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THE CHOLERA SITUATION.

The cholera situation remains practically the same as that reported last week. The disease continues to prevail in Italy apparently unabated. It is extending in Russia, and cases have been reported in Austria-Hungary. According to last advices the disease was still present at Marseille, France. The disease is spreading and the cases are becoming more numerous in Turkey, in Europe, and in Asia.

All precautions are being maintained to prevent the importation of the disease into the United States. Officers of the Public Health and Marine-Hospital Service are being kept at the principal foreign ports from which emigrants from cholera-infected localities embark for ports in the United States. Bacteriological examination of immigrants for the detection of cholera carriers is being continued. No case of cholera nor cholera carrier has been detected on arriving vessels since August 18, 1911.

ANTITYPHOID VACCINATION.

The prevalence of typhoid fever in practically every section of the United States makes any measure which will protect the individual or assist in preventing the spread of the disease of importance to health authorities, and of general interest. The production of artificial immunity against typhoid fever by antityphoid vaccination constitutes such a measure, and promises to have a considerable sphere of usefulness, especially for those about to enter conditions in which they will be unduly exposed to the disease, namely, physicians, nurses, hospital internes and externes, travelers, and armies.

However, although antityphoid vaccination is useful in the protection of the individual under the limitations noted in the report which follows, it should in no wise supplant the measures now in use and advocated for the prevention of the spread of the disease from the sick to the well. It should not lessen the precautions at the bedside, the disinfection of typhoid excreta in the household, the keeping of water supplies, both private and public, free from contamination, the purification of public water supplies where indicated and the supervision of the production and sale of milk, and other foodstuffs.

Antityphoid vaccine can now be obtained, by physicians wishing to use it, in the same way and at the same places as other biological products such as diphtheria antitoxin and vaccine for smallpox.

The following manufacturers of biological products have been licensed by the Secretary of the Treasury to produce and sell antityphoid vaccine in interstate traffic:

Parke, Davis & Co., Detroit, Mich.; H. K. Mulford Co., Philadelphia, Pa.; The Cutter Laboratory, Berkeley, Cal.; National Vaccine and Antitoxin Establishment, Washington, D. C.; Lederle Antitoxin Laboratories, New York City; Burroughs, Wellcome & Co., London, England (office for the United States, New York City); Swiss Serum and Vaccine Institute, Berne, Switzerland (agents for the United States, Pasteur Vaccine Co., New York City).

Before issuing these licenses the producing laboratories and their method of preparation of the vaccine were inspected by officers of the Public Health and Marine-Hospital Service detailed for the purpose and the product itself was examined in the Hygienic Laboratory.

A commission appointed by the Academy of Medicine of Paris to report upon the status of antityphoid vaccination has recently made its report. The commission consisted of MM. Chantemesse, Delorme, Kelsch, Landouzy, Netter, Roux, Thoinot, Vaillard, Widal, and H. Vincent, *rapporteur*. The report was written by H. Vincent and the conclusions were adopted by the commission. The report consists largely of a review of the experiments and statistics upon which the use of antityphoid vaccine is based.

Because of the interest and importance of the subject to health authorities and others, a translation has been made of extracts from this report, published in the April, 1911, Bulletin of the International Office of Public Hygiene at Paris. For the convenience of the reader the order of the report has been changed and the summary of the report and the conclusions of the commission placed first and the discussion and statistics last.

EXTRACTS FROM THE REPORT OF THE COMMISSION APPOINTED BY THE ACADEMY OF MEDICINE OF PARIS.[1]

(Translated by Joseph W. Schereschewsky, passed assistant surgeon, United States Public Health and Marine-Hospital Service.)

SUMMARY.

The facts and information contained in this report, as well as the indications for antityphoid vaccination may be summarized as follows:

First. Antityphoid vaccination has for several years been applied with success in the English, German, and American Army. More than 100,000 persons have been inoculated either in their native country or especially in colonies where these soldiers were sent and where typhoid fever is prevalent.

The antityphoid vaccines, hitherto the most frequently employed, have been the bacillary vaccines—that is, cultures of Eberth's bacillus killed by heat.

Second. The benefits conferred by these preventive inoculations are revealed by comparative statistics of the typhoid morbidity and mortality, on the one hand, among soldiers subjected to the vaccination and, on the other, among the nonvaccinated. The former

[1] From the Bull. de l'Off. Int. d'Hyg., Publ., Apr. 1911, pp. 631-662.

have presented a case incidence of typhoid fever of at least one-half that of the latter.

Third. Antityphoid vaccination does not accomplish the complete disappearance of this infectious disease in the communities where it is practiced, but it diminishes very notably its frequence. Moreover, such of the vaccinated who contract typhoid fever notwithstanding have much milder attacks than nonvaccinated subjects. The percentage of deaths supervening among the former is one-half that of the nonvaccinated typhoid patients.

Fourth. A single inoculation of bacillary vaccine assures a less efficacious protection than two or three inoculations. For vaccination by autolysates of living bacteria four injections are made.

Fifth. Relative or complete, the immunity engendered by antityphoid vaccination appears to last from one year (Pfeiffer-Kolle vaccine) to four years (Wright's vaccine). It is, therefore, advantageous, if it is desired to prolong this period of immunity, to have recourse to revaccination.

Sixth. No matter which vaccine is used, antityphoid vaccination has shown itself to be without danger for the very numerous persons who have been inoculated.

From the observations of Wright, Pfeiffer, and Kolle, Bassenge and Mayer, and others, it appears that injections of vaccines of dead bacilli, while harmless in themselves, give rise often to fever as well as painful local and general symptoms. These disappear in from 24 to 48 hours.

The proposition has been made to employ the autolysate of living bacilli as an antigen. This vaccine is much better borne, and causes but little pain or none at all.

Seventh. The inoculation of bacillary antityphoid vaccine may determine at times, for a period of from one to three weeks, a state of diminished resistance on the part of the subject to infection with Eberth's bacillus. This may result in a temporary predisposition to this infection. Although this is denied by Leishman and others, nevertheless, as a precautionary measure, vaccinal inoculations should never be made during an epidemic nor in persons who certainly have been exposed within less than three weeks to the contagion of typhoid fever. Preventive vaccination should, therefore, be generally undertaken before the usual time of the apparition of epidemics in localities and communities where they are habitually observed.

Eighth. For the same reason, and during the period immediately following inoculations, every person vaccinated against typhoid fever should take the strictest precautions in order to avoid the chances of typhoid infection by a careful watch upon the water that is drunk and the food that is eaten as well as by rigorous personal hygiene and cleanliness. The period during which such precautions must be taken has a duration of two or three weeks at the most.

Ninth. In the Army and Navy antityphoid vaccination is destined to render real service, more particularly in Algeria and Tunis, as well as in the colonies where typhoid fever is frequent and severe.

When there are no cases of typhoid fever and no danger of an epidemic at the place of destination of soldiers and sailors, the inoculations may be undertaken upon their arrival. In the contrary event, the inoculations should precede, by at least three weeks, the arrival

of these young men in colonies where the disease exists in endemic form.

Tenth. Antityphoid vaccination should be formally interdicted for every subject in whom typhoid fever seems imminent or at the beginning of an attack. It may, indeed, aggravate the disease.

Antityphoid vaccination should be practiced only upon perfectly healthy subjects, free from all organic or other defects and from local or general affections, no matter what their nature, especially tuberculosis.

Except in unusual circumstances, the vaccination of debilitated and delicate persons, who are likely to exhibit too severe a reaction to the antigen, is to be avoided.

Eleventh. Antityphoid vaccination, under present circumstances, can only be voluntary.

Nevertheless, it is highly important and advantageous to encourage its use by instructing communities as well as the military and the numerous other persons exposed to typhoid infection as to the degree of protection that may be expected from this specific method of immunization.

Twelfth. The different antityphoid vaccines derived from cultures of dead bacilli, whose efficacy has been demonstrated upon animals by Chantemesse and Widal and, subsequently upon man by Pfeiffer and Kolle, Wright and others have shown themselves to be equally efficacious, with the exception that the immunity from Wright's vaccine is more prolonged.

