) Klein (The Bacteriology and Etiology of Oriental Plague, MacMillan and Co., London, 1906).
- (18) Indian Plague Commission (Journal of Hygiene, 1907, Vol. VII, No. 6, p. 761).
- (19) Indian Plague Commission (Journal of Hygiene, 1906, Vol. VI, No. 4).

SPECIMEN RAT RECORD CARD.

Legend: O=Ordinary; W=White belly; R=Red; Go.=Gopher rat; S=Small; M=Medium; L=Large
M. R.=Mus rattus; M. N.=Mus norvegicus.]

No.	Date.	District No. 6.	Sex.		Size.			M. N.				M. R.		Preg- nant.		
			M.	F.	S.	M.	L.	O.	W.	R.	Go.	O.	W.			
19	Dec. 10, 1908	401 Fillmore Street....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	.....do.....	.....do.....	.....	1	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	17

¹ Number of fetuses.

SPECIMEN PLAGUE RAT CARD.

PLAGUE RAT NO. 50.

Date: June 20, 1908.

Species: *M. norvegicus*.

From District No. 6, sewer, Haight and Steiner Streets.

Condition: Badly injured by trap; thorax crushed.

Subcutaneous injection: General, marked.

Lymphatic glands, bubo or other lesions: Right inguinal bubo, caseous.

Liver: Typical whitish granules.

Spleen: Large, dark, firm.

Pleural effusion: Unable to say.

Purulent or caseous foci:

Diagnosis from gross lesions: Plague.

Diagnosis from smears: Plague (spleen and bubo).

Cultures: *B. pestis* recovered from liver culture.

Inoculation, guinea pig No. 50 A, +6.25.08.

Vaccination, guinea pig No. 50 B, +6.26.08.

Date suspicious:

Date positive: June 20, 1908.

Date negative:

TECHNIQUE EMPLOYED IN THE EXAMINATION OF RODENTS FOR PLAGUE.

By DONALD H. CURRIE, Passed Assistant Surgeon, Public Health and Marine-Hospital Service.

GROUND SQUIRRELS (*CITELLUS BEECHEYI*).

These rodents are secured by shooting, the hunters employing a 12-gauge shotgun loaded with No. 8 shot. As soon as the rodent is shot it is picked up by the hunter and placed in a specially prepared knapsack container. Either immediately or as soon as practicable thereafter a small portion of chloroform is poured into the container, in order to destroy fleas and other ecto-parasites. At the close of the day the several hunters in a given district convene at a certain point and transfer the rodents to large tin containers, having tight covers, similar to those used by dairymen in the shipment of milk. These cans are then sealed and shipped to the plague laboratory in San Francisco.

Immediately upon receipt of the squirrels at the San Francisco laboratory the cans are opened and filled with either bichloride or a solution of one of the phenol compounds, for the purpose of destroying any ecto-parasites that may have escaped the chloroform, as well as the disinfection of blood or other body fluids that may have escaped from the rodents. When this fluid has been allowed to act for a reasonable length of time the laboratory attendants, wearing gowns, rubber aprons, and rubber gloves, remove the rodents from the shipping cans and tack the four feet to a shingle in such a position that the animal's body will be fully stretched with the abdominal surface uppermost.

The animal thus stretched, together with the board, is then placed upon the dissecting table and an incision is made for the full length of the anterior aspect of the animal's body, and from this incision lateral incisions are carried to the skin over to the distal ends of the four limbs. The dissector then lays back the skin on the rodent, exposing to view the subcutaneous tissues over the whole anterior aspect of the body. The bacteriologist having charge of this work then inspects carefully the exposed area, especially noting any injection of vessels, enlargement of glands, collections of pus, or areas of focal necrosis. If any such suspicious appearances are met with a microscopical examination of stained smears from the animal is employed as an assistance to the diagnosis. The necropsy then proceeds in the usual way—the abdomen is opened by an incision through the tissue in the median line, from the lower end of the sternum to the symphysis pubis, and lateral releasing incisions carried from this line at right angles, severing the abdominal muscles; the abdominal cavity is then inspected, special attention being given to the spleen and the liver, the most common site of lesions in plague infection of these animals. Besides this any other abnormality is noted and investigated by means of stained microscopical smears.

An incision is next made through the diaphragm, and the blade of the scissors inserted through this into the plural cavity and by means of this instrument the anterior chest wall is removed, to permit of inspection of the thoracic organs; here, as in the abdomen, the dissec-

tor searches for small white nodules (areas of focal necrosis), collections of pus in large mediastinal glands, etc., using the microscope as an assistance when it appears necessary.

At the conclusion of the necropsy the bacteriologist in charge of this work decides whether, in his opinion, the indications of plague infection in a given animal are sufficiently strong to justify the inoculation of a guinea pig. If he decides that such is the case, the abdomen of a guinea pig is shaved without injury to the skin, and one of the suspicious lesions found in the squirrel is excised and thoroughly rubbed over the surface of the shaved abdomen of the guinea pig.

If the guinea pig dies as a result of the inoculation, of a plague-like infection, cultures are made from the heart blood of the animal, and these cultures, when pure, are carried through cultural tests.

From the evidence obtained by necropsy, microscopical examination, animal inoculation, and cultural tests, the bacteriologist having charge of this work decides whether the squirrel in question was or was not infected with plague.

RATS.

The procedure employed in the handling of these rodents differs only in the means of procuring them; that is, they are trapped, chloroformed to destroy ectoparasites, and brought immediately to the laboratory, where they are examined in the manner just described.

UNITED STATES.

MUNICIPAL ORDINANCES, RULES, AND REGULATIONS PERTAINING TO PUBLIC HYGIENE.

[Adopted since July 1, 1911.]

ELYRIA, OHIO.

FOODSTUFFS—PRODUCTION, CARE, AND SALE—BAKESHOPS, CONSTRUCTION AND MAINTENANCE.

SECTION 1. No person shall bring into the city for sale, or shall sell or offer for sale, any decayed or damaged vegetables or fruit.

SEC. 2. No person shall manufacture or shall bring into the city for sale or shall sell or offer for sale, breadstuffs, cake, pastry, candy, confections, or other articles of food—

(a) Containing any substance which lowers, depreciates, or injuriously affects its quality, strength, purity, or wholesomeness.

(b) Containing any cheaper or inferior substance than it is represented to contain.

(c) Which is in imitation or sold under the name of any other article.

(d) From which any valuable or necessary ingredient has been abstracted or omitted.

(e) Which is colored, coated, polished powdered, or by any other means is made to appear of greater value than it is.

SEC. 3. No person shall expose, sell, or offer for sale any breadstuffs, cakes, pastry, candy, confectionery, or dried fruits outside of any buildings, in any open window or doorway, or on any sidewalk, street, alley, or thoroughfare, except they be covered so as to protect them thoroughly from dust and dirt.

SEC. 4. No person shall sell or offer for sale any butter or cheese except the same be covered so as to protect it thoroughly from dust and dirt.

SEC. 5. Any place used for producing, mixing, compounding, or baking, for selling or for the purpose of a restaurant, bakeshop, or hotel, any bread, biscuit, crackers, rolls, cake, macaroni, pie, or any food products of which flour or meal is the principal ingredient shall be deemed a bakeshop. The regulations of this resolution shall apply also to places, rooms, or buildings where candy is prepared or manufactured.

SEC. 6. Any place used as a bakeshop shall be provided with floors of closely joined impervious material which can be thoroughly cleaned.

SEC. 7. Every baker or other person in charge of any bakeshop shall keep the floors, side walls, ceilings, woodwork, fixtures, tools, machinery, and utensils in a thoroughly clean and sanitary condition, and every bakeshop shall be provided with adequate ventilation so as to insure a free circulation of air at all times.

SEC. 8. The door and window openings of every bakeshop shall, from May 1 to September 30, inclusive, be provided with sound screens of mesh sufficiently fine to keep out flies and other insects.

SEC. 9. The side walls and ceilings of every bakeshop shall be well plastered or sheathed with metal, wood, or tile. All plastered walls or ceilings shall be kept lime-washed or calcimined or shall be painted with oil paint, and all woodwork in every bakeshop shall be well oiled and painted and washed clean.

SEC. 10. Every bakeshop shall be provided with adequate plumbing, including suitable washstands and water-closets. No water-closets shall be entered from or shall be in direct communication with the bakeshop. Every washstand in a bakeshop shall be provided with clean towels at all times.

SEC. 11. No person shall sleep in a bakeshop, and the sleeping places of persons employed in bakeshops shall be kept separate from the place where flour or meal or food products are handled or stored.

SEC. 12. No domestic animals shall be permitted in a bakeshop or place where flour or meal is stored in connection with a bakeshop.

SEC. 13. Every owner or person in charge of a bakeshop shall be required to keep himself and his employees in a clean condition and suitably clothed while engaged

in the production, handling, or selling of bakery products and shall provide a dressing room separated from the placé where flour and meal is stored or kept.

SEC. 14. Receptacles for expectoration, of impervious material, cleaned at least once in every 24 hours, shall be maintained and kept by the person in charge of every bakeshop, and no attendant or other person shall spit on the floor, side walls, or on any place in such bakeshop.

SEC. 15. Smoking, snuffing, or chewing tobacco is forbidden in a bakeshop. Notice forbidding all persons to use tobacco or to spit on the floor or side walls shall be posted in every bakeshop.

SEC. 16. No person who has tuberculosis, a venereal, or other communicable disease shall work in a bakeshop, and no person in charge of such bakeshop shall require, permit, or suffer such a person to be employed.

SEC. 17. Every bakeshop which shall not be kept in a cleanly condition, free from rats, mice, and vermin and from matter of an infectious or contagious nature, is hereby declared to be a public nuisance, and it shall be the duty of the sanitary police to cause the same to be abated.

SEC. 18. Whoever violates any provision of the above resolution, or obstructs or interferes with the execution thereof, or willfully or illegally omits to obey any provision of said resolution, shall be fined not to exceed \$100 or imprisoned for not to exceed 90 days, or both; but no person shall be imprisoned hereunder for the first offense, and the prosecution shall always be as and for a first offense unless the affidavit upon which the prosecution is instituted contains the allegation that the offense is a second or repeated offense.

SEC. 19. This resolution shall be in force and effect from and after the earliest period allowed by law.

[Ordinance adopted July 28, 1911.]

LITTLE ROCK, ARK.

FOODSTUFFS—PROTECTION OF.

SECTION 1. That all owners or proprietors of markets, restaurants, lunch wagons, stands, or counters, grocers, truckmen, vendors or peddlers in the city of Little Rock, selling or offering for sale, fruit or vegetables, cheese, ham, hamburger, sausage, chicken, fish, fowls, tamales, chili con carne, pie, cake, bread, or other food shall be, and they are hereby, required to have the same covered and protected at all times by glass, wood, or screens, and to preserve the same at all times free from exposure to flies and all other pests: *Provided*, That all vegetables, fruits, and foods before named exhibited in buildings properly screened and protected from flies and dust shall not be required to screen for each case or display stand.

SEC. 2. No article of food mentioned in section 1 of this ordinance shall be deposited or allowed to remain within 2½ feet of the surface of any sidewalk, street or alley, or floor of the building where exhibited, unless the same shall be contained in boxes or other receptacles so as to be protected from dogs and other animals and their excretions.

SEC. 3. All meat markets or butcher shops or stalls shall be provided with tight hardwood, tile, or cement floors, and with running water and sewer connections where water mains and sewer pipes have been laid in the street in front or the alley to the rear, and all windows and doors therein shall be properly screened so as to exclude flies. All such places, and all tools, implements, and fixtures used therein shall be kept clean and in a sanitary condition; and all employees, when handling provisions therein, shall wear clean linen or rubber aprons. All delivery wagons used by such places shall be covered so as to conceal the provisions or food therein from view, and shall be kept in a clean and sanitary condition. All food or provisions sold from such places shall be carefully wrapped with and entirely covered by clean paper or material.

SEC. 4. All packers or packing companies, peddlers, vendors, or others handling and delivering meat, mutton, pork or veal, of all kinds, shall keep their delivery wagons in a clean and sanitary condition; that fresh meat be wrapped and delivered in covered wagons; and said food or provisions, in delivering, shall be securely wrapped and entirely covered, protected from, and kept free from exposure to flies or dirt.

SEC. 5. Any person, firm, or corporation violating any provision of this ordinance shall be deemed guilty of a misdemeanor, and, upon conviction in police court, shall be fined not less than \$10 nor more than \$25, and each day's violation shall be treated as a separate offense and punished accordingly.

SEC. 6. This ordinance shall be in force and take effect from and after its passage.

[Ordinance No. 1710, adopted Aug. 7, 1911.]

NASHVILLE, TENN.

MUNICIPAL NURSES FOR CONSERVATION OF INFANTS.

SECTION 1. That the board of health be, and is hereby, empowered and authorized to employ two or more female nurses for the prevention of infant mortality at a salary of not less than \$80 per month nor more than \$85 per month. Said nurses shall be under the control and direction of the city health officer and shall be graduate trained nurses holding certificates or diplomas for proficiency from some reputable hospital or institution.

[Ordinance No. 134, as amended Sept. 18, 1911.]

NEW BEDFORD, MASS.

BAKERIES—CARE AND MAINTENANCE.

RULE 1. It shall be unlawful for any owner, agent, or lessee of a bakery, making use of a portable oven, to cover the same on top with dirt, sand, or ashes, unless the same be protected by some proper covering to prevent dust flying about the room.

RULE 2. The use of openings under ovens as places of storage for coal, coke, and ashes is prohibited, unless the same be placed in covered tight barrels.

RULE 3. The floors of all bakeries must be scrubbed with soap and water once a week and scraped daily.

RULE 4. The plastered walls and ceilings of all bakeries shall be whitewashed once every three months, and where the walls are wainscoted such wainscoting must be painted or shellacked and kept clean.

[Ordinance, board of health, adopted Oct. 2, 1911.]

OIL CITY, PA.

MILK—PRODUCTION, CARE, AND SALE.

RULE 27. At least once in each and every year the board of health shall cause an inspection to be made of every source of supply of milk or cream or both, which may be offered for sale or exchange, or sold or exchanged in the city or for use in the city of Oil City. The inspector and the method of inspection shall be selected by the board of health.

RULE 28. The inspector selected by the board shall have the power and authority to inspect all dairies, cows, utensils, appointments, water supply and methods, and anything which may in any way pertain to the proper producing and handling of milk or cream sold or consumed in the city of Oil City. He shall make a report in writing, on blanks provided for that purpose, of each dairy to the board of health as soon as possible after the inspection is made. Said report shall show the number of points allowed for each item appearing on the blanks, together with any recommendations which he may see fit to make in order to improve the methods employed.

If any cow or cows in any dairy do not come up to the standard as regards the health of the herd, the inspector shall specify the exact condition of such cow or cows and if in his opinion a tuberculin test should be made. If the inspector recommends a tuberculin test the board shall have the test made under the supervision of the State live-stock sanitary board.

RULE 29. No person, persons, or corporation shall sell, exchange, or furnish or offer to sell, exchange, or furnish milk or cream, or either or both, in the city or for use in the city of Oil City, without first procuring from the board of health a permit so to do. All dairies selling milk or cream or either or both for use in the city of Oil City shall procure permits from the board of health before the 1st day of June in each and every year.

RULE 30. The board shall by resolution fix a minimum score for dairies to be entitled to secure a permit to sell milk or cream or both in the city of Oil City. All dairies having the minimum score or a higher score shall be entitled to a permit to sell milk or cream or both in the city of Oil City. However, the board may on recommendation of the inspector of dairies issue a "probationary" permit to any dairy or dairies which shall not reach the minimum score, but which may be making improvements in the condition of their dairy surroundings or methods. The board may at any time revoke for just cause any permit or permits which may have been issued: *Provided*, That the holder of such revoked permits shall be entitled to a hearing on the same before the board, if the permit holder so desires. Should the reasons for revoking a permit be disproved at such hearing then the holder shall be entitled to a return of said permit.

RULE 31. Every vender of milk or cream or both shall have his or her name or the name of the dairy plainly marked, together with the number of the permit, in a conspicuous place on the vehicle or vehicles from which delivery of milk or cream is made.

RULE 32. Any addition of noninspected cows to herds already inspected shall be reported in writing to the board of health immediately, and any failure so to do shall be punishable by a fine of not less than \$1 and not more than \$5 for each such cow for each day while milk or cream or both is sold or offered for sale from said noninspected cow or cows: *Provided*, That the board of health may grant temporary permission for the sale of milk from uninspected cows until an inspection may be made.

RULE 33. No person, persons, or corporation shall sell, exchange, or deliver, or have in their custody or possession with intent to sell, exchange, or deliver, milk from which the cream or any part thereof has been removed, unless in a conspicuous place above the center upon the outside of every vessel, can, or package, from which such milk is sold, the words "skimmed milk" are distinctly painted in letters of not less than 1 inch in length.

RULE 34. No person, persons, or corporation shall sell, exchange, or deliver, or offer to sell, exchange, or deliver, or have in his or her possession or custody with intent to sell, exchange, or deliver, for use in the city of Oil City, any unwholesome, diluted, or adulterated milk or cream, or milk or cream to which has been added any foreign substance (see sec. 1, act of assembly, approved June 26, 1895), or milk known as "swill milk," or milk containing less than 3 per cent of butter fats, or the specific gravity of which, at 60° F., shall be between 1.029 and 1.031, or which upon analysis is shown to contain more than 87½ per cent of watery fluid, or less than 12½ per cent of milk solids; or milk from cows that, for the most part, are kept tied up in the stalls during suitable weather when they should be out of doors and have exercise, or milk from cows that are fed on swill, still slops, or other like food.

RULE 35. As soon as any case of typhoid or typhus fever, scarlet fever, scarlet rash or scarlatina, smallpox, variola, or varioloid, measles, diphtheria, diphtheric croup, diphtheric sore throat, cerebrospinal meningitis (epidemic) (cerebrospinal fever, spotted fever), chickenpox, erysipelas, German measles, tetanus, or tuberculosis in any form shall occur on any dairy premises from which milk or cream or both are sold, exchanged, or supplied in the city of Oil City, the owner, lessee, manager, or superintendent or other person in charge of such dairy premises shall immediately report the same to this board of health, giving full particulars, and refrain from selling, exchanging, or supplying in or for use in the city of Oil City, milk, cream, butter, cheese, or other dairy products from such dairy until authorized to again do so by the Oil City Board of Health.

RULE 36. No person having a contagious, infectious, or communicable disease, or having been recently in contact with or exposed to any person having a contagious, infectious, or communicable disease shall milk any cow or cows, or handle any cans, measures, or other vessels or utensils used for milk or cream, or their products, intended for sale or exchange or use or that may be sold, exchanged or used in the city of Oil City until after the time of quarantine prescribed in the rules and regulations of the board of health shall have expired.

RULE 37. No milk or cream or their products intended for sale, exchange, or use in the city of Oil City shall be kept in any manner in any house or cellar thereof in which there is or has been any contagious, infectious, or communicable disease until said dwelling or part thereof shall have been fully and properly disinfected by the board of health or representative thereof and also until authorized by the Oil City board of health.

RULE 38. All bottles used for the delivery of milk or cream shall be properly cleansed and sterilized each time before being used again. No bottles shall be collected from premises under quarantine until after such quarantine shall have been lifted and the premises properly disinfected by the board of health.

RULE 39. Every person, persons, or corporation conducting or intending to conduct a depot for distributing or bottling milk or cream, or both, for use in the city of Oil City shall make application in writing to the board of health for permission so to do. Said application shall state the location of the depot and the name or names and addresses of dairies from whom milk or cream or both is to be received. No milk or cream shall be received by any depot from any dairy or dairies which have not been inspected and approved by the Oil City board of health.

RULE 40. Any change in the source of supply of milk or cream, or both, by dairy depots shall be promptly reported to the board of health in writing, and no milk or cream shall be received by such dairy depot until after such proposed change shall have been reported to the Oil City board of health and the said dairy or dairies have been properly inspected and approved. Immediately upon the discontinuance of

supply of milk or cream from any dairy or dairies by a dairy depot, said change must be reported to the board of health in writing.

RULE 41. No milk or dairy depot or bottling room for milk or cream or both shall be conducted within the limits of the city, nor outside of the city when the milk or cream therefrom is intended for sale or use in the city of Oil City, unless said depot shall have been first approved by the board of health. All dairy depots or bottling rooms shall have the name of the depot or the owner or owners thereof plainly marked on the front of such place of business, together with the number of their permit issued by the Oil City Board of Health.

RULE 42. The following rules shall govern the condition of the storage or bottling room of all dairy depots:

(1) The floors shall be water-tight and the drainage therefrom shall be connected to properly trapped sewers, and no water shall be permitted to stand or accumulate under the floor.

(2) The room shall be properly ventilated and lighted.

(3) The locality shall be free from noxious odors.

(4) Nothing else, except butter or eggs, shall be kept or stored in said room with milk or cream or both.

(5) All windows and doors shall be properly and securely screened.

RULE 43. When it is not possible to have an inspection made of a dairy which desires to sell or ship milk into Oil City, the board of health may issue a temporary permit to such dairy or dairies, which permit shall remain in force until an inspection of such dairy or dairies can be made.

[Regulations board of health adopted Oct. 18, 1911.]

YONKERS, N. Y.

DISEASED AND DEAD ANIMALS.

SEC. 104. No animal affected with an infectious or contagious disease shall be brought or kept within the limits of the city of Yonkers without a permit from the health bureau. No animal having the glanders or farcy shall be kept, used, retained, or permitted within said city.

SEC. 105. It shall be the duty of every veterinary surgeon who is called to exterminate or professionally attend any animal within the city of Yonkers having the glanders or farcy, within 24 hours thereafter to report in writing to the health bureau the following facts, viz: First, a statement of the location of such diseased animal; second, the name and address of the owner thereof and of the person in whose possession the same may be; third, the type and character of the disease. It shall be the duty of every owner and person in possession of any such animal upon discovery of the fact that it is affected with glanders or farcy to immediately report the fact to the health officer and to remove or dispose of such animal in the manner designated by the health officer.

SEC. 106. No person shall leave in or throw into any public place, street, or water or offensively expose or bury the body, or any part thereof, of any dead or fatally sick or injured animal; and no person shall keep any dead animal or offensive meat, bird, fowl, or fish, in a place where the same may be dangerous to life or detrimental to the health of any person.

SEC. 107. Every person having a dead animal or any animal diseased past recovery or sick with any contagious or infectious disease on his premises in the city of Yonkers, and every person who has in his charge or under his control any animal which has died of any contagious or infectious disease in any street or place in said city, shall at once remove, or cause to be removed, every such animal, and dispose of the same as the health officer may direct.

SEC. 108. Any animal being in any street or public place in the city of Yonkers, and appearing in the estimation of the health officer (and of two discreet citizens called by him to view the same in his presence) injured or diseased past recovery for any useful purpose, and not being attended and properly cared for by the owner or by some proper person having charge thereof for such owner, or not having been removed to some private premises, or to some place designated by the health officer within one hour after being found or left in such condition, may be deprived of life by the health officer or as he may direct; and shall thereafter, unless at once removed by the owner or person having charge thereof for the owner, be treated as any other dead animal found on a street or public place.

[Part of ordinance adopted Dec. 26, 1911.]

PLAGUE-PREVENTION WORK.

PLAGUE-INFECTED SQUIRRELS FOUND.

During the week ended June 22, 1912, positive diagnosis was made of 75 plague-infected ground squirrels found in Alameda and Contra Costa Counties, Cal., as follows: Alameda County, June 6, 1 squirrel; June 17, 2 squirrels. Contra Costa County, June 5, 1 squirrel; June 7, 2 squirrels; June 8, 4 squirrels; June 10, 19 squirrels; June 11, 7 squirrels; June 12, 9 squirrels; June 13, 12 squirrels; June 14, 9 squirrels; June 15, 1 squirrel; June 17, 2 squirrels; June 18, 1 squirrel; June 21, 5 squirrels.

DISTRIBUTION OF POISON.

In connection with the making and maintenance of a squirrel-free zone around the cities of California on San Francisco Bay, 5,360 acres of land in Alameda County were covered with poison during the week ended June 22, 1912.

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.....	Aug. 9, 1911.....	Dec. 1, 1908.....	do.....	126 rats.
Berkeley.....	Aug. 27, 1907.....	None.....	do.....	None.
Los Angeles.....	Aug. 11, 1908.....	do.....	Aug. 21, 1908.....	1 squirrel.
Counties—				
Alameda (exclusive of Oakland and Berkeley).	Sept. 26, 1909.....	Wood rat, Oct. 17, 1909.	June 17, 1912.....	223 squirrels and 1 wood rat.
Contra Costa.....	July 21, 1911.....	None.....	June 21, 1912.....	564 squirrels.
Fresno.....	None.....	do.....	Oct. 27, 1911.....	1 squirrel.
Merced.....	do.....	do.....	July 13, 1911.....	5 squirrels.
Monterey.....	do.....	do.....	Aug. 6, 1911.....	6 squirrels.
San Benito.....	June 5, 1910.....	do.....	June 8, 1911.....	22 squirrels.
San Joaquin.....	Sept. 18, 1911.....	do.....	Aug. 26, 1911.....	18 squirrels.
San Luis Obispo.....	None.....	do.....	Jan. 29, 1910.....	1 squirrel.
Santa Clara.....	Aug. 23, 1910.....	do.....	Oct. 5, 1910.....	23 squirrels.
Santa Cruz.....	None.....	do.....	May 17, 1910.....	3 squirrels.
Stanislaus.....	do.....	do.....	June 2, 1911.....	13 squirrels.
Washington:				
Cities—				
Seattle.....	Oct. 30, 1907.....	Sept. 21, 1911.....	None.....	25 rats.

RATS COLLECTED AND EXAMINED FOR PLAGUE INFECTION.

Places.	Week ended—	Found dead.	Total collected.	Examined.	Found infected.
California:					
Cities—					
Berkeley.....	June 22, 1912	13	1 206	148	.....
Oakland.....	do.....	36	2 707	553	.....
San Francisco.....	do.....	15	1,742	1,454	.....
Washington:					
City—					
Seattle.....	do.....	.....	866	810	.....

¹ Identified: *Mus norvegicus*, 164; *Mus musculus*, 42.

² Identified: *Mus norvegicus*, 625; *Mus musculus*, 82.

³ Identified: *Mus norvegicus*, 980; *Mus alexandrinus*, 222; *Mus rattus*, 252; *Mus musculus*, 288.

SQUIRRELS COLLECTED AND EXAMINED FOR PLAGUE INFECTION.

During the week ended June 22, 1912, 156 ground squirrels collected in Alameda County and 1,750 collected in Contra Costa County, Cal., were examined for plague infection. Three from Alameda County and 72 from Contra Costa County were found to be plague infected.

CEREBROSPINAL MENINGITIS.

CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES FOR THE WEEK ENDED JULY 6, 1912.

Cities.	Cases.	Deaths.	Cities.	Cases.	Deaths.
Boston, Mass.....	1	.....	New York, N. Y.....	5	10
Cincinnati, Ohio.....	2	.....	Providence, R. I.....	.....	1
Cleveland, Ohio.....	1	.....	Springfield, Mass.....	.....	1
Lawrence, Mass.....	.....	1	Yonkers, N. Y.....	.....	1
Nashville, Tenn.....	2	2			

ERYSIPELAS.

CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES FOR THE WEEK ENDED JULY 6, 1912.

Cities.	Cases.	Deaths.	Cities.	Cases.	Deaths.
Baltimore, Md.....	.....	1	New York, N. Y.....	20	3
Buffalo, N. Y.....	1	1	Oklahoma City, Okla.....	1	.....
Cleveland, Ohio.....	1	.....	Philadelphia, Pa.....	2	.....
Dayton, Ohio.....	.....	1	Pittsburgh, Pa.....	4	1
Dunkirk, N. Y.....	1	.....	St. Louis, Mo.....	5	.....
Lancaster, Pa.....	2	.....	San Francisco, Cal.....	2	.....
Los Angeles, Cal.....	2	.....	Warren, Pa.....	1	.....
Milwaukee, Wis.....	4	.....		

LEPROSY.

BAY CITY, MICH.

Samuel Isen, one of the two lepers recently reported at Bay City, Mich., broke quarantine and was found missing July 15.

July 22 Dr. Francis E. Fronczak, commissioner of health of Buffalo, reported that Isen had been found in Buffalo and was being isolated at the Contagious Disease Hospital.

DENVER, COLO.

Dr. Sherman Williams, president of the Colorado State Board of Health, reported July 22 that they had in detention at Denver a man giving the name of C. W. Carson, and claiming to be a leper, who had escaped from the leper colony at San Francisco about May 2 and had been wandering over the country since that time in a box car.

PELLAGRA.

During the week ended July 6, 1912, pellagra was reported as follows: Chicago, Ill., 1 death; Montgomery, Ala., 5 deaths; Roanoke, Va., 1 case and 1 death.

PNEUMONIA.

CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES FOR THE WEEK ENDED JULY 6, 1912.