By reason of the painful reactions which the bacillary vaccines frequently give rise to, in vaccinated subjects, it is expedient to consider and to test vaccines obtained by the autolysis of living bacteria or any other vaccine showing itself to be efficacious and free from objection.

Thirteenth. Among persons who may be designated as particularly to be benefited by antityphoid vaccination, the following may be enumerated:

(*a*) Physicians, internes, medical students, male and female nurses in military and civil hospitals;

(*b*) Persons members of families in which bacillus carriers have been demonstrated.

(*c*) Young persons of both sexes who have come from salubrious regions in the country to cities which are habitual foci of typhoid fever.

(*d*) The population of cities where the latter disease is frequent.

(*e*) Soldiers and sailors (rank and file) sent either to Algeria and Tunis, or to colonies where typhoid fever is epidemic or endemic.

CONCLUSION.

Our general conclusion is derived from the long series of scientific observations which have accumulated during the last few years. These observations, made upon man derive their value both from their number and their results. They are still further fortified by the unanimous indorsements in England, Germany, and the United States, by the highest and most competent medical authority of these nations.

This conclusion is as follows: *There are grounds for recommending the voluntary employment of antityphoid vaccination as a rational and*

practical method of diminishing, by a sensible proportion, the frequence and gravity of typhoid fever in France and in the French colonies.

This recommendation is addressed to all whose profession, whose usual or accidental methods of alimentation, whose daily or frequent association with the sick or with bacillus carriers, expose them to direct or indirect contagion by the bacillus of typhoid fever. (The conclusion, put to a vote, was adopted.)

DISCUSSION AND STATISTICS.

The prevalence of typhoid fever at all centers and points of French territory justifies the injunction not to neglect any of the methods adequate to reduce the spread of this disease. Is antityphoid vaccination of their number, and by its employment may an efficient protection against the infection of Eberth's bacillus be expected? What are its advantages and what its disadvantages?

Although typhoid fever may recur in the same individual, this eventuality is none the less of considerable rarity. According to the statistics of the writer, it is only in 1 per cent of the cases, and in countries where the disease is rife (notably, in Algeria), that second attacks are observed.

The opinion, therefore, is quite justified that even a mild attack of typhoid fever assures an effective protection against a new infection, and, consequently, one may expect favorable results from a method of immunization founded upon an analogous principle.

The bacteriologists who have sought to evolve the method of antityphoid vaccination have had recourse to the principle of active vaccination; that is, to that of immunization by a true inoculation, either of the typhoid bacillus itself or of extracts or the products, by autolysis, of this microbe.

It is proper to refer, at the beginning of this study, to the important investigations of Chantemesse and Widal. Their date was 1888. By inoculating mice with cultures of the typhoid bacillus, killed by heat, they observed that this animal was vaccinated against typhoid infection (that is, against a true infection) and not an intoxication by the toxins of the bacillus typhosus. In 1892 Chantemesse and Widal repeated the same vaccinations with guinea pigs and rabbits.

The later investigations of Brieger, Kitasato, and Wassermann (the latter two employed cultures in thymus bouillon, heated to 100°), as well as those of Bruschettini, who employed at first heated and then living cultures, confirmed the results of Chantemesse and Widal, and showed the possibility of conferring upon animals complete immunity against typhoid infection.

These experimental researches have proved to be the point of departure of tentatives made to immunize man against certain infectious diseases. By applying the same principle, Haffkine has vaccinated man against cholera (1894).

The first antityphoid vaccinations in man were made by Pfeiffer and Kolle, upon two subjects who volunteered for the attempt. The systematic practice, and upon an extensive scale, of human vaccination by heated cultures was made about the same time by Almroth Wright.

It was, therefore, in 1896, and almost simultaneously, that Pfeiffer and Kolle in Germany, and A. Wright in England, advocated subcutaneous injections of cultures of the typhoid bacillus, killed by heat, to immunize man against typhoid fever. The authors are numerous who, in their turn, have studied this important question.

The same attempts at typhoid vaccination were practiced in France for the first time by Chantemesse. In 1899, at his hospital, he vaccinated his externes and internes and the personnel attached to his service by cultures of the typhoid bacillus killed by heat.

Besredka reported in 1902 his method of immunization by "sensitized" vaccine. Netter had Drs. Prouff and Querneau, of Morlaix, vaccinate about 40 persons with this vaccine.

Finally, of recent years, the writer himself has proposed an antityphoid vaccine, prepared according to a different principle, with which, up to the present time, 17 persons have been inoculated.

This short historical résumé shows how numerous the publications and the investigations concerning active immunization against typhoid fever have become of recent years.

DESCRIPTION OF THE VARIOUS METHODS OF ANTITYPHOID VACCINATION.

The methods proposed to vaccinate man against typhoid fever exhibit considerable variation. This multiplicity is doubtless due to the fact that man does not possess, with respect to vaccine viruses, the indifference or the resignation of laboratory animals, and, in consequence, we demand of the methods proposed a maximum of immunity combined with a minimum of inconvenience, conditions not always easy to realize.

Be that as it may, abstracts in chronological order having been made, the writer classifies as follows the methods of antityphoid vaccination, the employment of which has been recommended:

1. The use, as an antityphoid vaccine, of living bacilli.
2. Vaccination with dead bacilli.
3. Vaccination by the aid of bacilli killed by antiseptic substances. (Experiments with this vaccine have been conducted only with animals.)
4. Vaccination with dead bacilli, antityphoid serum—vaccination with sensitized bacilli.
5. Vaccines prepared with pulverized bacilli. (Method of Friedberger and Moreschi.)
6. Vaccines prepared from bacillary extracts.
7. Vaccines prepared by chemical methods.

In order to obtain an active vaccine, it would seem reasonable to suppose that the immunizing value of a bacillus is in direct ratio to the activity of its receptors and to its intrinsic virulence. By reason of this postulate, Pfeiffer and Kolle, Bassenge and Mayer, and others recommend the use of virulent bacilli. Pfeiffer and Kolle employ a culture of which one-eighth of a standard loopful introduced intraperitoneally kills a 250-gram guinea pig.

Wright takes, as one vaccine unit, the dose of heated culture, which kills 100 grams of guinea pig. This dose, which is quite variable, oscillates between 0.5 c. c. and 2 c. c.

Wassermann, Pfeiffer, and Kolle select cultures which have the maximum properties of saturation or absorption for antityphoid serum.

Nevertheless we must take into account the fact that the manipulations, the heating, the filtration or even the addition of antiseptics to maintain the sterility of the liquid, reduce the protective properties of all these different vaccines to about the same titer. This feature evidently modifies the toxicity as well as the power of combination or "binding-power" of the bacilli. (Wassermann.) It is, no doubt, for this reason and also in conformity with observations made upon human beings, that Leishmann and Harrilon have made use of non-virulent cultures. They have obtained results just as satisfactory as by the use of virulent bacilli.

LOCAL AND GENERAL SYMPTOMS CAUSED BY THE INJECTION OF ANTITYPHOID VACCINE.

The introduction into the interior of the organism, either of the bodies of bacilli or their extracts, excites, to different degrees, local and general reactions, which are sometimes intense in the case of certain of these vaccines.

It has been uniformly established that the inoculation of living bacilli (Castellani) or of bacilli killed by heat (Pfeiffer, Kolle, and Wright), and, finally, sensitized bacilli (Besredka, Netter) give rise to more or less painful symptoms in those vaccinated. Killed cultures may contain at one and the same time the bacillary bodies and their endotoxin, the peptone of the bouillon (Wright's vaccine), and finally antiseptics (lysol, phenol). The pain caused by the injections is thus readily explained.

We can not, therefore, consider the inoculation with bacillary vaccine a painless or an indifferent procedure for him who is the subject thereof. Neither Wright nor Hetsch and Kutscher, nor Castellani, nor Leishman, nor Netter, nor yet others, have endeavored to conceal this. It is therefore germane to the subject to discuss the reactions which are called forth by the group of bacillary vaccines.

A quarter of an hour to three hours after the injections of Wright's or of Pfeiffer and Kolle's vaccine, a smart reaction takes place at the site of the inoculation, characterized by pain, redness, heat, and finally an edematous swelling of such extent that it may even suggest a phlegmonous erysipelas. The edematous region is more or less painful, either actively so, or upon pressure, or upon attempting to move the extremities. The pain is reflected into the axilla or the inguinal fold; it invades, at times, the corresponding arm and the nape of the neck.

Occasionally red lines of lymphangitis extend from the inoculated zone, and the corresponding lymphatic glands are swollen and very sensitive.

According to a recent paper by Hartsock, the febrile reactions in 56 persons who had previously had an attack of typhoid fever were as follows: No febrile reaction, 17.5 per cent; to 38° C., 73.3 per cent; to 39° C., 8.9 per cent.

The second inoculation in the same subjects caused the following febrile reactions: No febrile reaction, 10 per cent; to 38° C., 79 per cent; to 39° C., 5 per cent.

When a person who has been vaccinated subsequently contracts typhoid fever, the region corresponding to the vaccination site becomes tender. Exhausted and overworked individuals experience a particularly severe reaction after the inocculation. The inoculation

may also bring on a malarial paroxysm in persons suffering from chronic malaria (Kolle).

According to Netter, the "sensitized" vaccine of Besredka engenders a train of analogous symptoms.

The vaccines of bacilli killed by phenol, the vaccines of Bassenge and Mayer and of Neisser and Shiga cause identical local and general phenomena. The same general phenomena are produced by the vaccine of Friedberger and Moreschi.

Wassermann's vaccine (filtered maceration of culture killed by heat, dried and pulverized) is far less painful in its effects.

The polyvalent vaccine which the writer has proposed (the centrifuged fluid derived by autolysis from the typhoid and paratyphoid bacillus, sterilized by ether) has been inoculated into 17 subjects. In one of them (a neurotic individual) it gave rise to rather severe local pain lasting two or three hours; in 10 others only a slight or moderate local tenderness was developed, especially upon pressure; finally, in the other 6, the local discomfort was insignificant. Five had a very slight and fugacious erythema at the site of injection. None had any fever; one only a temperature rise to 37.4° C. Finally, none was obliged to interrupt his occupation or work, often laborious.

The local and general phenomena, therefore, in this last method are reduced to their minimum.

In order to combat the symptoms produced by the injections, Wright prescribes ¾ gram of chlorid or lactate of calcium internally and locally hot applications and inunctions with a special ointment.

It can not be denied that these painful symptoms constitute the principal reason which has restricted the spread among the general public of the English and German antityphoid vaccines. As a consequence of a campaign of protest carried on in 1905 in England by certain medical journals, and also by reason of an investigation in the House of Parliament, antityphoid vaccination was menaced with abandonment and its official employment was suspended for a year. It was again resumed in consequence of a very favorable report from the College of Physicians of London.

The same inconveniences have been observed with combined injections of bacillary vaccine and antityphoid serum (J. Levy). Attempts of a similar nature in the hands of Triglia and Mazzuoli (Shiga's vaccine and serum) caused general and local reactions of an endurable character; the subjects presented an urticarial eruption.

EXPERIMENTAL CONTROL OF THE EFFICACITY OF ANTITYPHOID VACCINATION.

Though in the case of antipest vaccine, and vaccine against anthrax, it is possible and even easy, as far as animals are concerned, to verify the efficacity of a vaccine, this is hardly so with reference to man, because the experimental proof of such efficacity can not be furnished, i. e., the inoculation of the vaccinated subject with the pathogenic microbe.

Consequently, with respect to vaccination against typhoid fever, recourse has been had to three different methods of control in order to estimate the protective value of the vaccines:

First. The vaccination of animals by identical methods and the verification of their immunity against infection by the bacillus of Eberth.

Second. The study of the properties of the body fluids of the vaccinated individual, and the search for the presence of antibodies in the blood.

Third. The official statistics of the typhoid morbidity and the mortality among the vaccinated and the nonvaccinated.

The first of these methods of study is, evidently, the least convincing, no matter what animal is used. On the contrary the presence or absence of typhoid fever among individuals protected in this manner is the best index of the value which can be assigned to it.

The study of the bacteriocidal and bacteriolytic properties, etc., of human blood-serum, subsequent to vaccination furnishes, however, a more practical and certain method of teaching us the effects produced by vaccines. Wright, Leishman, Semple, Harrison, Hetsch, and Kutscher, Bassenge and Rimpau, Castellani, H. Vincent, and others have studied the antibodies developed in the serum.

This method of control has an undeniable value. Nevertheless modifications pertaining solely to body fluids are not everything in the complex evolution of that condition known as immunity.

A. *Experimental control in anima vili.*—Chantemesse and Widal immunized mice against the infection of living and virulent cultures by injecting intraperitoneally one-fourth to one-half of a cubic centimeter of culture 7 days old and sterilized by heat. They have also succeeded in immunizing the guinea-pig and the rabbit by the injection of the soluble products of the microbe. Subsequent to them, Beumer and Peiper attained the same object, by inoculating the animal several times in succession with cultures killed at 60° C. These investigations, as well as those of Funck, Pfeiffer, and Kolle, Sanarelli, and others have served as a point of departure for human vaccination. They show that an animal may be used as an element in the control of the efficacity of a vaccine.

Nevertheless it must be pointed out that animals, in general, are only slightly susceptible to inoculation with this bacillus. Kolle and Hetsch have recently called attention to this.

In order to facilitate this study, the writer has proposed and applied a method which almost surely results in death by typhoid septicemia in the guinea pig. It consists in the simultaneous injection of virulent typhoid bacillus (1 c. c.) in the peritoneal cavity and of from 2 to 4 c. c. of a hypertonic solution of sodium chloride (10 per cent) subcutaneously. The bacilli multiply luxuriantly and kill the animal in three days, on the average. In this way it becomes possible to verify the value of a vaccine, by submitting a vaccinated guinea pig to infection by this method. Conclusions may be drawn, according to its death or survival, as to the sufficiency or inadequacy of the antigen tested.

Living vaccine was the most active of those tested by the writer upon animals.

The second place must be conceded, and to an equal degree, to vaccines prepared from bacilli killed by heating to 53–55°, on the one hand, and, on the other, to polyvalent autolysates of living bacteria, which the writer has recommended as vaccines.

Bacilli "sensitized" and killed, the maceration of dead bacilli, the ingestion via the digestive tract of living or dead bacilli have acted less favorably than the preceding methods in the case of animals.

B.—*Specific modifications in the blood of vaccinated animals and human beings—The determination in vitro of the efficiency of vaccines.*—The introduction of a typhoid antigen, no matter what the method of its preparation, into the body of an animal, brings about the production of defensive antibodies: Agglutinins, precipitins, lysins, "sensitizers" opsonins, stimulins. Living bacteria possess the most active properties with respect to this production (H. Vincent). The same biological modifications of the serum have been observed in the case of man, whether he receive preventive inoculations of living or of dead bacilli. Wright was the first to take up the highly important study of these antibodies. It was upon their presence, as a basis, that he was led to apply antityphoid vaccination in man on a large scale.

It may be stated as a uniform conclusion, from the result of these investigations, that antibodies are constantly present, though in variable quantities.

The larger doses of vaccine, usually, but not always, have given the highest agglutinating, bacteriocidal, and bacteriolytic titers, etc.

Nevertheless, so far as agglutinins are concerned, there is nothing absolute in this parallelism (Shoemaker) and the most contradictory results may be observed. For example: At the instance of Castellani, Browning inoculated himself with successive doses of living and virulent bacilli attenuated by heating to 50° C. for an hour, at the rate of 1 c. c. per week for seven weeks. After the sixth and seventh inoculation local reaction was still very severe. Three weeks later he received an eighth injection. Now, the agglutinating titer attained its maximum of 1:40 after the fourth inoculation, while after the fifth it was 1:20, after the sixth scarcely 1:10, after the eighth it did not exceed 1:20.