Cities.	Cases.	Deaths.	Cities.	Cases.	Deaths.
Altoona, Pa.		1	New Orleans, La.		5
Baltimore, Md.		9	Newport, Ky.	2	2
Binghamton, N. Y.	2	1	Newton, Mass.		1
Boston, Mass.		11	New York, N. Y.		61
Braddock, Pa.	1		Niagara Falls, N. Y.		1
Brookline, Mass.		1	Oakland, Cal.	4	
Buffalo, N. Y.		10	Omaha, Nebr.		2
Butte, Mont.		1	Passaic, N. J.		3
Chelsea, Mass.		2	Philadelphia, Pa.	11	21
Chicago, Ill.	8	54	Pittsburgh, Pa.	5	13
Cincinnati, Ohio.		3	Pittsfield, Mass.		1
Cleveland, Ohio.	10	7	Richmond, Va.		2
Cumberland, Md.		1	Rockford, Ill.		1
Dayton, Ohio.		1	San Antonio, Tex.		2
El Paso, Tex.		1	San Francisco, Cal.	3	
Fall River, Mass.		1	Schenectady, N. Y.	1	1
Grand Rapids, Mich.	2		Saratoga Springs, N. Y.	2	
Harrisburg, Pa.		1	South Bethlehem, Pa.		1
Hartford, Conn.		3	South Omaha, Nebr.		1
Kalamazoo, Mich.	4	3	Springfield, Ill.		1
Lawrence, Mass.		2	Springfield, Mass.		3
Lima, Ohio.		2	Taunton, Mass.		2
Los Angeles, Cal.	1	5	Toledo, Ohio.		3
Lowell, Mass.		3	Washington, D. C.		5
Lynn, Mass.		1	Wilkes-Barre, Pa.	1	2
Malden, Mass.		1	Wilmington, Del.		2
Newark, N. J.		3	Yonkers, N. Y.		4
Newburyport, Mass.		1	Zanesville, Ohio.		1

POLIOMYELITIS.

CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES FOR THE WEEK ENDED JULY 6, 1912.

Cities.	Cases.	Deaths.	Cities.	Cases.	Deaths.
Buffalo, N. Y.	2	1	New York, N. Y.	8	
Cleveland, Ohio.	1		Pittsburgh, Pa.	1	1
Haverhill, Mass.	1		Springfield, Mass.	1	
Los Angeles, Cal.	37	6	Taunton, Mass.	1	1
Lowell, Mass.	1	1			

RABIES.

During the week ended July 6, 1912, 1 death from rabies was reported at New York, N. Y.

TETANUS.

CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES FOR THE WEEK ENDED JULY 6, 1912.

Cities.	Cases.	Deaths.	Cities.	Cases.	Deaths.
Baltimore, Md.		1	Morristown, N. J.		1
Buffalo, N. Y.		1	New York, N. Y.		2
Chicago, Ill.		1	Wilmington, N. C.		1

SMALLPOX IN THE UNITED STATES.**SMALLPOX REPORTED DURING FIRST QUARTER OF 1912.**

Information regarding the reported prevalence of smallpox during the first quarter of the current calendar year is available for the District of Columbia and the 31 States enumerated in the tables which follow. No case was reported in either the District of Columbia or in Maryland. Cases were notified in all the other States from which reports are received.

During the first three months of the year 1912 there were reported in the 31 States 8,850 cases of smallpox with 81 deaths. More than half of the deaths occurred in Texas, where out of 347 reported cases 56 terminated fatally. Of these cases, 175, with 43 deaths, occurred in Tarrant County, in which is located the city of Fort Worth. The Tarrant County cases constituted an outbreak of virulent smallpox. Other virulent outbreaks occurred in Texas in McCulloch County, where 10 cases with 4 deaths were reported during March; in San Patricio County, where 7 cases with 3 deaths were reported during January; and in Uvalde County, where during February 4 cases with 2 deaths occurred. The next greatest number of deaths occurred in Indiana, where there were 484 cases with 5 deaths. Of these 5 deaths, 4 occurred among 11 cases in St. Joseph County, indicating that the infection there was of the virulent type. Two deaths were reported in California. Both of these were in Los Angeles County, where, during the last two months of 1911, there had been a virulent outbreak. These two deaths, which occurred in January and February, may have been due, therefore, to infection with the virulent strain of the disease.

The disease was more prevalent in the New England States than usual, although by no means as prevalent there as in some other sections of the country. In the 4 New England States for which the information was available, namely, Connecticut, Maine, Massachusetts, and Vermont, there were in all 400 cases reported. None was fatal. Of these 400 cases, 219 were in Maine, 83 in Vermont, 69 in Connecticut, and 29 in Massachusetts.

With the exception of the isolated outbreaks of virulent smallpox in Texas and Indiana the disease was of the same mild type that has been so generally prevalent throughout the United States during the last 14 years. In Utah there were 958 cases without a death. Other States also had a considerable number of cases without any recorded deaths. Florida had 576 cases without a reported death, Illinois 451 cases, Maine 219, Michigan 452, North Carolina 859, Virginia 274, Washington 507.

Smallpox was also present in the States not enumerated in the table, but information regarding the number of cases occurring has not been available.

SMALLPOX IN THE UNITED STATES—Continued.

Smallpox reported during January, February, and March, 1912—Occurrence of cases by States and Counties.

	January.		February.		March.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Arizona:								
Counties—								
Cochise.....	3		11				14	
Gila.....					5		5	
Pima.....	17		5	1	5		27	1
Total.....	20		16	1	10		46	1
California:								
Counties—								
Alameda.....					2		2	
Butte.....			3				3	
Contra Costa.....	2		1				3	
Eldorado.....					1		1	
Fresno.....	53		13		8		74	
Kern.....					5		5	
Los Angeles.....	29	1	19	1	9		57	2
Mendocino.....			3				3	
Nevada.....			4		5		9	
Placer.....			2				2	
Riverside.....	18		13		3		34	
Sacramento.....			1		2		3	
San Bernardino.....	34		23		13		70	
San Diego.....	2		1		1		4	
San Joaquin.....					3		3	
Santa Clara.....					5		5	
Santa Cruz.....					1		1	
Shasta.....			1		1		2	
Siskiyou.....			2		1		3	
Stanislaus.....	1						1	
Tulare.....			13		7		20	
Total.....	139	1	99	1	67		305	2
Colorado:								
Counties—								
Archuleta.....			2				2	
Boulder.....	1				3		4	
Delta.....					12		12	
Denver.....	5		1		3		9	
El Paso.....					2		2	
Huerfano.....					2		2	
Jefferson.....	1						1	
Larimer.....	1		1				2	
Las Animas.....					1		1	
Mesa.....			2				2	
Montrose.....	3		6		3		12	
Ouray.....					1		1	
Pueblo.....	3				1		4	
Rio Grande.....	3		6		6		15	
Routt.....	1						1	
Weld.....	1						1	
Total.....	19		18		34		71	
Connecticut:								
Counties—								
New Haven.....					41		41	
Tolland.....					1		1	
Windham.....			1		26		27	
Total.....			1		68		69	
District of Columbia:								
Florida:¹								
Counties—								
Alachua.....			2		7		9	
Baker.....			1				1	
Calhoun.....					1		1	
Citrus.....					2		2	
Clay.....	5						5	
Columbia.....	19		6		4		29	

¹ The Florida cases were reported to the bureau by weeks, and therefore the division of the cases by months is only approximate. The cases assigned to January were reported for the period Dec. 31 to Jan. 27; those assigned to February were reported for the period Jan. 28 to Feb. 24; those assigned to March were reported for the period Feb. 25 to Mar. 30.

SMALLPOX IN THE UNITED STATES—Continued.

Smallpox reported during January, February, and March, 1912—Occurrence of cases by States and Counties.

	January.		February.		March.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Florida—Continued:								
Counties—Continued.								
Dade.....	1				1		2	
De Soto.....			4		4		8	
Duval.....	65		97		74		236	
Escambia.....			2		7		9	
Franklin.....			3				3	
Gadsden.....			8				8	
Hernando.....	4		4		20		28	
Hillsboro.....	1		6		12		19	
Holmes.....			2				2	
Jackson.....	26						26	
Jefferson.....					1		1	
Lake.....					5		5	
Leon.....			12				12	
Levy.....	2				3		5	
Madison.....					1		1	
Manatee.....			1		1		2	
Marion.....			4				4	
Orange.....	5		16				21	
Pasco.....			1		1		2	
Polk.....					2		2	
Putnam.....			67		37		104	
St. John.....			13				13	
St. Lucie.....			1				1	
Santa Rosa.....					3		3	
Suwanee.....			1				1	
Volusia.....	1		4		5		10	
Washington.....			1				1	
Total.....	129		256		191		576	
Illinois:								
Counties—								
Adams.....					1		1	
Bond.....	5		2		10		17	
Boone.....			1				1	
Bureau.....	2		2		1		5	
Champaign.....	1						1	
Christian.....	3		4				7	
Clinton.....	1		13		14		28	
Cook.....	1				5		6	
Cumberland.....			1				1	
Douglas.....	16		9				25	
Effingham.....			4				4	
Fayette.....					5		5	
Henry.....					63		63	
Iroquois.....			1		1		2	
Kane.....	9		15		24		48	
Kankakee.....			1		1		2	
Knox.....			1		1		2	
Lasalle.....	24		9		22		55	
McDonough.....			17		6		23	
McLean.....					13		13	
Macon.....	1						1	
Madison.....	1				7		8	
Marion.....					2		2	
Montgomery.....			1				1	
Moultrie.....					1		1	
Ogle.....	1						1	
Peoria.....					1		1	
Piatt.....	2				4		6	
Putnam.....	1						1	
Rock Island.....	3				4		7	
St. Clair.....	2		1		1		4	
Sangamon.....	5		11		4		20	
Shelby.....	21		4				25	
Stephenson.....	5		2		2		9	
Vermilion.....			1		1		2	
Warren.....			6		28		34	
Whiteside.....	4						4	
Winnebago.....			1				1	
Villages—								
Taylor Springs.....					1		1	
Wetherfield.....					1		1	
Woburn.....					12		12	
Total.....	108		107		236		451	

SMALLPOX IN THE UNITED STATES—Continued.

Smallpox reported during January, February, and March, 1912—Occurrence of cases by States and Counties.

	January.		February.		March.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Indiana:								
Counties—								
Adams.....	3						3	
Bartholomew.....	33		36	1	30		99	1
Boone.....			2				2	
Cass.....	3		8		3		14	
Clark.....					1		1	
Clinton.....	9		1				10	
Daviess.....			1				1	
Dearborn.....			27		7		34	
Delaware.....					4		4	
Elkhart.....					1		1	
Fayette.....			40		50		90	
Fountain.....	12		7		3		22	
Gibson.....			1		9		10	
Grant.....			1				1	
Hancock.....	2						2	
Hendricks.....			2		10		12	
Howard.....	5				16		21	
Johnson.....			13		3		13	
Madison.....	2		2		3		7	
Marion.....	1				5		6	
Monroe.....	1						1	
Noble.....					1		1	
Pike.....			25		25		50	
Posey.....					1		1	
Randolph.....	7						7	
Rush.....			4				4	
St. Joseph.....	1		2	1	8	3	11	4
Sullivan.....					4		4	
Tipton.....			5		25		30	
Union.....			2				2	
Vanderburg.....	8		1		6		15	
Vigo.....					1		1	
Wabash.....	1				1		1	
Wayne.....	1						1	
Wells.....			1		1		2	
Total.....	89		181	2	214	3	484	5
Iowa:								
Counties—								
Appanoose.....					25		25	
Audubon.....					1		1	
Blackhawk.....					1		1	
Butler.....	3						3	
Carroll.....	1		1		8		10	
Cerro Gordo.....	4						4	
Fayette.....	1						1	
Floyd.....			1				1	
Guthrie.....	1						1	
Harrison.....			1				1	
Humbolt.....					1		1	
Ida.....			1				1	
Lee.....					1		1	
Linn.....	3		2		1		6	
Louisa.....			1				1	
Marshall.....	5		1				6	
Muscatine.....					1		1	
Page.....	1						1	
Pottawattamie.....	3		3		4		10	
Poweshiek.....					1		1	
Sac.....	7		6		1		14	
Scott.....			11				11	
Sioux.....			5				5	
Van Buren.....	2						2	
Washington.....			1				1	
Webster.....	2						2	
Woodbury.....	3		3		2		8	
Worth.....	2						2	
Total.....	38		37		49		124	

SMALLPOX IN THE UNITED STATES—Continued.

Smallpox reported during January, February, and March, 1912—Occurrence of cases by States and Counties.

	January.		February.		March.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Kansas:								
Counties—								
Allen.....			2		2		4	
Cherokee.....					2		2	
Cloud.....			1				1	
Coffey.....	4		2				6	
Cowley.....			1				1	
Crawford.....	2		4		5		11	
Ford.....			1				1	
Labette.....					1		1	
Leavenworth.....	5						5	
Lyon.....	1		4		47		52	
Osborne.....	7						7	
McPherson.....					1		1	
Mitchell.....					1		1	
Montgomery.....					1		1	
Republic.....					1		1	
Reno.....			1				1	
Riley.....	2						2	
Sedgwick.....					36		36	
Shawnee.....	1	1					1	1
Sumner.....					1		1	
Wichita.....					1		1	
Woodson.....	23		1				24	
Wyandotte.....	4		3		5		12	
Total.....	49	1	20		104		173	1
Maine:								
Counties—								
Androscoggin.....	50		48		43		141	
Cumberland.....	19		9				28	
Kenebec.....	2		2		2		6	
Lincoln.....			1		6		7	
Oxford.....					3		3	
Penobscot.....	1		9		1		11	
Sagadahoc.....	2		2		4		8	
Somerset.....					15		15	
Total.....	74		71		74		219	
Maryland.....								
Massachusetts:								
Counties—								
Bristol.....			9		1		10	
Essex.....					1		1	
Franklin.....					2		2	
Hampden.....	1						1	
Middlesex.....	6		4				10	
Suffolk.....	4		1				5	
Total.....	11		14		4		29	
Michigan.....								
Counties—								
Allegan.....	1						1	
Bay.....	1						1	
Berrien.....					2		2	
Butler.....	2						2	
Calhoun.....	13						13	
Chippewa.....			1		1		2	
Clinton.....			2				2	
Crawford.....			1				1	
Eaton.....	7		1		1		9	
Genesee.....	4		3		6		13	
Hillsdale.....	3		3		1		7	
Ingham.....	1		1				2	
Ionia.....	17		4		1		22	
Jackson.....	101		10		9		120	
Kalamazoo.....			8		22		30	
Kalkaska.....			3				3	
Kent.....	7				1		8	
Lenawee.....	58		1				59	
Macomb.....	1						1	
Monroe.....	11		5				16	
Montcalm.....	14				2		16	

SMALLPOX IN THE UNITED STATES—Continued.