This characteristic example shows that the agglutination titer is by no means an index of the degree of immunization obtained. Pfeiffer and Kolle, and Hetsch and Kutscher, have called attention to the same point. The writer himself has made a similar observation both in man and in animals subjected to divers methods of vaccination.

Be this as it may, the appearance of agglutinin is manifest on the ninth day. Its titer diminishes after the second injection and then increases to 1:50, 1:100, and sometimes, 1:1000, 1:5000, and higher. Its maximum is observed toward the twentieth or twenty-fifth day following the last inoculation.

The demonstration of other antibodies and particularly that of bacteriolysins, presents, according to Wright, Hetsch, Kutscher, Leishman, etc., a much greater importance and a more precise significance.

The bacteriolytic property, obtained by Wright's vaccine, shows its maximum at about the eighteenth day.

The bacteriocidal titer may be already increased six days after the first inoculation. The killed vaccines (Wright, Pfeiffer and Kolle) raise the bacteriocidal power of the serum from 1:2 or 1:10 (the normal titer of human serum) to 1:100, 1:500, 1:1000, or even higher, seven days after the last injection (Hetsch and Kutscher, Harrison).

The stimulins (Leishman) and the opsonins (Harrison) are always increased, especially the former. The stimulin content, however,

is not in direct proportion with the dose of vaccine injected, and the tendency, nowadays, is to attach little importance to the determination of the oposonic index as a criterion of the degree of vaccinal immunity (Richardson, Hektoen, Weaver, and Tunnicliffe, Cevey, etc.).

Kutscher and Hetsch have established that there is no direct relation between the degree of the reaction and of the fever observed in vaccinated persons and the activity in antibody formation.

The bacteriolytic properties of the serum of an individual who has exhibited a temperature of but 37.6 or even 37° may be more intense than in the case of a vaccinated person who has shown a rise to 39°.

A comparison of the methods of Wright, and of Pfeiffer and Kolle shows pretty nearly analogous results as far as the formation of antibodies is concerned. Wright's vaccine seems to engender the highest agglutinating power. Hetsch and Kutscher believe that the vaccine of Pfeiffer and Kolle has shown itself, from reactions in vitro, to be more active than that of Wright. Such is not the opinion of Bassenge and Mayer.

The experiments made by the writer upon animals justify placing the results determined by these two vaccines upon the same plane. The agglutinating, bacteriolytic, and bacteriocidal powers noted are practically analogous. Attention has already been called to the fact that the agglutinating power has no great importance in the evaluation of a vaccine.

Among a certain number of subjects vaccinated with the aid of centrifuged autolysates of living bacilli (Vincent) sterilized with ether, the study of the biological properties of their serum revealed, after a month or more, the existence of an intense bacteriocidal power in this serum in dilutions of 1:100, 1:500, 1:1,000, 1:2,000 and even higher.

C. *Practical results furnished by vaccination in human beings.*—The publications, to-day very numerous, upon this subject create the impression that active immunization against typhoid fever gives, from a practical standpoint, results which are favorable beyond question.

This opinion could already be adduced by the first vaccinations made by Wright under conditions but little favorable for statistical analysis.

Indeed this author calls attention to the fact that the statistics referring to the English troops sent to the colonies contain inaccuracies or even errors which are inalienable from the conditions under which they were compiled: Permanent fluctuations in the number of effectives sent to India, South Africa, Egypt, etc.; absence of bacteriological control in the verification of the diagnosis of typhoid fever; frequent changes of station; incomplete data on the number of inoculations; frequent differences in the hygienic conditions themselves to which the vaccinated and nonvaccinated were exposed, etc.

Other errors arose from the circumstance that, in order to escape antityphoid vaccination, a certain number of soldiers succeeded in deceiving the medical staff. Sometimes they even confounded, voluntarily or involuntarily, this form of vaccination with that for smallpox.

The writer herewith calls attention to the results yielded by Wright's method of vaccination. The first which Wright reported to the English commission on antityphoid vaccination are as follows:

	Number.	Typhoid morbidity.	Typhoid mortality.
		Per cent.	*Per cent.*
Vaccinated	2,835	0.95	0.2
Nonvaccinated	8,640	2.5	0.34

These figures refer to troops stationed in India. In Egypt and in Cyprus, 729 soldiers vaccinated in 1900 had 1 case and 1 death (0.14 per cent), 2,669 nonvaccinated had 68 cases (2.55 per cent) and 10 deaths (0.37 per cent).

"Enteric" or typhoid fever was very frequent and severe during the war of the English against the Boers. Antityphoid vaccination demonstrated its efficacy, as seen by the following, in one of the gravest foci of the infection, at Ladysmith:

	Number.	Typhoid morbidity.	Typhoid mortality.
Vaccinated	1,705	35 cases=2.05 per cent.	8 deaths=0.47 per cent.
Nonvaccinated	10,529	1,489 cases=14.14 per cent.	329 cases=3.13 per cent.

The writer further borrows from the statistics of deaths published by Wright the following data relative to the Indian Army:

	Number.	Typhoid morbidity.	Typhoid mortality.
1900			
Vaccinated	5,999	52 cases=0.87 per cent.	8 deaths=0.13 per cent.
Nonvaccinated	54,554	731 cases=1.69 per cent.	224 deaths=0.48 per cent.
1901			
Vaccinated	4,833	32 cases=0.66 per cent.	3 deaths=0.06 per cent.
Nonvaccinated	55,955	774 cases=1.33 per cent.	199 deaths=0.36 per cent.

Certain statistics compiled by West, Sherman, Nord, and Townsend have given less evident results. They refer only to scanty numbers of vaccinated and unvaccinated. On uniting the data published by these authors it is seen that the vaccinated (3,742) had 98 cases, or 2.62 per cent, and the nonvaccinated had 339 cases, or 2.76 per cent. The mortality, however (among the vaccinated), was lower.

But Wright points out that, in these cases, vaccination was limited to a single inoculation. Now, as has been previously stated, it has been conclusively shown that a single injection insures but inadequate protection, no matter what vaccine is employed. Besides this, Wright attributes a disturbing factor to the age of the subjects. Up to 30 years, protection is more certain than in older persons. According to Elliot and Washbourne, that is the reason why officers have appeared to be less efficiently immunized by antityphoid inoculation than privates.

From the data of E. Birt (September, 1900, to September, 1901), of H.Tooth, J. B. Coleman, Dodgson, Cayley, Henry, etc., published at the same time, it would appear that the morbidity and the mortality are

favorably influenced by antityphoid vaccination and, in particular, there were twice as many deaths among the nonvaccinated as the vaccinated.

In Lord Methuen's column, at the Modder River, we find in 2,335 vaccinated 26 cases, and in 10,981 nonvaccinated 257 cases.

A typhoid fever epidemic having made its appearance at the Richmond Insane Asylum near Dublin, a certain number of the doctors, attendants, and inmates (511) were subjected to vaccination. The case-incidence per hundred was 1.5 and the deaths, 0.3.[1] The nonvaccinated had 10.1 cases per hundred and 1.3 deaths—that is, about seven times the cases and four times the deaths. Among the medical staff typhoid fever attacked 14.7 per cent of the nonvaccinated (Cullinan).

Generally speaking, and basing his conclusions upon the statistics of the Indian, the South African, the Egyptian, and the Cyprian Armies, Wright estimates that vaccination has reduced by one-half the frequency of deaths due to typhoid fever.

The further investigations of Harrison, Buist, Leishman, Aldridge, and others have entirely supported this conclusion.

According to Harrison (1907), the troops in barracks at six important stations in India have presented:

	Number.	Typhoid cases.	Typhoid deaths.
		Per cent.	*Per cent.*
Nonvaccinated	8,113	2.13	0.52
Vaccinated	2,207	.68	.13

Buist points out that attacks which supervened in spite of vaccination have been in those who received but a single injection.

From the 1st of March, 1906, to the 28th of February, 1907, vaccinations practiced in the Indian army showed the same efficacy. Here follow the official results which were published: 4,157 were inoculated and had 32 cases and 2 deaths, or 0.87 per cent and 0.048 per cent, respectively. On the other hand, 65,666 nonvaccinated had 1,021 cases and 151 deaths, or 1.55 per cent and 0.23 per cent.

From the 1st of January to the 30th of June, 1907, in the same army of India, the following was observed: 12,188 noninoculated had 181 cases (1.485 per 100) and 44 deaths, or 24.30 per 100 sick; 1,048 men who had received an inoculating injection had 6 cases (0.372 per 100) and 1 death; 1,340 men twice vaccinated had 9 cases (0.67 per 100) and 2 deaths. The average duration of attack was—in the nonvaccinated, 29.49 days; in the once vaccinated, 24.72 days; in the twice vaccinated or more, 21.53 days.

The frequency of complications and the case mortality were as follows:

[Army Medical Department report, 1907.]

	Hemorrhage.	Intestinal perforation.	Thrombosis.	Case mortality.
Nonvaccinated	16.20	5.48	4.88	21.34
Vaccinated once	10.53	5.26	0	15.79
Vaccinated two or more times	9.61	1.92	0	11.54

[1] It is important to note that the seven insane who contracted typhoid fever were already incubating the disease, or even infected by it—fever, rose spots. They do not, therefore, constitute negative evidence against the method.

An early article of W. B. Leishman's gives the statistics of antityphoid vaccination in the English colonies. They are based upon a rigid medical control.

These statistics cover a period of three and one-half years—that is, from January, 1905, to June, 1908. Of 5,473 vaccinated soldiers, 21 had typhoid fever; 2 died. Of 6,610 nonvaccinated, under very nearly similar conditions, 187 cases and 26 deaths were recorded. The results were that 1,000 vaccinated had 3.8 cases of typhoid fever; 1,000 nonvaccinated had 28.33 cases.

In two regiments vaccine heated to 58° was used. For the others vaccine killed by heating to 53° was employed. The latter seemed demonstrably the more active. It gave the following results: 3,123 inoculated had but 8 cases, or 2.56 cases per thousand and no deaths.

In a more recent publication (Harben Lectures, July, 1910) Leishman reports, after a long series of observations made upon 24 regiments stationed in India, Gibraltar, Malta, Crete, Egypt, and other places, that from December, 1904, to July, 1909, the statistics of morbidity and mortality from typhoid fever have revealed the following very remarkable results. These statistics relate to 10,378 vaccinated individuals.

	Case incidence per 1,000.	Mortality per 100 cases.
Vaccinated	5.39	8.9
Nonvaccinated	30.4	16.9

According to Aldridge, the morbidity among the English troops in India during 1908 was reduced by one-half among the vaccinated. The mortality was three times less.

Up to January 31, 1909, 23,996 persons were enumerated in the army of India who had been vaccinated at some time since 1898 and who had never contracted typhoid fever, in spite of the adverse sanitary conditions of that country and the great frequence of the disease. Of this number, 16,000 had received two or three injections of antityphoid vaccine.

Antityphoid vaccination was instituted in the American Army about two years ago. According to the figures given by Netter, which were furnished by Maj. Russell, it appears that 2,000 men who were vaccinated gave 1 case, in a man who was inoculated during the incubation period of typhoid fever. On the other hand, there were about 150 cases in 65,000 nonvaccinated men.

To summarize, an exact idea of the value of Wright's vaccine may be arrived at by compiling the results of the principal statistical tables which have been published with respect to this vaccine.

This the writer has done and finds: First. That 216,811 nonvaccinated men stationed in the English colonies had 4,677 cases of typhoid fever, a case incidence of 21.5 per 1,000; and that 1,018 deaths were due to the same disease, or a mortality of 4.68 per 1,000. Second. Twenty-eight thousand one hundred and ten vaccinated men garrisoned in the same countries had 215 cases of typhoid fever, or a case incidence of 7.29 per 1,000, and 34 deaths from the same disease, or a mortality of 1.20 per 1,000.

If it be assumed that the conditions of receptivity and of contagion were identical for the two groups of the vaccinated and the nonvaccinated, the typhoid morbidity among those vaccinated by Wright's method was 2.82 times less than among the nonvaccinated. The mortality was 3.9 times less among the vaccinated than among the nonvaccinated.

The method of the preparation of the vaccine of Pfeiffer and Kolle differs but little from that of Wright's. Its protective value has shown itself to be analogous, although perhaps less enduring.

At the colonial congress at Berlin, Stendel and Schian reported that the vaccine of Pfeiffer and Kolle can sensibly diminish the typhoid morbidity and mortality. They also call attention to the fact that, in vaccinated subjects, when typhoid fever supervenes it is attenuated and its course is shorter.

One of the first statistical tables is due to Morganroth.

	Noninoculated.		Inoculated.		
	Number.	Per 100 sick.	Number.		Per 100 sick.
Died of typhoid fever	36	11.1	4		4
Severe cases	82	25.3	10	Inoculated once. 6 Inoculated twice 3 Inoculated three times. 1	10
Average severity	69	21.3	20	Inoculated once. 3 Inoculated twice 13 Inoculated three times. 4	20
Mild cases	137	42.3	66	Inoculated once. 18 Inoculated twice 35 Inoculated three times. 13	66
Complications among the foregoing	113	34.9	20		20

Eichholz has published statistical data relating to 68 cases of typhoid fever (34 in vaccinated, 34 in nonvaccinated persons).

	Nonvaccinated.	Vaccinated.
	Per cent.	
Died	8.8	.....
Grave complications	22.6	8.8
Fever higher than 40° C.	79.2	48.3
Duration of the fever	[1] 14.8	[1] 12.5

[1] Days.

Kuhn's statistics, as well as the official bulletins published under the auspices of the Ministry of War in Germany, detail the results observed in 7,287 vaccinated and 9,204 nonvaccinated subjects among the troops sent to Southwest Africa from 1906 to 1907.

The number of vaccinations given to the same person varied from one to three, as follows:

Once	1,950
Twice	3,615
Three times	1,578
(?)	144

In all 1,277 cases of typhoid fever were observed. The typhoid morbidity among the vaccinated was 57 per 1,000; that of the nonvaccinated was almost double, 99 per 1,000.

The classification of these cases according to their incidence and severity, among the vaccinated and nonvaccinated, was as follows:

	Nonvaccinated (906) per 100 cases.	Vaccinated (371) per 100 cases.
Mild cases	331=36.55	186=50.13
Moderate cases	225=24.85	96=25.88
Severe cases	334=25.80	65=17.52
Fatal cases	116=12.80	24= 6.47
	906 100	371 100

It will be seen from this table that the attacks of typhoid fever were much milder in those vaccinated; the proportion of deaths was about four times less. The vaccinated (7,287) had 24 deaths from typhoid fever, or 3.3 deaths per 1,000; the nonvaccinated (9,202) had 116 deaths, or 12.6 deaths per 1,000, due to the same disease.

The number of the preventive inoculations has a remarkable influence, as has been equally pointed out by Wright, Pfeiffer and Kolle, Morganroth, and by Leishman.

Among persons inoculated two or three times, the results were as follows, according to Kuhn:

	Per cent per 100 cases.
Mild cases	51.2
Moderate cases	29.44
Fatal	4.02

Complications such as pneumonia, bronchitis, tonsillitis, cardiac affections, etc., were equally infrequent among the vaccinated. The mortality was 1 to 15 sick among the vaccinated and 1 to 8 sick among the nonvaccinated.

The favorable influence of the number of vaccinations is brought out more clearly in the following table. It shows that immunity is the more certain the nearer the date of inoculation.

Nevertheless severe cases are recorded during the first week following vaccination (negative phase).