Smallpox reported during January, February, and March, 1912—Occurrence of cases by States and Counties.

	January.		February.		March.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Michigan—Continued.								
Counties—Continued.								
Oceana.....			11				11	
Saginaw.....					1		1	
St. Clair.....	1		5		16		22	
St. Joseph.....			1		2		3	
Shiawassee.....			4		2		6	
Tuscola.....			1				1	
Washtenaw.....	2						2	
Wayne.....	18		15		20		53	
Wexford.....	4						4	
Total.....	267		95		90		452	
Minnesota¹.....								
Counties—								
Anoka.....			2				3	
Becker.....	1		3		1		4	
Beltrami.....			4				4	
Brown.....	1		6				7	
Chippewa.....					1		1	
Chisago.....	1		1				2	
Clay.....	50				1		51	
Dakota.....					2		2	
Dodge.....	14		4		2		20	
Fillmore.....			2		1		3	
Hennepin.....	33		36		64		133	
Lac qui Parle.....	7		14		8		29	
Lesueur.....			6				6	
Marshall.....					1		1	
Meeker.....			1				1	
Mower.....					1		1	
Nicollet.....	1		1				2	
Norman.....			1				1	
Olmsted.....			2				2	
Otter Tail.....	15		8		5		28	
Pipestone.....	1						1	
Polk.....					2		2	
Ramsey.....	91		101	1	106		298	1
Renville.....					5		5	
Rice.....	8				1		9	
St. Louis.....	23		11		15		49	
Scott.....	2		2		1		5	
Sherburne.....			6				6	
Stearns.....			1				1	
Steele.....	1						1	
Swift.....	8		1		1		10	
Todd.....			1		1		2	
Wabasha.....	2		1		1		4	
Wadena.....					1		1	
Washington.....	2		2				4	
Watonwan.....	20		1				21	
Winona.....	1		6		5		12	
Wright.....	6						6	
Total.....	288		224	3	226		738	3
Mississippi:								
Counties—								
Attala.....			50		50		100	
Benton.....	1						1	
Chicasaw.....					1		1	
Clarke.....			1		5		6	
Covington.....	4						4	
George.....					10		10	
Greene.....					11		11	
Harrison.....					38		38	
Hinds.....			10				10	
Holmes.....	2						2	
Jackson.....			2		1		3	
Jefferson Davis.....			20		6		26	
Lamar.....			15		5		20	
Lauderdale.....	15		66		58	1	139	1

¹ The Minnesota cases were reported to the bureau by weeks. The assignment of the cases to calendar months is therefore only approximate. The cases assigned to January were reported for the period Jan. 2 to 29, inclusive; those assigned to February were for the period Jan. 30 to Feb. 26; those to March were for the period Feb. 27 to Apr. 1.

SMALLPOX IN THE UNITED STATES—Continued.

Smallpox reported during January, February, and March, 1912—Occurrence of cases by States and Counties.

	January.		February.		March.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Mississippi—Continued.								
Counties—Continued.								
Lee.....			6				6	
Lincoln.....	1						1	
Newton.....	20		12		6		38	
Panola.....					1		1	
Pike.....					5		5	
Pontotoc.....					1		1	
Union.....					3		3	
Wayne.....					10		10	
Winston.....					20		20	
Yalobusha.....					10	1	10	1
Yazoo.....	1		1				2	
Total.....	44		183		241	2	468	2
Montana:								
Counties—								
Cascade.....	6		6		1		13	
Chouteau.....	3		7		3		13	
Custer.....	2						2	
Dawson.....	1						1	
Fergus.....	21		12		3		36	
Lewis and Clark.....			6		1		7	
Lincoln.....					4		4	
Missoula.....	5		2		1		8	
Ravalli.....	5						5	
Silverbow.....					1		1	
Teton.....					3		3	
Total.....	43		33		17		93	
New Jersey:								
County—								
Essex.....			1				1	
New York:								
Counties—								
Albany.....	13						13	
Allegany.....			8				8	
Cattaraugus.....	10		1		5		16	
Cayuga.....	13		14				27	
Chautauqua.....	2				8		10	
Chemung.....	4		1				5	
Cortland.....	6		4		9		19	
Dutchess.....					2		2	
Erie.....	6		3		1		10	
Franklin.....	11		3		2		16	
Genesee.....	6		19		1		26	
Jefferson.....					1		1	
Monroe.....	5		26		8		39	
New York.....	9	1	5		1		15	1
Oneida.....	1						1	
Onondaga.....	3						3	
Ontario.....					1		1	
Schuyler.....					1		1	
Steuben.....	1		1		4		6	
Suffolk.....	1						1	
Tioga.....	77		1				78	
Tompkins.....			1		1		2	
Warren.....					4		4	
Wyoming.....	10		1		5		16	
Total.....	178	1	88		54		320	1
North Carolina:								
Counties—								
Anson.....			81		118		199	
Beaufort.....	2		4		1		7	
Bertie.....	2						2	
Bladen.....			1				1	
Buncombe.....	2		4		6		12	
Carteret.....					13		13	
Cleveland.....					6		6	
Columbus.....	2		10		1		13	
Craven.....			5		6		11	
Cumberland.....							28	
Currituck.....	28				3		3	

SMALLPOX IN THE UNITED STATES—Continued.

Smallpox reported during January, February, and March, 1912—Occurrence of cases by States and Counties.

	January.		February.		March.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
North Carolina—Continued.								
Counties—Continued.								
Davidson.....					1		1	
Durham.....			2		2		4	
Edgecombe.....			1				1	
Forsyth.....	1						1	
Gaston.....	5						5	
Granville.....	7		2		6		15	
Greene.....					1		1	
Harnett.....	1						1	
Haywood.....	57		42		10		109	
Iredell.....	10				1		11	
Jackson.....	20		4				24	
Johnston.....	1						1	
Lee.....			1		5		6	
Lincoln.....			6		6		12	
Macon.....	1		2		2		5	
Madison.....	14		42		8		64	
Mecklenburg.....	3		3		7		13	
Montgomery.....			6				6	
New Hanover.....			15				18	
Orange.....	5						5	
Pender.....	3				7		10	
Robeson.....					5		5	
Sampson.....	6						6	
Scotland.....	2						2	
Surry.....					1		1	
Swain.....	20		7		1		28	
Union.....	70		64		20		154	
Vance.....					32		32	
Wake.....					5		5	
Warren.....			9		3		12	
Wayne.....					3		3	
Yancey.....	3						3	
Total.....	268		311		280		859	
North Dakota:								
Counties—								
Benson.....					6		6	
Bottineau.....			2				2	
Cass.....	5				13		18	
Grand Forks.....			6		1		7	
Lamoure.....			7		4		11	
McHenry.....	16		35		10		61	
Renville.....	2		1				3	
Stutsman.....	1				2		3	
Walsh.....			8				8	
Wells.....	1						1	
Total.....	25		59		36		120	
Ohio:								
Counties—								
Athens.....			3		32		35	
Clark.....					1		1	
Columbia.....					1		1	
Crawford.....					6		6	
Cuyahoga.....					1		1	
Defiance.....			1		1		3	
Franklin.....	8						8	
Green.....					3		3	
Hamilton.....	7		8		5		20	
Hocking.....					1		1	
Huron.....					1		1	
Lucas.....	58		9		1		68	
Madison.....	5				14		19	
Morgan.....	4						4	
Montgomery.....			6		18		24	
Ottawa.....	3						3	
Portage.....					1		1	
Stark.....	7						7	
Tuscarawas.....			1		1	1	2	1
Total.....	93		28		87	1	208	1

SMALLPOX IN THE UNITED STATES—Continued.

Smallpox reported during January, February, and March, 1912—Occurrence of cases by States and Counties.

	January.		February.		March.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Oregon:								
Counties—								
Baker.....	47		20	1	8		75	1
Benton.....	27		10		4		41	
Clackamas.....	1		1				2	
Douglas.....	5				1		6	
Grant.....			1				1	
Jackson.....			2		1		3	
Lane.....	1		1				2	
Lincoln.....	1						1	
Linn.....	2		2				4	
Malheur.....	1		1				2	
Marion.....	8		6		9		23	
Morrow.....	1						1	
Multnomah.....	41		34		25		100	
Umatilla.....	4		6		3		13	
Union.....			1		5		6	
Washington.....	2		1		3		6	
Total.....	141		86	1	59		286	1
Pennsylvania ¹								
	15	1	35	1	22		72	2
South Dakota:								
Counties—								
Brookings.....	8						8	
Brown.....	7		13		30		50	
Brule.....			2				2	
Charles Mix.....					2		2	
Clay.....					2		2	
Custer.....					25		25	
Davidson.....	3		1				4	
Edmunds.....					2		2	
Lincoln.....	8				3		11	
McCook.....					2		2	
McPherson.....			4				4	
Marshall.....					1		1	
Minnehaha.....	1		1		1		2	
Moody.....					1		1	
Pennington.....					1	1	1	1
Roberts.....					1		1	
Spink.....					17		17	
Walworth.....					1		1	
Yankton.....			1		1		2	
Total.....	27		21		90	1	138	1
Texas:								
Counties—								
Anderson.....	1						1	
Brazoria.....					1	1	1	1
Brown.....					1		1	
Cameron.....	1						1	
Cherokee.....	50		1				51	
Coleman.....					3	1	3	1
Collin.....	1						1	
Comal.....	5						5	
Goliad.....					32	1	32	1
Hale.....	3						3	
Johnson.....					1		1	
Jones.....					1		1	
Lamar.....					9		9	
Marion.....					1		1	
McCulloch.....					10	4	10	4
McLennan.....					1		1	
Nuées.....			1				1	
Palo Pinto.....	4						4	
Panola.....	5						5	
Reeves.....	3	1	1				4	1
San Patricio.....	7	3			5		12	3
Tarrant.....	13		36	9	126	34	175	43
Travis.....					2		2	
Upshur.....					15		15	

¹ Distribution of cases not given by counties in reports received from Pennsylvania.

SMALLPOX IN THE UNITED STATES—Continued.

Smallpox reported during January, February, and March, 1912—Occurrence of cases by States and Counties.

	January.		February.		March.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Texas—Continued.								
Counties—Continued.								
Uvalde.....			4	2			4	2
Waco.....			1				1	
Wichita.....	2						2	
Total.....	95	4	44	11	208	41	347	56
Utah:								
Counties—								
Beaver.....			2		1		3	
Boxelder.....	4		4		10		18	
Cache.....	17		3		32		52	
Carbon.....	1		2		3		6	
Davis.....	20		8		11		39	
Emery.....					1		1	
Juab.....	32		11		1		44	
Millard.....					1		1	
Salt Lake.....	120		118		137		375	
Sanpete.....	5						5	
Sevier.....			1				1	
Tooele.....	32		8		3		43	
Uintah.....	100		74				174	
Utah.....	23		11		29		63	
Wasatch.....	11				15		26	
Weber.....	25		37		45		107	
Total.....	390		279		289		958	
Vermont:								
Counties—								
Caledonia.....	16		19		8		43	
Chittenden.....	2		2				4	
Essex.....	5		3				8	
Franklin.....	1				5		6	
Lamoille.....	3		1		8		12	
Orange.....	1						1	
Orleans.....	1						1	
Rutland.....	2						2	
Washington.....	1		3		2		6	
Total.....	32		28		23		83	
Virginia:								
Counties—								
Amherst.....	4						4	
Brunswick.....	5						5	
Buckingham.....	1						1	
Carroll.....	20						20	
Dickenson.....					3		3	
Elizabeth.....			1				1	
Hanover.....			1				1	
Henrico.....			1		7		8	
Mecklenburg.....	13		14		5		32	
Middlesex.....	1		4				5	
Montgomery.....	4						4	
Pansemmond.....	25		7		7		39	
Norfolk.....	9		7		44		60	
Roanoke.....			9		1		10	
Russell.....	8		12		9		29	
Scott.....					5		5	
Southampton.....	19		10		7		36	
Washington.....	5						5	
Wise.....			6				6	
Total.....	114		72		88		274	
Washington:								
Counties—								
Asotin.....	10		17				27	
Chehalis.....	2						2	
Chelan.....	12		13		2		27	
Clark.....			1		3		4	
Columbia.....	6				1		7	
Garfield.....					2		2	

SMALLPOX IN THE UNITED STATES—Continued.

Smallpox reported during January, February, and March, 1912—Occurrence of cases by States and Counties.

	January.		February.		March.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Washington—Continued.								
Counties—Continued.								
Grant.....					51		51	
King.....	3		5		7		15	
Kittitas.....	2		11				13	
Klickitat.....	12				5		17	
Lincoln.....			4				4	
Mason.....	18						18	
Pacific.....			4		1		5	
Pend Oreille.....			1				1	
Pierce.....			16		47		63	
Skagit.....	2		6		1		9	
Spokane.....	64		68		68		200	
Stevens.....	1		2				3	
Walla Walla.....	10		10				20	
Whatcom.....					1		1	
Whitman.....	12		1				13	
Yakima.....			2		3		5	
Total.....	154		161		192		507	
Wisconsin:								
Counties.....							135	
Adams.....	2		6				8	
Brown.....			4				4	
Buffalo.....					1		1	
Clark.....					2		2	
Columbia.....					1		1	
Dane.....	6		1				7	
Dodge.....	1						1	
Douglas.....	11		4		4		19	
Dunn.....			1		9		10	
Eau Claire.....			3				3	
Fond du Lac.....	1		2				3	
Grant.....			1				1	
Green.....			1				1	
Green Lake.....			3		7		10	
Iowa.....	6						6	
Jackson.....			8		3		11	
La Crosse.....	1		2				3	
Marathon.....	11	1	1				12	1
Monroe.....			1		7		8	
Outagamie.....	2						2	
Polk.....	1						1	
Portage.....	4		25		4		33	
Price.....			1				1	
Rock.....					1		1	
St. Croix.....			5				5	
Trempealeau.....	1		4		2		7	
Waupaca.....			2		1		3	
Waushara.....	4		7				11	
Wood.....	13		12		1		26	
Total.....	64	1	94		43		236	1
Wyoming:								
Counties—								
Albany.....	4		2				6	
Carbon.....			3		1		4	
Fremont.....			8	1			8	1
Laramie.....	2		2				6	
Sweetwater.....	11		6		14		31	
Uinta.....	55		33	3			88	3
Total.....	73		55	4	15		143	4
Grand total.....	2,987	9	2,717	24	3,111	48	8,850	81

¹ The location of these 35 cases was not given by counties.

SMALLPOX IN THE UNITED STATES—Continued.

Smallpox reported during January, February, and March, 1912—Occurrence of cases by States and Counties.

Summary of States.