Time elapsed since vaccination.	One inoculation.				Two inoculations.				Three inoculations.			
	Mild cases.	Moderate cases.	Severe cases.	Deaths.	Mild cases.	Moderate cases.	Severe cases.	Deaths.	Mild cases.	Moderate cases.	Severe cases.	Deaths.
1 week	1	.....	2	.....	2	.....	2	.....	.....	.....	.....	.....
2 weeks	1	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....
3–4 weeks	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....
2–6 months	30	11	12	5	52	22	12	3	23	11	3	1
7–12 months	13	7	2	5	20	11	10	1	12	7	4	1
More than 12 months	13	5	11	4	12	14	4	4	1	8	1	.....
	59	23	27	14	91	47	28	8	36	26	8	2

Considering the *mortality* only, it is seen that the percentage of deaths was: For typhoid-fever subjects vaccinated once, 12.84 per

cent; vaccinated twice, 4.81 per cent; vaccinated three times, 2.77 per cent.

These results are well worth comparing with those previously obtained by Wright: Three hundred and sixteen nonvaccinated officers and privates of the Seventeenth Meerut Launns gave a morbidity of 18.67 cases of typhoid fever per 100. One hundred and fifty vaccinated once had 1.33 cases of typhoid fever per 100. One hundred and twenty-seven inoculated twice had no cases per 100.

There is, in consequence, conformity in the results of antityphoid vaccination among the English and the German troops stationed in their respective colonies.

The duration of the relative immunity conferred by antityphoid vaccination can not be established with absolute certainty. It is longer with Wright's vaccine than with that of Pfeiffer and Kolle. The former immunizes for three years (Wright) or four years (Ward); the latter for one year (Kuhn).

Be that as it may, 4,883 soldiers vaccinated in India by Wright's method in 1898, 1899, and 1900 had, eventually, 32 cases (0.66 per cent) and 3 deaths (0.06 per cent), while the 55,955 nonvaccinated had 744 cases (1.33 per cent) and 199 deaths (0.36 per cent) from typhoid fever.

It is worth noting that, in 1909, 23,996 persons were enumerated in the army of India who had been vaccinated at some time since 1898 (and especially since 1900), and which, up to January 31, 1909, had escaped typhoid fever.

The protection insured by antityphoid vaccination is therefore of no doubtful character. Yet it can not be considered as absolute. As, in similar fashion, an attack of typhoid fever does not surely protect against a new infection, so antityphoid vaccination can not lay claim to producing absolute or highly prolonged immunity. The persistence of this protection is a function of the nature of the vaccine, the number of injections the subject has received, and, finally, the date, more or less remote, of the last injection.

REMARKS UPON WRIGHT'S "NEGATIVE PHASE."

Before increasing the antibacterial power of the serum, antityphoid vaccination, Friedberger and Pfeiffer to the contrary, determines, in a certain number of subjects (one in five, according to Wright) a deficiency of about one-half in the quantity of antibodies present and a parallel diminution in the bacteriocidal properties of their serum (negative phase). This peculiarity is observed especially in those who exhibit an intense post-vaccinal reaction.

The impoverishment of the blood in defensive substances reappears upon the occasion of the second injection of antityphoid vaccine. This has been verified by the observation of a temporary diminution in the bacteriocidal power of the serum.

The antigen introduced into the blood binds, according to Ehrlich's laws, the normal or the newly-formed free antibodies. The intensity of the deficit is relative to the quantity of vaccine injected (Wright) and, in consequence, is greater the higher the dose. Small doses of antigen tend to inhibit this phase and yet do not prevent the rapid production of immunizing antibodies.

The duration of the negative phase, when produced, is from one to three weeks. During this period not only is the vaccinated subject not immunized, but he even presents a rather high susceptibility to typhoid infection.

As will be seen, this phase permits the interpretation of the precocious appearance of typhoid fever in individuals living in a place where there is an epidemic of this disease and who have received, several days previously, Wright's or Pfeiffer and Kolle's vaccine. This results in the fact that active immunization, undertaken under such conditions—that is, in a region suffering from an epidemic—is not without a certain risk. This risk, according to Kuhn's statistics, is observed with the German as well as with the English vaccine; it is also present with "sensitized" vaccine, as has been recently pointed out by Netter.

In order to conclude for the present the discussion of this question the writer would call attention to the following episode, observed in the early days of the application of the method, when the existence of the negative phase was but little known. In February, 1899, Wright vaccinated 303 men of the Third Regiment of Hussars. In the 19 following days 5 vaccinated soldiers contracted typhoid fever and 2 died. During this period none of the 281 nonvaccinated hussars had typhoid fever, although the disease was present in the garrison.

The vaccinated persons were, therefore, exposed to the infection under elective conditions during this period of receptivity.

Similar examples have been cited by Cullinan, in an insane asylum, Castellani, in the case of a woman, and Wright, in the English Army.

Besides this, Morgenroth, in the report of the commanding officer of the German troops sent to South Africa, has noted that the course of typhoid fever has been particularly severe in persons who became sick a few days after antityphoid vaccination.

It appears, however, to the writer that this eventuality can be prevented to a great extent from taking place if, instead of injecting large does of antigen, which determine a coequal neutralization of antibodies, smaller doses are employed, which leave certain defensive reserves to the vaccinated person.

According to a report, however, recently published by B. Leishman (Journal of Royal Institute of Public Health, September, 1910), this author would show that, according to his observations, the negative phase has by no means the importance or frequence attributed to it by Wright. Yet it is certain that the excessive proportions of antigen, injected in the early days of vaccine, predisposed to a high degree to the evolution of this negative phase.

GENERAL SUMMARY OF THE RESULTS GIVEN BY ANTITYPHOID VACCINATION.

It has been said in the foregoing that of all methods of immunization which can be advocated that one which has shown itself to be the most efficacious in animal experiments, both by the formation of antibodies demonstrable in the blood and by resistance to virulent infection, results from the injection of living bacilli (H. Vincent).

Moreover, Castellani has on fifteen occasions infected human beings with living bacilli, attenuated by heating to 50° C.

It would seem from this collection of facts that living vaccine would constitute the best agent for human immunization.

In practice, however, this somewhat audacious method is open to grave objections. This results from the fact that the introduction of a living though attenuated virus into the human body leaves it exposed to the menace of typhoid infection. It is not without apprehension that the injection of living typhoid bacilli would be made in the case of young persons who, by reason of their age, present a high degree of receptivity for typhoid fever.

If the innocuity of this method of vaccination is yet problematical, another objection just as grave may be raised: Is not the risk inherent in Castellani's method that of transforming vaccinated subjects into so many bacillus carriers by reason of the consequent almost inevitable infection of the blood? Supposing this to be so, far from preventing an epidemic disease, it might light up new foci of infection.

We are therefore justified in opposing this method of vaccination by the classical adage, "Primo non nocere."

Active immunization, either by vaccines of killed bacilli or by autolysates derived from several races of living bacteria, is not open to objection on these grounds.

We must therefore, in view of the actual state of our present knowledge, confine ourselves to one or the other of the latter methods.

The "sensitized" vaccine of Besredka appears, from a practical standpoint, far preferable to the method of Triglia and Mazznoli (combined injection of killed bacilli and antityphoid serum). Nevertheless, Kuhn is of the opinion that apart from the delicate technic required which exposes it to contamination, the practical value of "sensitized" and heated vaccine does not seem to be very great. Animals immunized by this method, so rational from a theoretical standpoint, seem less thoroughly protected than by living or dead bacilli or by the extracts from living bacilli. Finally, the trials undertaken in Brittanny, under Netter's direction, have not given such encouraging results as had been hoped.

Semple and Watson's procedure, which employs, as antigen, the typhoid bacillus killed by the addition of 0.5 per cent of phenol, does not appear to present advantages over bacillary vaccine heated to 53° C. Its injection is also painful by reason of the antiseptic which it contains. In addition to this phenol gradually attenuates the endotoxines, and, in consequence, abstracts from the antigen a portion of its power to stimulate the formation of antibodies in the organism into which it is injected. Moreover, experiments with this vaccine have been conducted only upon animals.

It would seem difficult to establish an equitable comparison between the methods of immunization by the killed bacillary vaccines and by the autolysates of living bacteria, for though the former have been tested on a very extensive scale, the latter have up to the present time been tried only upon a small number of persons.

This does not, however, constitute a reason for refusing to consider the latter method. It would evidently be prejudicial to the cause of antityphoid vaccination to remain stationary in the domain of past additions to our knowledge, if the future permits us a glimpse of refinements in the methods now at our command. The field of research remains open at this point.

However that may be, immunization by killed bacilli has proved its efficacity. It is beyond question useful and to be recommended as a specific method of immunization against typhoid fever.

As to vaccination by the products of autolysis of living bacteria, it would seem to the author that it possesses an immunizing value of equal titer, for the reasons previously adverted to. In addition, this vaccine has the advantage of being both very well borne and absorbed and of being polyvalent and at the same time protective against paratyphoid infection. It is well worthy of attention and serious trial. Experience will teach us if it is to be preferred to other methods.

Based upon an imposing number of cases, the official statistics published by the war departments in England and in Germany have uniformly established that vaccination practiced according to the analogous methods of Pfeiffer and Kolle or of Wright assure an active immunity against typhoid fever, which, if not absolute, is at least very high.

In order further to satisfy any scruples of the academy, the writer quotes herewith the opinions handed down by sundry scientific commissions.

The Royal College of Physicians, meeting on the 30th of July, 1903, approved by its vote the principle of antityphoid vaccination and its application to man. "Not only," it concludes, "has vaccination reduced susceptibility to the disease, but it has largely reduced the frequency of cases. It is accompanied by no direct danger except a temporary increase in the susceptibility to the typhoid bacillus."

In 1904, as the result of 20,000 inoculations with Wright's vaccine, the commission elected by the same Royal College of Physicians renewed its indorsement. The same year the faculty of the Royal Army Medical College, as well as the committee of the War Office, gave it their approval. Dating from that time the number of antityphoid vaccinations practiced in India, Egypt, South Africa, Cyprus, etc., has been very high.

According to the official reports which have been published no inconveniences other than the local and general symptoms already referred to (fever, pain, etc.) have resulted.

Appointed on the 11th of May, 1904, the English Commission on Antityphoid Vaccination (army council) has held six meetings. The Lancet of May 19, 1906, reports the findings. The evidence and reports sent to this commission "prove that the practice of antityphoid vaccination has effected a substantial reduction in the deaths by typhoid fever among the vaccinated."

The specific protective substances developed in the organism of the vaccinated individual are the same as those developed by typhoid fever itself. As a consequence the commission is of the opinion "that there are grounds for recommending the practice of voluntary inoculations against typhoid fever among troops serving in foreign countries." The men should be vaccinated at least a month before embarking for India.

An identical indorsement was formulated shortly afterwards in Germany.

A German commission was officially appointed in 1905 in order to study the question of antityphoid vaccination. It was composed of R. Koch, Kolle, Donitz, Kirchner, and Gaffky.

It concluded favorably as to the utility of this sanitary measure. Here is the text of some of their conclusions: "According to scientific observations made upon animals and men, and after the practical teachings of experience, it is impossible to doubt, even with the

greatest conservatism, that antityphoid inoculation confers a certain degree of protection." The commission was of the opinion that "there was no danger in employing it among the German troops sent to southwest Africa."

Prof. Chantemesse, to whom the academy owes the initiative in the institution of our commission on antityphoid vaccination, and who, the first in France, has applied since 1899 the method of inoculating the personnel of his service with cultures killed by heat, has reported, in the course of the discussion on the prophylaxis of typhoid fever, that he has obtained very favorable results by this method.

He has also called attention to the fact that similar studies have been undertaken officially in the United States. Permit me to borrow from him the data which follow:

In 1909 a commission was appointed with the object of studying this question. It was composed of Surg. Gen. O'Reilly, V. C. Vaughn, M. T. Councilman, J. H. Mauser, A. Lambert, Simon Flexner, W. S. Thayer, and T. Russell.

The conclusions which they adopted were as follows:

First. The commission has been convinced that antityphoid vaccination is useful and without danger. It provides a simple method in diminishing the frequency of typhoid fever in the Army, both in peace and war.

Second. The commission is of the opinion that the actual experience of vaccinations justifies their recommendation in times of war for the Regular Army and the Volunteers.

Third. It recommends the immediate introduction of the practice of antityphoid vaccination in the Hospital Corps, in hospital orderlies, and all units of the Regular Army sent out on expeditions. It recommends in addition that steps be taken to have Volunteers submit to these vaccinations.[1]

The sum of the preceding conclusions and resolutions are based upon the result of manifold experiments, conducted in different countries, and totaling to-day more than 100,000 vaccinations. It is based also upon the demonstration of specific bacteriocidal properties acquired by the blood of the vaccinated. As Russell has stated, the tentative period of immunization against typhoid fever is now closed forever.

As a consequence, antityphoid vaccination confers a notable immunity against typhoid infection.

1. It reduces by one-half the case incidence of typhoid fever in groups of individuals submitted to this method of immunization.

2. Under similar conditions typhoid fever determines a "general mortality" approximately four times less in vaccinated collections or groups of individuals than in those who have not been vaccinated.

3. Typhoid fever is milder and gives rise to one-half the "clinical mortality" among the sick who have been vaccinated than among those who have not been vaccinated.[2]

Such are, in the most concise form, the general results given by antityphoid vaccination (Wright's or Pfeiffer and Kolle's method).

[1] In a recent article (Journal A. M. Med. Association No. 26, 1910) Hartsock, who has inoculated 563 persons against typhoid fever, has expressed the same opinion.

[2] "Clinical mortality" refers to the percentage of deaths among the sick.

These are the only methods which hitherto have been applied to a large number of individuals.

The writer would again call attention to the fact that these methods involve, in a certain percentage of cases, the production of temporary phase of abnormal receptivity for typhoid fever. With an average duration of from one to three weeks, this negative phase has been greatly attenuated since the doses of bacillary vaccine have been reduced to lesser proportions (Leishman). From a practical standpoint the existence of this possible period of predisposition involves the injunction of refraining from antityphoid vaccination when the subject is likely to be exposed to infection during the 21 days which correspond to the increase in his receptivity.

Consequently, so far as possible, inoculations should be practiced at times other than during periods of epidemics.

Notwithstanding its utility, the fever and the dual reaction (local and general) which follow the injections of bacillary vaccine constitute, beyond doubt, the principal reasons which have, up to now, prevented the extension of this method of immunization. This is the reason why the latter has not become more generalized in the country of its origin. It seems difficult, on this account, to render it obligatory in threatened communities; this vaccination can be only voluntary.

It can only be hoped that the intensive study of antityphoid immunization will add to the preceding methods, the practical modifications recognized as necessary, and will remedy the not inconsiderable inconveniences which they still present.

This statement, which the author made in 1908 in an official report to the minister of war in France, has lost none of its point to-day.

The great incidence of typhoid fever in the French population and in the military establishment gives an interest of the highest order to the evidence which has just been discussed.

We are still altogether too much at the mercy of an infectious disease which can be classed, at the same time, as one of the most common and most easily prevented. It gives rise to an annual mortality which may be estimated at from 8,000 to 9,000 deaths in France.

The army is especially exposed to its ravages by reason of its high susceptibility, which it owes to the age of the soldiers, to their rural origin, and in consequence the absence of immunity due to a previous infection. It is principally the troops sent to Algeria and Tunis which pay the heaviest tribute to typhoid fever.

For every man who contracts typhoid fever in the metropolitan army, there are four or five which contract the same affection in Algeria and Tunis. For one death from typhoid fever in the French Army of the Interior, four are numbered in the North African garrisons. In that country the typhogenic foci are dense and numerous.