	January.		February.		March.		Total.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Arizona.....	20		16	1	10		46	1
California.....	139	1	99	1	67		305	2
Colorado.....	19		18		34		71	
Connecticut.....			1		68		69	
District of Columbia.....								
Florida.....	129		256		191		576	
Illinois.....	108		107		236		451	
Indiana.....	89		181	2	214	3	484	5
Iowa.....	38		37		49		124	
Kansas.....	49	1	20		104		173	1
Maine.....	74		71		74		219	
Maryland.....								
Massachusetts.....	11		14		4		29	
Michigan.....	267		95		90		452	
Minnesota.....	288		224	3	226		738	3
Mississippi.....	44		183		241	2	468	2
Montana.....	43		33		17		93	
New Jersey.....			1				1	
New York.....	178	1	88		54		320	1
North Carolina.....	268		311		280		859	
North Dakota.....	25		59		36		120	
Ohio.....	93		28		87	1	208	1
Oregon.....	141		86	1	59		286	1
Pennsylvania.....	15	1	35	1	22		72	2
South Dakota.....	27		21		90	1	138	1
Texas.....	95	4	44	11	208	41	347	56
Utah.....	390		279		289		958	
Vermont.....	32		28		23		83	
Virginia.....	114		72		88		274	
Washington.....	154		161		192		507	
Wisconsin ¹	64	1	94		43		236	1
Wyoming.....	73		55	4	15		143	4
Total.....	2,987	9	2,717	24	3,111	48	8,850	81

¹ 35 cases not designated by months.

STATE REPORTS (CURRENT).

The following table is compiled from reports made to the Bureau of the Public Health and Marine-Hospital Service by the health authorities of certain States, and shows the number of cases of smallpox notified to the authorities in these States.

Certain States report monthly, namely: Arizona, California, Colorado, Connecticut, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Mississippi, Montana, New Jersey, New York, North Carolina, North Dakota, Oklahoma, Ohio, Oregon, Pennsylvania, South Dakota, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming.

Florida, Minnesota, and the District of Columbia report by weeks.

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received During Week Ended July 26, 1912.

Places.	Date.	Cases.	Deaths.	Remarks.
Indiana:				
Counties—				
Brown.....	June 1-30.....	7		
Delaware.....	do.....	1		
Gibson.....	do.....	5		
Grant.....	do.....		1	
Howard.....	do.....	6		
Johnson.....	do.....	1		
Laporte.....	do.....	2		
Madison.....	do.....	3		
Marion.....	do.....	44		
Pike.....	do.....	7		
Ripley.....	do.....	1		
Shelby.....	do.....	4		
St. Joseph.....	do.....	1	2	
Tipton.....	do.....	1		
Vanderburgh.....	do.....	6		
Wabash.....	do.....	1		
Warrick.....	do.....	1		
Total for State.....		91	3	
Kansas:				
Counties—				
Allen.....	May 1-31.....	1		
Chase.....	do.....	6		
Chautauqua.....	do.....	1		
Cowley.....	do.....	1		
Finney.....	do.....	2		
Jewell.....	do.....	1		
Leavenworth.....	do.....	1		
Lyon.....	do.....	6		
Montgomery.....	do.....	1		
Shawnee.....	do.....	1		
Wyandotte.....	do.....	3		
Total for State.....		24		
Ohio:				
Counties—				
Hamilton.....	June 1-30.....	2		
Jackson.....	do.....	8		
Miami.....	do.....	1		
Montgomery.....	do.....	1		
Seneca.....	do.....	3		
Total for State.....		15		
Grand total for the United States.....		130	3	

CITY REPORTS (CURRENT).

Cases and Deaths Reported by City Health Authorities for the Week Ended July 6, 1912.

Cities.	Cases.	Deaths.	Cities.	Cases.	Deaths.
Chicago, Ill.....	1		Philadelphia, Pa.....		1
Detroit, Mich.....	1		Pittsburgh, Pa.....	1	
Duluth, Minn.....	1		Portsmouth, Va.....	3	
Evansville, Ind.....	1		Richmond, Va.....	2	
Los Angeles, Cal.....	1		San Antonio, Tex.....	2	
Manchester, N. H.....	2		San Francisco, Cal.....	6	
Milwaukee, Wis.....	2		Spokane, Wash.....	3	
New Orleans, La.....	2		Wilkes-Barre, Pa.....	1	
Peoria, Ill.....	2				

MORBIDITY AND MORTALITY.

MORBIDITY AND MORTALITY TABLE, CITIES OF THE UNITED STATES, FOR WEEK ENDED JULY 6, 1912.

Cities.	Popula- tion, United States census 1910.	Total deaths from all causes.	Diph- theria.		Measles.		Scarlet fever.		Tuber- culosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
<i>Cities having over 500,000 inhabitants.</i>												
Baltimore, Md.	558,485	164	4	1	16	1	8	23	30	14	7	1
Boston, Mass.	670,585	196	24	1	108	1	14	63	25	4	4	1
Chicago, Ill.	2,185,283	560	153	14	191	4	149	11	70	10	10	7
Cleveland, Ohio.	560,263	153	31	2	36	1	31	4	34	11	5	1
New York, N. Y.	4,766,883	1,273	253	25	603	18	157	13	343	161	45	6
Philadelphia, Pa.	1,549,008	449	44	8	20	1	34	1	70	43	31	6
Pittsburgh, Pa.	533,905	163	8	3	197	7	24	23	12	4	4	1
St. Louis, Mo.	687,029	168	15	1	11	1	17	31	14	7	1	1
<i>Cities having from 300,000 to 500,000 inhabitants.</i>												
Buffalo, N. Y.	423,715	112	4	2	22	7	5	20	9	4	1	1
Cincinnati, Ohio.	364,463	104	5	1	7	1	7	41	21	1	1	1
Detroit, Mich.	465,766	130	29	6	1	1	18	1	1	1	1	1
Los Angeles, Cal.	319,198	107	5	1	11	1	3	19	17	2	1	1
Milwaukee, Wis.	373,857	87	11	1	36	2	18	10	5	7	2	1
Newark, N. J.	347,469	107	23	1	12	1	8	25	12	3	1	1
New Orleans, La.	339,075	145	3	1	6	1	3	22	23	4	2	1
San Francisco, Cal.	416,912	124	6	1	3	1	1	7	10	25	1	1
Washington, D. C.	331,069	106	5	1	53	2	1	25	17	6	2	1
<i>Cities having from 200,000 to 300,000 inhabitants.</i>												
Providence, R. I.	224,326	55	15	1	3	1	6	2	7	3	1	1
<i>Cities having from 100,000 to 200,000 inhabitants.</i>												
Bridgeport, Conn.	102,054	24	1	1	1	1	7	4	2	1	1	1
Cambridge, Mass.	104,839	23	3	1	11	1	1	7	2	1	1	1
Columbus, Ohio	181,548	51	2	1	14	1	14	1	4	1	1	1
Dayton, Ohio	116,577	37	2	1	9	1	1	4	3	1	1	1
Fall River, Mass.	119,295	29	3	1	1	1	4	2	3	4	1	1
Grand Rapids, Mich.	112,571	28	1	1	1	1	1	1	1	2	2	1
Lowell, Mass.	106,294	34	1	1	20	1	1	1	4	1	1	1
Nashville, Tenn.	110,364	37	1	1	1	1	1	2	2	1	1	1
Oakland, Cal.	150,171	36	1	1	1	1	1	5	1	1	1	1
Omaha, Nebr.	124,096	28	1	1	3	1	1	1	3	1	1	1
Richmond, Va.	127,628	45	1	1	1	1	1	4	5	8	1	1
Spokane, Wash.	104,402	1	1	1	6	1	1	2	2	1	1	1
Toledo, Ohio.	168,497	41	2	1	37	1	9	1	1	1	1	1
Worcester, Mass.	145,986	53	7	1	17	2	1	7	2	1	1	1
<i>Cities having from 50,000 to 100,000 inhabitants.</i>												
Altoona, Pa.	52,127	10	1	1	1	1	1	1	1	1	1	1
Bayonne, N. J.	55,545	1	1	1	4	1	2	1	1	1	1	1
Brockton, Mass.	56,878	9	1	1	2	1	1	1	1	1	1	1
Camden, N. J.	94,538	4	1	1	1	1	1	6	1	2	1	1
Duluth, Minn.	78,466	15	1	1	1	1	2	2	2	1	1	1
Elizabeth, N. J.	73,409	26	1	1	2	1	2	6	3	1	1	1
Erie, Pa.	66,525	15	4	1	57	1	6	4	3	2	1	1
Evansville, Ind.	69,647	18	1	1	1	1	1	1	3	1	1	1
Fort Wayne, Ind.	63,933	13	1	1	1	1	1	4	1	1	1	1
Harrisburg, Pa.	64,186	25	1	1	1	1	1	5	1	1	1	1
Hartford, Conn.	98,915	33	4	1	57	1	1	1	1	1	1	1
Hoboken, N. J.	70,324	9	5	1	1	1	1	3	1	1	1	1
Houston, Tex.	78,800	38	1	1	1	1	1	2	2	5	1	1
Johnstown, Pa.	55,482	15	1	1	3	1	1	3	2	1	1	1
Kansas City, Kans.	82,331	2	1	1	2	1	1	1	1	1	1	1
Lawrence, Mass.	85,892	28	1	1	2	1	1	5	2	1	1	1
Lynn, Mass.	89,336	24	4	1	18	1	2	4	1	1	1	1
Manchester, N. H.	70,063	23	2	1	17	1	1	2	2	2	1	1
New Bedford, Mass.	96,652	39	4	1	4	1	1	3	2	2	1	1
Oklahoma City, Okla.	64,205	13	1	1	1	1	1	1	1	1	1	1
Passaic, N. J.	54,773	22	3	1	7	1	1	2	2	1	1	1
Peoria, Ill.	66,950	27	3	1	1	1	1	3	1	1	1	1

MORBIDITY AND MORTALITY—Continued.

Morbidity and mortality table, cities of the United States, for week ended July 6, 1912—Continued.

Cities.	Population, United States Census 1910.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
<i>Cities having from 50,000 to 100,000 inhabitants—Continued.</i>												
Portland, Me.	58,571	23			1	1	1			3		
Reading, Pa.	96,071	20	9		26		2		2	2	4	1
Saginaw, Mich.	50,510	15	5		5						3	
San Antonio, Tex.	96,614	50	2	1			1			9	8	4
Schenectady, N. Y.	72,826	16			23	1	2				1	
South Bend, Ind.	53,684	16								1		
Springfield, Ill.	51,678	9								1		
Springfield, Mass.	88,926	19	2		2		2		5	1		
Trenton, N. J.	96,815	31	3		2		3		4	1	2	
Wilkes-Barre, Pa.	67,105		2						5	1	1	
Wilmington, Del.	87,411	31							1	1	1	1
Yonkers, N. Y.	79,803	19	1		1		7		2	1		
<i>Cities having from 25,000 to 50,000 inhabitants.</i>												
Atlantic City, N. J.	46,150	16	1						1			
Aurora, Ill.	29,807	4										
Berkeley, Cal.	40,434	4			2				2			
Binghamton, N. Y.	48,443	16										
Brookline, Mass.	27,792	10	1						3		1	
Butte, Mont.	39,165	10	1				2	1				
Chattanooga, Tenn.	44,604								2		1	
Chelsea, Mass.	32,452	6			6				2		1	
Chicopee, Mass.	25,401	8			6				1			
Danville, Ill.	27,871	5	1							2		
East Orange, N. J.	34,371		1		10		1					
Elmira, N. Y.	37,176	10			37				3			
El Paso, Tex.	39,279	31					1	1		7	1	1
Everett, Mass.	33,484				11		1			1		
Fitchburg, Mass.	37,826	6							1		1	
Haverhill, Mass.	44,115	12			23				3	3	4	1
Kalamazoo, Mich.	39,437	17					1					
Knoxville, Tenn.	36,346	10								2	1	
La Crosse, Wis.	30,417	5							1			
Lancaster, Pa.	47,227		3		13							
Lexington, Ky.	35,099	12								1		
Lima, Ohio	30,508	5	1		3					2		
Lynchburg, Va.	29,494	16			4		3					
Malden, Mass.	44,404	8			37		1		2	1		
Montgomery, Ala.	38,136	15								1	4	
Newport, Ky.	30,309	10					2					
Newton, Mass.	39,806	8			6				2	1	2	
Niagara Falls, N. Y.	30,445	6	1				1		2			
Norristown, Pa.	27,875	4			1				2			
Orange, N. J.	29,630	9	1		15				1	4		
Pasadena, Cal.	30,291	9										
Pittsfield, Mass.	32,121	8	3	1			1		3		3	
Portsmouth, Va.	33,190	11										
Racine, Wis.	38,002	12	1	1			1					
Roanoke, Va.	34,874	8			1				3			
Rockford, Ill.	45,401	12					2				18	
Salem, Mass.	43,697	9			1				1		1	
San Diego, Cal.	39,578				2							
South Omaha, Nebr.	26,259	5										
Superior, Wis.	40,384	5	1									
Taunton, Mass.	34,259	14									1	
Waltham, Mass.	27,834	4			3		1		1	1	1	
West Hoboken, N. J.	35,403		1		1				2			
Wheeling, W. Va.	41,641	9	3		4					1	3	
Wilmington, N. C.	25,748	5			1				1		3	
York, Pa.	44,750				13				3		1	
Zanesville, Ohio	28,026	7	1						1			

MORBIDITY AND MORTALITY—Continued.

Morbidity and mortality tables, cities of the United States, for week ended July 6, 1912—Continued.

Cities.	Popula- tion, United States Census 1910.	Total deaths from all causes.	Diph- theria.		Measles.		Scarlet fever.		Tuber- culosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
<i>Cities having less than 25,000 inhab- itants.</i>												
Alameda, Cal.	23,833	7			4				1	1	2	
Ann Arbor, Mich.	14,817	6										
Beaver Falls, Pa.	12,191		1									
Bennington, Vt.					88							
Biddeford, Me.	17,079	2										
Braddock, Pa.	17,759	8	1		1							
Cambridge, Ohio	11,327	4			1				2			
Camden, S. C.		2									1	
Carbondale, Pa.	17,040	5			1							
Clinton, Mass.	13,075	2										
Coffeyville, Kans.	12,687										2	
Columbus, Ga.	20,554	14			1							1
Columbus, Ind.		2										
Concord, N. H.	21,497	6	1		5					1		
Cumberland, Md.	21,839	6			14						3	
Dunkirk, N. Y.		3	1				1		1			
Galesburg, Ill.	22,089	4										
Harrison, N. J.	14,498	4	1					2				
Homestead, Pa.	18,710	4	1		1							
Kearny, N. J.	18,659	8	1						1	1		
La Fayette, Ind.	20,081	5										
Logansport, Ind.	19,050	4			1						1	
Marinette, Wis.	14,610	2	1						1			
Marlboro, Mass.	14,579	2			2							
Massillon, Ohio	13,879	3					1					
Medford, Mass.	23,150	4	2		21				1			
Melrose, Mass.	15,715	4					1		1			
Moline, Ill.	24,199	5									1	
Montclair, N. J.	21,150	7	1		3				1			
Morristown, N. J.	12,507	6		1	3							
Nanticoke, Pa.	18,857	5										
Newburyport, Mass.	19,240	5							1			
North Adams, Mass.	22,019	6	1									
Northampton, Mass.	19,431	8	2	1	1					1		
Plainfield, N. J.	22,550	5							1		1	
Saratoga Springs, N. Y.		4							3	1		
South Bethlehem, Pa.		9							6	2	1	
Steelton, Pa.	14,246	6			1							
Warren, Pa.	11,080	1	1		1							
Wilksburg, Pa.	18,924	5			1				1			
Woburn, Mass.	15,308	4					1					

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

MASSACHUSETTS.—Week ended May 4, 1912. Population of reporting towns, 2,577,764. Total number of deaths from all causes 729, including diphtheria 8, measles 10, scarlet fever 1, tuberculosis 81, typhoid fever 1. Cases reported: Diphtheria 110, measles 802, scarlet fever 90, smallpox 4, tuberculosis 198, typhoid fever 14.

Week ended May 11, 1912. Total deaths from all causes 695, including diphtheria 4, measles 4, scarlet fever 3, tuberculosis 76, typhoid fever 1. Cases reported: Diphtheria 99, measles 917, scarlet fever 125, smallpox 4, tuberculosis 187, typhoid fever 33

Week ended May 18, 1912. Total deaths from all causes 774, including diphtheria 4, measles 9, scarlet fever 6, tuberculosis 83, typhoid fever 2. Cases reported: Diphtheria 70, measles 820, scarlet fever 104, smallpox 6, tuberculosis 184, typhoid fever 31.

Week ended May 25, 1912. Total number of deaths from all causes 687, including diphtheria 8, measles 11, tuberculosis 62, typhoid fever 5. Cases reported: Diphtheria 95, measles 957, scarlet fever 87, tuberculosis 160, typhoid fever 33.

UTAH.—Month of May, 1912. Population, 373,351. Total number of deaths from all causes 317, including diphtheria 2, scarlet fever 4, smallpox 2, tuberculosis 9. Cases reported: Diphtheria 27, measles 70, scarlet fever 60, smallpox 229, tuberculosis 7, typhoid fever 26.

FOREIGN AND INSULAR.

CHINA.

Hankow—Typhus Fever.

Consul General Greene at Hankow reports 1 case of typhus fever at Hankow during the week ended June 1, 1912.

Hongkong—Plague—Smallpox—Plague-infected Rats.

Surg. Brown reports: During the week ended June 1, 1912, 140 cases of plague, with 110 deaths, and 3 cases of smallpox, with 3 deaths, were reported at Hongkong.

During the same period 2,666 rats were examined for plague infection; 46 were found to be plague infected.

During the month of May 689 cases of plague, with 587 deaths, and 25 cases of smallpox, with 15 deaths, were reported at Hongkong.

During the same month 10,998 rats were examined for plague infection; 208 were found to be plague infected.

CUBA.

Habana—Plague Situation.

Passed Asst. Surg. von Ezdorf reports, July 17:

The first case of plague in Habana was in the person of a Spaniard, 47 years of age, who was taken sick June 30. He was seen by the commission on infectious diseases July 5, and the diagnosis of plague was confirmed July 6. The patient is convalescing.

The second case of plague was in a Spaniard, age 26 years. He was under treatment at the Dependientes Hospital. His illness was suspicious. He died July 10. Six hours before death fluid was obtained by puncture from his swollen femoral glands. This fluid showed a large number of bipolar staining bacilli, which morphologically and by staining reaction were those of plague. The cultural characteristics of the organism were also those of plague.

The infected district, which has been established as four blocks, is in the vicinity of the wharves. On June 20 an anonymous communication was received by the sanitary department to the effect that rats were dying in an area covering two blocks in Oficios Street. Inquiry elicited the information that the mortality among rats had been noticed during the preceding two weeks, and that the unusual mortality had ceased by the time the information reached the sanitary department. Investigation, however, led to the finding of several dead rats. These were necropsied, but were found negative as to plague. Beginning July 8, a routine examination was made of all the rats caught in this district. From July 8 to 14, inclusive, 1,400 rats were examined without any being found infected.

A campaign against rats was begun, and 50 men are engaged in trapping and putting out poison. The work of deratization was first directed to the district in which the unusual mortality had been observed among rats. Then attention was given to the wharves. The work has been extended as rapidly as an organization could be developed. In the blocks in which the unusual mortality among rats was first observed, and which has come to be considered as the known infected area, a cleaning-up campaign has been instituted. Orders were issued for the removal of wooden floors and their substitution by cement floors.

In regard to shipping, there are three cement and iron wharves which are absolutely rat proof, and which are now used for the greater part of the outgoing freight. Regarding vessels clearing for United States ports, freight received on the aforementioned rat proof wharves is subject to inspection to insure its freedom from rats. From the wharves the freight is loaded on lighters and thence taken to the vessels. The principal cargoes handled are sugar, tobacco, vegetables, fruits, and hides. The hides that are shipped are salted and disinfected by immersion into a 5 per cent carbolic acid solution, and are kept salted and wet until the day of shipment, when they are packed in bundles. Vessels clearing for United States ports are fumigated while empty. Very few have been fumigated with cargo. For empty vessels, $2\frac{1}{2}$ to 3 pounds of sulphur per 1,000 cubic feet is used, the disinfection continuing for six hours or more. The fumigation is simultaneous for all parts of the vessel with the exception of the engine room. If cargo is taken on after fumigation, a quarantine inspector is detailed aboard the vessel in order to enforce the regulations with regard to communication held with lighters, and also to inspect the cargo for the possible presence of rats. No shore leave is granted to members of crews, nor are vessels allowed to ship crews in Habana.

Passed Asst. Surg. von Ezdorf further reports July 20 that to date 3,015 rats have been caught in Habana and necropsied and that none has been found infected.

Dr. von Ezdorf further reported July 22 that a case which had for some days been considered suspicious had been positively diagnosed to be plague; that the patient had resided in Baratillo Street in the same house as the one occupied by the second case of plague reported; the patient had been ill for nine days, during which time he had been isolated.

This makes to date a total of three positive cases of plague in Habana.

HAWAII.

Examination of Rodents for Plague Infection.

During the week ended June 22, 1912, 598 rats and mongoose were examined at Hilo and 1,619 at Honokaa. No plague infection was found.

The last case of human plague occurred at Honokaa March 15, 1912. The last plague-infected rat was found between Honokaa and Kapulena April 24, 1912.

ITALY.

Examination of Emigrants.

Surg. Geddings, at Naples, reports:

Vessels inspected at Naples, Messina, and Palermo, week ended June 29, 1912.

NAPLES.

Date.	Name of ship.	Destination.	Steerage passengers inspected and passed.	Pieces of baggage inspected and passed.	Pieces of baggage disinfected.
June 25	San Giorgio.....	New York.....			
26	Canopic.....	Boston.....	872	175	1,380
28	Carpathia.....	New York.....			
28	San Giorgio.....	do.....	398	50	520
	Total.....		1,270	225	1,900

MESSINA.

June 26	San Giorgio.....	New York.....	168	20	171
26	Carpathia.....	do.....			

PALERMO.

June 27	Canopic.....	Boston.....	94	100	90
27	Carpathia.....	New York.....			
27	San Giorgio.....	do.....	281	270	180
29	Moncenisio.....	New Orleans.....			
	Total.....		375	370	270

JAPAN.

Formosa—Cholera—Plague.

Consul Reat, at Tamsui, reports June 18: Twenty-one cases of cholera, with 12 deaths, and 13 cases of plague, with 9 deaths, in the island of Formosa during the week ended June 15, 1912. The last case of cholera previously reported in Formosa occurred December 17, 1911.

Yokohama—Disinfection of Vessel for Plague Rats.

Surg. Irwin, at Yokohama, reports June 24: Before the arrival at Yokohama of the steamship *Persia* a telegram was received from Hongkong stating that two Filipinos landed there from the *Persia* had died of plague. Upon arrival the vessel was remanded to the quarantine station at Nagahama and disinfected with carbon-monoxide gas and carbolic-acid solution. Sulphur could not be used on account of the cargo of tea and silk. Sulphur fumigation had been performed at Hongkong, but as a number of rats were killed by the carbon monoxide used at Nagahama it was evident that the sulphur fumigation should be repeated to kill fleas. It was recommended that this be done after the removal of the cargo.

PHILIPPINE ISLANDS.**Mortality Report—Government Employees.**

The Governor General of the Philippine Islands reports, July 15, 1912, as follows: For the fiscal year ending June 30, 1912, total number of government employees, 9,395; deaths, 40; average years service, 5.62; average age at death, 32; annual death rate per thousand, 5.65.

Protection Against Plague.

Chief Quarantine Officer Heiser reports, May 31, as follows:

The plague epidemic along the China coast is constantly increasing in severity, and is a grave menace to the Philippines. The constant spread and increase in the number of cases and deaths in the nearby ports of Hongkong and Kowloon are particularly dangerous to these islands. For the two weeks ended May 18, 1912, 346 plague cases, with 297 deaths, were reported from Hongkong.

The case which developed in a contact undergoing detention at the Mariveles Quarantine Station well illustrates the insidious nature of the present outbreak. The masked symptoms that occurred in the two cases of pneumonic plague which were detected at Manila in the steamers *Loongsang* and *Zafiro* have already been reported in my letter of April 11. In this last case the medical officer in command of the Mariveles Quarantine Station observed on April 30, 1912, that the patient had a temperature of 38.9° C., and pulse of 100, with a few symptoms of pneumonia. Up until May 6 he ran an irregular temperature which varied between 38.6° and 39.8°, and on May 5 he expectorated a small quantity of blood. Smears of this were made, but no suspicious organisms could be found. During all this time the patient stoutly maintained that he was not ill, that he felt perfectly well, and strenuously objected to being detained in the hospital. On May 6 his temperature and pulse suddenly dropped, and on the morning of that day a slight enlargement of the glands in the right axilla was noted. By 5 p. m. they had shown considerable increase in size; the right side of the neck was swollen and tender; and there was also tenderness in the right groin. The patient now stated that he felt very ill. Before midnight the palpable glands throughout the body were constantly increasing in size, and at 7 o'clock on the morning of May 7 the patient died. Laboratory examinations, subsequently made, fully established the diagnosis of pneumonic plague.

From the foregoing it is evident that the illness in the patient who died on the steamer *Loongsang* was not noted by the officers and laymen on board, and that the unusual strain caused by heaving on a rope, as was alleged, might well have hastened his death before the symptoms could be noticed by the officers of the vessel.

The rats killed by the biweekly fumigation of vessels plying between Hongkong and Amoy and Manila have been examined at Manila for plague. The results to date have all been negative.

There is reason to believe that plague has been present for some time in Amoy.

Cabin passengers are detained in quarantine at Mariveles, if they have lived in the Asiatic quarters of the China coast. Advices from the plague centers tend to show that, just now, the well-to-do classes,

owing to the large number of servants which they employ, are liable to convey the disease, and from a quarantine standpoint must be viewed as steerage.

PORTO RICO.

Plague Situation.

On July 15 there were no new cases of plague reported. July 16 a diagnosis of plague was made in a case which had been previously reported at San Juan as suspicious. July 17 and 18 there were no new cases of plague. July 19 a diagnosis of plague was confirmed in a case which had been previously reported as suspicious at Carolina. This makes the second case occurring at Carolina, in addition to the one reported at Loiza in which the infection in all probability had been contracted in Carolina. July 20, 1 case was reported at San Juan and 2 cases at Santurce. July 21 there were no new cases. This makes a total for all Porto Rico up to and including July 21 of 42 cases with 23 deaths, of which 28 cases occurred in the old city of San Juan; 9 in Santurce, a residential suburb of San Juan; 2 in Carolina, a town 13 miles from San Juan; 1 at Loiza, 3 miles from Carolina and 16 miles from San Juan; 1 at Arroyo, 40 miles from San Juan; and 1 at Dorado, 13 miles from San Juan.

Rats examined July 10 to 13, inclusive.

Place.	Rats examined.	Rats found infected.	Rats found suspicious.
San Juan.....	23	0	0
Puerta de Tierra ¹	15	2	0
Santurce.....	139	4	5
All Porto Rico.....	679	6	9

¹ Puerta de Tierra is a section of San Juan.

Carolina.

Passed Asst. Surg. Creel reports, July 16:

The last case of plague reported in Carolina occurred in the municipal jail, which is located in the same buildings wherein the Loiza case contracted his infection. The structure of the building is of the character known as adobe in some countries, but called "mamposteria" in Porto Rico. On the first inspection of Carolina, it was discovered that this building, and especially the thick walls of mamposteria, was riddled with rat holes and rat runs. Its total demolition was advised, and agreed upon by the director of sanitation. However, the matter was deferred until to-day. This matter has again been taken up with the director of sanitation, and it is expected that the building will be destroyed without further delay.

Rat proofing of houses and destruction of rat harbors in Carolina has just about been completed. It is believed that when the above-mentioned building has been torn down rat infection will have been practically eradicated from Carolina.

To date there have been examined from Carolina 287 rats, of which 10 were found infected.

SAN JUAN—RAT PROOFING.

Passed Asst. Surg. Creel reported, July 17:

Regarding the rat proofing of wharves and warehouses on water front at San Juan, instructions have already been given for the rat proofing of docks, and this order will be effectually complied with at an early date. Large warehouses, however, offer certain obstacles to immediate rat proofing. In the first place, all concrete is imported, and the sudden increased demand for concrete work will soon drain the present supply. Again, many of the warehouses are filled with such large amounts of freight as to necessitate a considerable time for its removal. Both of these conditions will prevent immediate rat proofing of the larger warehouses, but orders for material have already been forwarded to the States, and the owners of warehouses have given every evidence of willingness to comply with the law in so far as they are able. There is only one large warehouse immediately on the water front. This is the customs warehouse, called the "Tinglado." Orders have been given, and will be executed, for the total destruction of the place within the following week, inasmuch as it can not be rat proofed excepting by entirely new construction.

Recently promulgated regulations for rat proofing follow:

GOVERNMENT OF PORTO RICO,
OFFICE OF THE SECRETARY,
San Juan, P. R., July 15, 1912.

[Administrative Bulletin No. 45.]

BY THE ACTING GOVERNOR OF PORTO RICO.

A PROCLAMATION.

SANITARY RULES AND REGULATIONS No. 3.—RAT PROOFING OF ALL BUILDINGS AND OUTHOUSES IN PORTO RICO; REGULATIONS GOVERNING; PROMULGATED.

The following rules and regulations, prescribed by the insular board of health and approved by the executive council on July 11, 1912, are hereby promulgated for the information and guidance of all concerned:

REGULATIONS GOVERNING THE CONSTRUCTION AND MAKING RAT PROOF OF ALL BUILDINGS AND OUTHOUSES IN THE ISLAND OF PORTO RICO.

"SECTION 1. From and after the approval of these regulations, no house or building, storehouse, store, warehouse, etc., can be constructed without submitting to the sanitary service a special plan providing that the floor of the lower story be made of concrete when the floor is not to be a sufficient height from the ground to permit free access; or the wooden floor may be placed immediately on top of the concrete without leaving any space which may serve as a refuge for rats (no wood or other inferior material shall be used under the flooring. Concrete floors shall have walls of concrete or stone extending at least 2 feet below the surface of surrounding ground and shall also have a concrete or masonry wall extending 1 foot above the level of the floor, the walls of buildings to fit flush on top of concrete or masonry walls); and what other means are to be adopted in order that said buildings and establishments may be rat proof are to be clearly specified. The sanitary service is authorized to approve or to make in said plans the changes which the case may require, without which approval the work, which must conform in each case to the definitely approved plan, can not be commenced.

"The plans must be sent directly to the health officer: *Provided*, That these regulations shall be understood as amplifying the provisions concerning plans in the regulations now in force concerning constructions.

"SEC. 2. In houses and buildings already constructed the following rules shall be observed:

"Dwelling houses which have the floor of the lower story of wood shall be made rat-proof by (1) raising the floor to a height of at least 2 feet from the ground with all

underpinning free, or (2) shall have all space beneath flooring made rat-proof by a foundation wall of stone or concrete extending below surface of ground to depth of 2 feet and fitting flush the floor of house. All decayed wood must be replaced.

"SEC. 3. In no dwelling house or building shall food, remnants of food, or other matter which may be made use of by the rats be kept, except when placed in pantries, storerooms, or receptacles constructed so as to be inaccessible to said rodents.

"SEC. 4. Roofs, garrets, courtyards, yards, alleys, cellars, and any other open space belonging to houses or buildings must be kept free from food, garbage, forage, and other material which may serve as food or as a refuge for rats.

"SEC. 5. Sinks, drains, gutters, and private sewers shall be kept strictly clean.

"SEC. 6. Coconut-palm trees, mango, and fruit trees which furnish food for rats and are situated in gardens or orchards of any house or building within the city limits or within the neighborhood of any town, at the discretion of the health officer and with the approval of the director of health, shall be kept free of rats, first exterminating those already existing, and protecting the trunk of the tree with a band of tin or zinc and other suitable means to render the trees inaccessible to the rodents.

"SEC. 7. Every building intended for a market, warehouse, storehouse, bakery, macaroni factory, distillery, pastry shops, stores, groceries, wine cellars, piers, hotels, cafés, restaurants, eating houses and booths shall be subject to the rules prescribed for dwelling houses and buildings: *Provided, notwithstanding*, That markets, piers, warehouses, and any storehouse of provisions must necessarily have the floor of concrete or plaster, and further:

"(a) Provisions and other articles in storehouses or on sale at wholesale or retail shall be kept in piles placed upon platforms which shall be at least a foot above the pavement, and arranged in rows, leaving free spaces between to permit of easy cleaning and for sanitary inspection. The floor shall be kept free of provisions spilled either through breakage or through handling of the receptacles which contained them.

"(b) Groceries, small shops, and other establishments which sell at retail shall have all the provisions for daily consumption in lockers or cupboards placed in such a way that they shall be inaccessible to rats.

"SEC. 8. Lots and ground not built upon within the city limits shall be subject to the preceding regulations which may be applicable.

"SEC. 9. Barnyard fowls shall not be kept within the city limits of any town except under the following conditions:

"A rat-proof henhouse shall be constructed which must have a concrete floor as well as walls of the same material, which shall be sunk in the ground to a depth of 2 feet and raised 1 foot above the level of the floor. This surface must be surrounded by wire netting which shall have a half-inch mesh and be 6 feet high. Food intended for the fowls must be kept within these henhouses so that it shall not be accessible to rats, and it will not be permitted in any case to deposit it outside.

"SEC. 10. Stables and stalls within the city limits must fulfill the following conditions:

"1. Each horse cared for shall have a space of not less than 5 square meters.

"2. The floor shall be of concrete and with an adequate slope, as of one-eighth of an inch per foot.

"3. Upon this concrete floor may be placed planks for a floor for the horses; this shall be made in parts or sections so that it may be easily raised. The boards which form the floor shall be separated by at least 2 inches.

"4. The sections or parts of the floor must be raised once a week in order to do the necessary cleaning.

"5. Each stable shall be provided with a well lined with cement in which to deposit the manure, the well to have a capacity of at least one-fourth of a cubic meter for each horse. Said receptacle shall have a well-fitting cover divided into two sections.

"6. The manure shall be placed in said receptacles and carefully covered. The cleaning of said wells or receptacles shall be done once a week and the manure carried to the place which the director of health may designate.

"7. The stable, stall, manger, and their surroundings must be kept strictly clean.

"8. Grain to be used as food for the live stock shall be kept in a rat-proof box.

"9. Each manger shall be placed at a minimum distance of 2 feet from the wall or building and its sides shall have a slope of 2 inches toward the bottom and shall be covered with tin or zinc, and the said manger shall be at least 18 inches deep to avoid the spilling of food.

"SEC. 11. These conditions must be fulfilled within a period of time which the director of health in each case shall fix in accordance with the importance of the work and the means to be obtained in that locality.

"SEC. 12. Every infraction of any of the rules set forth in these regulations shall be punished with a maximum fine of \$100, and the director of health shall have the necessary work done at the expense of the owner, in accordance with the law of sanitation in force: *Provided*, That those persons who prove that they do not possess more than one piece of property whose value does not exceed \$100, according to the official assessment, shall be exempt from payment, and the said work shall be done, in this case, at the expense of the public treasury."

Being so promulgated, and having been published in two newspapers of general circulation in the island, in accordance with the provisions of section 13 of Act No. 81, approved March 14, 1912, the said rules and regulations, entitled "Regulations governing the construction and making rat-proof of all buildings and outhouses in the island of Porto Rico," on and after this date have the force and effect of law.

In testimony whereof, I have hereunto set my hand and caused the seal of the Government of Porto Rico to be affixed at the city of San Juan, this 15th day of July, A. D. 1912.

[SEAL.]

M. DREW CARREL,
Acting Governor.

Promulgated according to law, July 15, 1912.

R. SIACA PACHECO,
Acting Secretary of Porto Rico.

San Juan—Inspection of Outgoing Freight.

All freight leaving San Juan is subject to inspection and fumigated if its character is such as to render possible the harboring of rats. All cars are inspected, and if not rat proof are remanded to the railroad shop for the purpose of making them so. A copy of instructions to inspectors follows:

To inspectors in charge of freight inspection:

For your information and guidance the following directions for the inspection of freight are hereby given.

All packages loaded into cars will fall under two classes:

1. Those which will have to be fumigated.
2. Those which can be inspected and passed.

In a general way those packages which can be passed by inspection are as follows:

All boxes and barrels which are unbroken and which do not permit a rat to enter, if packed outside of San Juan.

All freight contained in unbroken sacks; baled hay—this last-named article shall be thoroughly inspected.

The following articles in a general way will require either to be repacked or subjected to a sulphur fumigation:

Merchandise packed within San Juan; any crated material, especially chinaware or crockery or any articles which are packed in hay or straw, whether they originated in San Juan or outside of San Juan, irrespective of their origin; any barrel or boxed goods in which the container has been broken so as to admit the entrance of a rat. All goods within any container whatever which will permit the harboring of a rat.

These will be your general instructions. You will, necessarily, have to use discretion in difficult cases, and you will bend your energies to see that no article or freight that could contain a rat leaves the depot. All cars must be loaded by daylight. After a car has been completely loaded it shall be sealed, and you will attach a paster across the seal.

In order not to duplicate fumigation of freight, as soon as the fumigation room is open and you can enter in safety, you will immediately attach a fumigation paster to each article. In all cases of freight in which you are not certain as to whether they should be passed or fumigated you will call up this office by telephone for further instructions.

Respectfully,

R. H. CREEL,
*Passed Assistant Surgeon,
Public Health and Marine-Hospital Service.*

Dorado.

The case of plague reported at Dorado July 15 was in the person of a 14-year-old boy, who had not been out of Dorado, and his infection, therefore, presumably occurred at that place. Active measures have

been instituted at Dorado, which is quite a small town, having a population of 900 people and less than 200 buildings. No other cases have occurred to date (July 17).

Rat Examination Along Railroad.

Instructions have been given to health officers along the line of the Porto Rican Railroad to send to the laboratory, as soon as possible, rats taken in the vicinity of railroad stations. This action is due to the supposition that the infection at Carolina and at Dorado may have been transmitted by means of the railroad.

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX.

Reports Received During Week Ended July 26, 1912.

[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.
China: Swatow.....	June 22.....			Sporadic cases occurring in the port.
India: Moulmine.....	May 4-11.....	6	6	
Japan: Formosa.....	June 9-15.....	21	12	Total May 19-June 15: Cases 58, deaths 67.
Russian Empire: Astrakhan.....	July 12.....	1		
Turkey in Asia.....				
Adana..... Alexandretta.....	May 14-20..... May 28-June 15...	11 3	6 1	

YELLOW FEVER.

Brazil: Manaos.....	June 16-29.....		7	
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PLAGUE.

Chile: Iquique.....	June 9-22.....	7	4	Present. June 19, 2 deaths from steamship Persia.
China: Ambo..... Hongkong.....	June 22..... June 9-15.....	126	104	
Packhoi.....	May 1-29 ¹		35	
Cuba: Habana.....	July 14-22.....	1		June 26, 4 cases in the lazaretto at Trujillo.
India: Karachi.....	June 9-15.....	3	3	
Japan: Formosa.....	June 2-15.....	18	14	
Java: Passerocean Residency.....	June 2-8.....	12	9	
Persia: Bushir.....	May 19-June 1.....	43	39	
Peru: Salaverry.....	June 6-12.....	1	1	
Porto Rico: Carolina..... San Juan..... Santurce.....	July 19..... July 20..... do.....	1 1 2	1	

¹ From the Veröffentlichungen des Kaiserlichen Gesundheitsamtes, July 3, 1912.

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

Reports Received During Week Ended July 26, 1912.

SMALLPOX.

Places.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Aden.....	June 18-24.....		1	
British East Africa:				
Mombasa.....	May 1-31.....	2		
Chile:				
Coquimbo.....	Mar. 1-May 1.....	30		
Do.....	June 9-22.....	30	7	
La Serena.....	Nov. 30-May 7 ² ...	300	40	
China:				
Shanghai.....	June 3-16.....		6	
Germany.....				Total June 23-July 6: Cases, 6.
Great Britain:				
Bristol.....	June 22-28.....	2		
India:				
Madras.....	June 9-15.....	2	1	
Italy:				
Leghorn.....	June 23-July 6....	5		
Naples.....	June 23-29.....	3	1	
Japan:				
Kobe.....	June 17-23.....	1		
Java:				
Batavia.....	June 2-8.....	8	2	
Surabaya.....	Apr. 1-30 ²	155	70	
Mexico:				
Aguascalientes.....	July 1-7.....		1	
Mazatlan.....	July 3-9.....		1	Total Jan. 1-June 30: Deaths, 29.
Mexico.....	June 2-22.....	112	60	
Peru:				
Callao.....	May 19-June 2.....			Present.
Portugal:				
Lisbon.....	June 23-29.....	4		
Russia:				
Libau.....	May 14-June 13....		1	
Do.....	June 22-28.....	2		
Riga.....	June 23-29.....	1		
St. Petersburg.....	June 16-22.....	13	3	
Warsaw.....	May 12-18.....	1	3	
Spain:				
Barcelona.....	July 1-6.....		1	
Turkey in Asia:				
Beirut.....	June 23-29.....	15		
Turkey in Europe:				
Constantinople.....	June 24-30.....		9	

² From the Veröffentlichungen des Kaiserlichen Gesundheitsamtes, July 3, 1912.

Reports Received from June 29 to July 19, 1912.

[For reports received from Dec. 30, 1911, to June 28, 1912, see PUBLIC HEALTH REPORTS for June 28, 1912. In accordance with custom, the tables of epidemic diseases are terminated semiannually and new tables begun.]

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Ceylon:				
Colombo.....	May 19-25.....	1		In the port.
China:				
Amoy.....	June 1-20.....			Present in vicinity.
Swatow.....	June 1-22.....			Sporadic cases occurring in the port.
India:				
Bassein.....	May 5-11.....	14	13	
Bombay.....	May 19-June 8....	82	74	
Calcutta.....	Apr. 21-27.....		87	Received out of date.
Do.....	May 5-25.....		116	
Madras.....	May 19-June 8....	3	2	
Rangoon.....	Apr. 1-30.....	25	24	
Indo-China:				
Saigon.....	May 14-28.....	92	68	
Japan:				
Formosa—				
Tamsui.....	July 1.....			Present.

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

Reports Received from June 29 to July 19, 1912.

CHOLERA—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Russian Empire:				
Astrakhan.....	June 11.....	1	1	
Siam:				
Bangkok.....	Apr. 21-May 18.....		660	
Straits Settlements:				
Singapore.....	May 12-June 1....	5	8	

YELLOW FEVER.

Brazil:				
Manaos.....	June 2-15.....		6	
Pernambuco.....	Apr. 16-30.....		3	
Chile:				
Toco district.....	May 1-16.....	62	17	
Tocopilla.....	....do.....	237	85	June 22 Improving.
Ecuador:				
Duran.....	May 1-15.....	1	1	
Guayaquil.....	May 1-31.....	37	21	
Milagro.....	May 16-31.....	5	2	
Naranjito.....	May 1-31.....	4	2	
Yaguachi.....	May 16-31.....	1		
Mexico:				
San Juan Bautista.....	June 23-July 7....	6		
Venezuela:				
Caracas.....	May 1-31.....		4	
La Guaira.....	May 1.....	1		
Macuto.....	June 1.....	1	1	
Maiquetia.....	June 17.....	1	1	

PLAGUE.

Chile:				
Iquique.....	May 26-June 9....	9	6	
China:				
Ampo.....	May 18-June 22.....			May 18-June 15 present in the magistracies of Fungshun, Cayung, and Puning.
Amoy.....	May 20-June 1....	46	40	Present.
Chifu.....	June 2-8.....			Present in vicinity.
Hongkong.....	May 12-June 8....	880	721	2 deaths on S. S. Cheongshing between Tientsin and Taku.
Tientsin.....	June 2-8.....	1	1	From S. S. Cheongshing from Hongkong.
Cuba:				
Habana.....	July 4-12.....	2	1	
Ecuador:				
Guayaquil.....	May 1-31.....	4	2	
Dutch East Indies:				
Java—				
Provinces—				
Kediri.....	Mar. 31-Apr. 6....	2	2	
Madiven.....	....do.....	3	3	
Passerocean Residency.....	May 12-25.....	16	15	
Egypt:				
Alexandria.....	May 27-June 16...	5	1	
Port Said.....	May 29-June 1....	1		
Provinces—				
Assiout.....	May 25-June 1....	2		
Beni Souef.....	May 30-June 6....	3	3	
Carchieh.....	Apr. 28-June 4....	1		
Fayoum.....	Apr. 28-May 4....	1		
Minieh.....	May 27-June 5....	13	2	
India:				
Bombay.....	May 19-June 8....	156	117	
Calcutta.....	Apr. 21-27.....		119	
Do.....	May 5-25.....		166	
Karachi.....	Apr. 1-June 8....	55	54	
Rangoon.....	Apr. 1-30.....	51	46	
Bombay Presidency and Sind.....	Apr. 21-May 25....	1,434	1,211	
Madras Presidency.....	....do.....	64	57	
Bengal.....	....do.....	443	406	
Babar and Orissa.....	....do.....	4,796	4,167	

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

Reports Received from June 29 to July 19, 1912.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
India—Continued.				
United Provinces.....	Apr. 21—May 25...	6,794	6,370	
Punjab.....	do.....	13,349	10,940	
Burma.....	do.....	125	108	
Central Provinces.....	do.....	283	238	
Mysore State.....	do.....	55	50	
Hyderabad State.....	do.....	217	175	
Central India.....	do.....	276	227	
Rajputana and Ajmere Merwara.....	do.....	490	411	
Kashmir.....	do.....	229	134	Total for India Apr. 21—May 25: Cases, 23,555; deaths, 24,494.
Indo-China:				
Saigon.....	May 14—28.....	21	14	
Japan:				
Formosa.....	Apr. 22—June 1.....	49	33	
Java:				
Passerocean Residency.....	May 26—June 1.....	11	9	
Persia:				
Bushir.....	May 12—18.....	64	61	Total Feb. 4—May 18: Cases 979, deaths 664, including report, p. 1060, Pt. I.
Philippine Islands:				
Mariveles quarantine sta- tion.....	Apr. 30—May 7.....	1	1	From s. s. Taisang from Amoy.
Porto Rico:				
Arroyo.....	June 22.....	1		On the schooner Guillermito from San Juan.
Carolina.....	June 25.....	1	1	
Dorado.....	July 15.....	1	1	
Loiza.....	June 28.....	1	1	
San Juan.....	June 21—July 13.....	14	11	Total June 14—July 13: Cases 26, deaths 16.
Santurce.....	June 22—July 8.....	7	3	
Siam:				
Bangkok.....	Apr. 21—May 18.....		1	
South Africa:				
Durban.....				Jan. 14—May 31: Cases 30, deaths 24, including report, p. 1060, Pt. I.
Straits Settlements:				
Singapore.....	May 5—June 1.....	8	6	
Turkey in Asia:				
Basra.....	May 20.....	1	1	
Jiddah.....	May 18.....	1		
West Indies:				
Trinidad.....				Total Apr. 1—June 13: Cases 11, deaths 7, including report, p. 1060, Pt. I; 3 of these cases were in Tunapuna.
Do.....	July 2—11.....	2		

SMALLPOX.

Algeria:				
Algiers.....	Jan. 1—Apr. 30.....	17		
Constantine.....	Apr. 1—30.....	4		
Australia:				
Fremantle quarantine sta- tion.....	Apr. 19.....	1		From s. s. Malwa from London via Colombo.
Austria-Hungary:				
Bohemia.....	May 12—18.....	1		
Galicia.....	do.....	2		
Brazil:				
Pernambuco.....	Apr. 16—30.....		39	
Canada:				
Provinces—				
Ontario—				
Ottawa.....	June 9—15.....	1		
Windsor.....	June 12—22.....	2		
Quebec—				
Montreal.....	June 16—22.....	2		
Chile:				
Coquimbo.....	May 26—June 1.....	7		

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

Reports Received from June 29 to July 19, 1912.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
China:				
Amoy.....	May 21-June 8.....			Present in vicinity.
Chungking.....	May 5-June 1.....			Present.
Hongkong.....	May 12-June 8.....	18	11	
Nanking.....	May 19-June 22.....			Do.
Shanghai.....	May 28-June 2.....		1	
Tientsin.....	June 2-8.....		1	
Egypt:				
Cairo.....	May 14-27.....	4		
Port Said.....	do.....	2	1	
France:				
Nantes.....	June 17-23.....	1		
Paris.....	June 2-22.....	4	1	
Germany.....				Total June 2-23: Cases, 15.
Great Britain:				
Liverpool.....	June 2-8.....	1		
India:				
Bombay.....	May 19-June 8.....	128	106	
Calcutta.....	Apr. 21-27.....		2	
Do.....	May 5-25.....		8	
Karachi.....	May 19-26.....	1	1	
Madras.....	May 19-June 1.....	6	4	
Mulmaine.....	Jan. 1-May 4.....		85	
Rangoon.....	Apr. 1-30.....	154	57	
Indo-China:				
Saigon.....	May 14-20.....	3	2	
Italy:				
Leghorn.....	June 9-22.....	4		
Naples.....	June 2-22.....	13	1	
Palermo.....	May 26-June 1.....	3	1	
Turin.....	June 3-9.....	1		
Japan:				
Kobe.....	June 3-16.....	2		
Java:				
Batavia.....	May 12-June 1.....	11	2	
Mexico:				
Aguascalientes.....	June 9-16.....		1	
Durango.....	June 1-30.....	1	1	
Frontera.....	July 7.....	1		
Guadalajara.....	June 9-15.....	1	2	
Juarez.....	June 16-22.....		1	
Mazatlan.....	June 19-25.....		1	
Mexico.....	May 19-June 1.....	94	43	
San Luis Potosi.....	Apr. 7-20.....	2	2	
Portugal:				
Lisbon.....	May 27-June 22.....	13		
Russia:				
Moscow.....	May 19-June 8.....	12	2	
Odessa.....	May 19-25.....		1	
Do.....	June 2-22.....	4	1	
Riga.....	June 9-22.....	7		
St. Petersburg.....	May 27-June 15.....	31	6	
Warsaw.....	Apr. 21-May 11.....	17	9	
Siam:				
Bangkok.....	Apr. 21-May 18.....		41	
Siberia:				
Vladivostok.....	May 17-23.....	1		
South Africa:				
Durban.....	Apr. 28-May 31.....	6	2	
Spain:				
Cadiz.....	May 1-31.....		2	
Valencia.....	June 2-22.....	45	2	
Straits Settlements:				
Singapore.....	May 5-June 1.....	3	1	
Switzerland:				
Berne.....	May 5-11.....	2		
Geneva.....	do.....	1		
Lucerne.....	May 12-18.....	1		
Neuchatel.....	do.....	1		
Turkey in Asia:				
Beirut.....	May 26-June 22.....	35		
Turkey in Europe:				
Constantinople.....	May 27-June 23.....		45	
Venezuela:				
La Guaira.....	June 6.....	1		

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.
Aberdeen	June 29	163,084	57								1	1		1
Aguascalientes	July 7	40,000	65	1				1	1			1	1	
Amsterdam	June 22	582,674	106	16							1	1	6	1
Do	June 28		98	18									5	1
Antwerp	June 29	316,604	60	5									2	
Do	June 22		71	3									2	
Athens	July 1	250,010	91	14							1			2
Barcelona	June 29	591,272	214	17						3		1	1	
Do	July 6		185	28				1		2		1		
Batavia	June 8	217,630	12					2	1					
Beirut	June 29	80,000	20	2						4				
Belfast	do	391,051	96	20									1	3
Belgrade	June 22	90,050	31											
Do	June 29		46								1			
Bergen	June 22	87,749	14	2								1		
Berlin	June 15	2,070,202	515	67						1	4	10	6	8
Do	June 22	2,077,294	485	84						1	7	4	6	7
Birmingham	June 29	842,517	174							1	2	2	2	2
Do	July 6		190	16							2	3	2	4
Bordeaux	do	253,000	58	6							1			
Bristol	June 28	359,400	69	4										
Brussels	June 29	739,684	172	28						1	1	1	1	3
Catania	June 28	207,000	83	4					2			4	1	3
Do	July 5		84	3							2			
Charlottetown	July 9	93,728											1	
Christiania	June 29	248,000	61	13								2	3	
Colombo	June 8	227,026	141	10										
Coquimbo	June 15	14,000	20	3										1
Do	June 22		15											
Constantinople	June 30	1,300,000	213	31						3	1	1	3	
Copenhagen	June 22	465,000	111	12							3		1	3
Dalny	June 15	45,719	26	3							1	1	4	
Dublin	June 22	406,536	131	23								2	11	
Do	June 29		129	22							1	1	4	
Dundee	do	171,006	74	5								2	18	2
Do	July 6		71	8								7		
Edinburgh	June 29	321,200	91	11										1
Fiume	do	51,500	20	5							1		2	
Ghent	June 8	166,235	35	1									1	
Do	June 22		36	2									2	
Glasgow	July 5	785,600	202	8							2	3	2	
Gothenburg	July 29	170,100	50	8								1		4
Havre	June 29	136,159	68	12						1		2		
Hongkong	May 25	336,488			168			1		1				
Do	June 1				110			3						
Do	June 8				96					2				
Do	June 15				104					2				
Hull	June 29	282,987	48							2			1	
Iquique	June 15	40,000		7	4					2				
Do	June 22			8						1				
Karachi	June 15	157,290	110		3								1	
Kingston	June 29	57,379								1				
Kobe	June 23	425,023	129							1		1	1	
Leeds	June 29	445,568	120	11							1	1	14	1
Do	July 6		106	10								2	1	1
Libau	June 20	84,000									4			
Liege	June 22	168,735	28	4									1	
Do	June 29		37	4									1	
Liverpool	do	752,055	226	19						2	3	2	32	6
Do	July 6		250	19							3	1	33	8
London	June 29	7,340,119	1,356							1	6	6	49	16
Madras	June 15	518,660	300					1		1				
Manaos	June 22	52,000	46	4										
Do	June 29		42	4				5						
Manchester	do	714,427	147	14								2	6	4
Matamoras	July 14	15,000	5							1				
Mazatlan	July 9	22,000	21	1				1						

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.
Mexico.....	June 8	719,052	385	13				14	9		1		3	
Do.....	June 15		447	12				25	5		4		4	
Do.....	June 22		381	5				21	7		4		2	1
Monterey.....	July 7	100,000	58	8									2	
Montreal.....	July 13	466,198	329	24						1				1
Nagasaki.....	June 16	179,257	35	7						1				
Nagoya.....	June 15	429,297	121							2		2		
Newcastle-on-Tyne.....	June 29	266,671	60	1						1			1	
Nottingham.....	June 22	262,563	56	6								2	6	1
Do.....	June 29		55	4									4	2
Palermo.....do.....		340,000	127	7					2	4	1			
Penang.....	June 1	102,167	78	11									1	
Port of Spain.....	June 22	60,000	37	3						1			1	
Rangoon.....	May 25	235,316	153	6	4	2		4						
Do.....	June 1	293,316	182	10	12	1		1						
Rome.....	Feb. 24	564,913	200	23						3	2	2	4	2
Do.....	Mar. 2		184	24						2		3	2	3
Do.....	Mar. 9		171	18						1	1	3		1
Do.....	Mar. 16		147	12						5		2	3	1
Saigon.....	June 3	220,000	99		5	92		2						
St. Petersburg.....	June 22	1,962,400	860	129				3	1	16	14	3	64	5
Salaverry.....	June 12	1,700	74		1									
San Luis Potosi.....	May 4	82,946	60	2						2				
Santiago de Cuba.....	June 1	53,614	19	3						1				
Do.....	June 15		28	3						1				
Do.....	July 6		31							2				
Shanghai.....	June 9	500,000	159	20				3	1			1	6	
Do.....	June 16		147	26				3			7	2	6	
Sheffield.....	June 15	455,000	108	9							1	1		
Do.....	June 22		121	14							1			
Southampton.....	July 6	120,896	19	1						1		1	1	
Valencia.....	June 29	235,000	87	8				1						
Victoria.....	July 6	31,620	7											
Warsaw.....	May 18	821,369	250	34				8			4	1	2	2
Yokohama.....	June 24	444,039								1				

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

CANADA—*Hamilton*.—Month of June, 1912. Total number of deaths from all causes 81, including measles 4, tuberculosis 7. Cases reported: Diphtheria 12, measles 198, scarlet fever 19, tuberculosis 2.

FRANCE—*Roubaix*.—Month of June, 1912. Population, 122,723. Total number of deaths from all causes 140, including tuberculosis 29, typhoid fever 1.

GREAT BRITAIN.—Week ended June 22, 1912.

England and Wales.—The deaths registered in 95 great towns correspond to an annual rate of 11.6 per 1,000 of the population, which is estimated at 17,639,816.

Ireland.—The deaths registered in 22 principal town districts correspond to an annual rate of 15.7 per 1,000 of the population, which is estimated at 1,157,014.

Scotland.—The deaths registered in 18 principal towns correspond to an annual rate of 14.5 per 1,000 of the population, which is estimated at 2,182,400. The lowest rate was recorded at Clydebank, viz, 6.5, and the highest at Dundee, viz, 26.5, per 1,000. The total number of deaths from all causes was 605, including diphtheria 3, measles 30, scarlet fever 7.

JAMAICA—Kingston.—Month of June, 1912. Population, 57,397. Total number of deaths from all causes 124, including tuberculosis 18, typhoid fever 8.

PANAMA—Panama.—Three weeks ended July 6, 1912. Population, 30,000. Total number of deaths from all causes not reported. Seven deaths from tuberculosis were reported.

SOUTH AFRICA—Mombasa.—Month of May, 1912. Population, 26,000. Total number of deaths from all causes 72, including tuberculosis 3. Cases reported: Smallpox 2.

By authority of the Secretary of the Treasury:

RUPERT BLUE,
Surgeon General.

United States Public Health and Marine-Hospital Service.

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