A sanitary situation so grave as this must be met, without hesitation and without departure from the rules of strict precaution, by all the preventive measures designed to remedy it. Antityphoid vaccination is one of the methods from which a favorable result may be expected. It assures a real protection against typhoid infection and the mortality which it connotes.

The writer calls attention, in addition, to the fact that, at the instigation of Medical Inspector Fevrier, director of the health service in the war department of France, the question of antityphoid

vaccination in the French Army was studied in 1908, and was the subject of an official report recommending its adoption for troops sent to Algeria and Tunis.

At the present day it is evident that its use can not be generalized in all communities in which the disease is observed. These efforts at specific prophylaxis should be directed more particularly upon groups and individuals more especially exposed to infection. The army and the navy seem destined, the first, to reap its most direct advantages.

In the civil population antityphoid vaccination should render useful service to persons belonging to the medical profession, to students, and to hospital attendants.

The employment of antityphoid vaccination is especially justified in the case of hospital orderlies and nurses. Prof. Chauffard has recently called attention to the great frequence of typhoid fever among them.

Typhoid morbidity and mortality in the personnel of the Paris hospitals, 1900–1909.

Years.	General medical service (adults).			Service chronic diseases.		
	Morbidity.	Mortality.	Nurses and surveillantes in the service.	Morbidity.	Mortality.	Nurses and surveillantes in the service.
1900	20	3	844	10	.....	539
1901	15	2	844	3	.....	539
1902	19	3	844	1	1	539
1903	12	3	844	2	.....	539
1904	14	2	844	3	1	539
1905	17	2	844	1	.....	539
1906	16	4	844	2	.....	539
1907	15	2	844	2	2	539
1908	21	2	844	1	.....	539
1909	35	2	844	3	.....	539

Years.	Surgical service.			Typhoid service.		
	Morbidity.	Mortality.	Nurses and surveillantes in the service.	Morbidity.	Mortality.	Nurses and surveillantes in the service.
1900	1	.....	568	2	.....	56
1901	1	.....	568	2	.....	56
1902	2	2	568	2	.....	56
1903	1	.....	568	4	.....	56
1904	3	1	568	2	.....	56
1905	3	1	568	.....	.....	56
1906	3	.....	568	7	.....	56
1907	.....	.....	568	3	.....	56
1908	3	.....	568	3	.....	56
1909	2	.....	568	1	.....	56

Upon the request of Prof. Chauffard, M. Mesureur has kindly furnished the writer with this very interesting table. It relates to the nursing staffs of the following hospitals: Hôtel Dieu, Pitié, Charité-Lariboisière, Tenon, Lænnec, Boucicaut, Broussais, Saint-Louis, Broca, Claude-Bernard, Bastion 29, Andral, Bicêtre, Salpêtrière, Ivry, Brevannes, Maison Municipale de Santé.

We gather from this important document that typhoid fever is very frequent among the orderlies or nurses detailed to the typhoid wards. It is also rather common among those attached to the

general medical services. Finally it is much less frequent in the personnel of the surgical service or the service of chronic diseases, where the contagion has much fewer occasions of exerting its influence.

If the average percentage of typhoid fever among the personnel of the Paris hospitals observed from 1900 to 1909, inclusive, be calculated, we observe the following distribution:

	Cases.	Deaths.
	Per cent.	*Per cent.*
Typhoid service at Bastion 29	4.64	.....
General medical service	2.18	2.9
Chronic disease service	.51	.074
Surgical diseases	.33	.07

On data furnished by M. Netter, it is shown that the 126 male and female nurses employed at the Trousseau Hospital had, from 1903 to 1907, inclusive, 7 cases of typhoid fever, a figure high enough in itself, but which is in reality more striking when it is noted that the majority of these cases belongs to the personnel on duty in the typhoid wards. As a matter of fact, 6 of the 7 cases occurred among the 14 nurses in this latter category. Of these 6 nurses, 5 were night nurses, younger, more susceptible, and more ignorant and neglectful of the precautions to be observed.

The general service, the surgical service, the diphtheria pavilions, and the creche yielded but one case of typhoid fever among the 112 male and female nurses composing their personnel.

In consequence, there is no doubt that antityphoid vaccination should be practiced at the earliest possible moment on the nursing staff of hospitals.

There is yet another group of persons to whom antityphoid vaccination might render great service—that of the young persons coming from the country in order to find work in populous cities where typhoid fever is endemic.

This applies as well to relatives or persons who must live in contact with bacillus carriers. The important discussion which was opened at the beginning of the past year at the Academy of Medicine upon the etiology and prophylaxis of typhoid fever has brought out, among the multiple causes which induce this infectious disease, the part played by latent carriers of Eberth's bacillus, especially in families. It has also clearly demonstrated the real nature of the difficulties in protecting against such carriers.

There is no doubt in the mind of the writer that antityphoid vaccination constitutes, in the light of our present knowledge, the most efficacious prophylactic measure with respect to the contagion for which the bacillus carriers may be responsible in families containing such individuals.

UNITED STATES.

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

[Adopted since Jan. 1, 1910.]

ALTOONA, PA.

NUISANCES.

Rule 11. No person, either by himself, his agent, or in association with others, shall create or maintain a nuisance within the city of Altoona.

Rule 12. To render or maintain either impure or unwholesome the air, the soil, the public highway, any structure, any food, drink, or medicine, or to sell or lease that which has been rendered impure or unwholesome, or to needlessly put in jeopardy human life, health, or physical comfort in any manner whatsoever, or to aid in so doing, is hereby declared to be a nuisance within the city of Altoona, as understood in these rules and regulations.

Rule 13. When any nuisance thus prohibited shall be brought to the attention of the health officer he shall make prompt and careful inspection, and if satisfied that the nuisance exists, he shall serve upon the person or persons responsible for creating or maintaining it, a notice, signed by himself, directing the said party responsible for the nuisance to take proper steps to abate it within 48 hours.

Rule 14. If the person or persons notified as directed in rule 13 shall neglect or refuse to take proper steps to abate the nuisance within the time specified, the health officer shall then serve a second notice in the same manner as the first, requiring abatement within 24 hours.

Rule 15. If the proper steps to secure abatement of the nuisance shall not be taken, as required by rule 14, the health officer shall then make information against a delinquent in a prosecution before the mayor or other proper magistrate.

Rule 16. In case of emergency the health officer or any member of the board may make a summary information for neglect or refusal to abate a nuisance.

Rule 17. Service in each case above cited shall be made to the delinquent or his agent personally, but if he can not be found it shall be considered sufficient to leave a copy of the notice with an adult present and belonging to the residence or business place of the delinquent. (Regulations, board of health, adopted Jan. 22, 1910.)

GARBAGE AND ASHES.

Rule 18. The term garbage, as used herein, is intended to include all kinds of organic kitchen refuse. All garbage must be either promptly burned on the premises where it may accumulate, in a stove or furnace, within doors, or it must be placed in tightly covered metallic cans, containing not more than one-half barrel each.

Rule 19. Garbage shall be removed from each residence or hotel as often as twice a week from May 1 to November 1 and during the rest of the year as often as once a week.

Rule 20. Ashes must be removed from the premises on which is located any hotel, residence, boarding house, or public building as often as once every three months.

Rule 21. No person shall place upon any public sidewalk, highway, or alley in the city of Altoona any refuse of organic matter subject to decomposition, either vegetable or animal. (Regulations, board of health, adopted Jan. 22, 1910.)

SPITTING.

Rule 22. No person shall spit on any sidewalk, in any street car, public conveyance, or on the floor or steps of any public hall or building. (Regulations, board of health, adopted Jan. 22, 1910.)

STREET CARS—DISINFECTION OF.

Rule 23. It shall be the duty of every street car company running cars on the streets of Altoona to have all cars disinfected once a week and to have prominently posted in every car a card warning passengers against the violation of rule 22, under penalty of prosecution. (Regulations, board of health, adopted Jan. 22, 1910.)

CESSPOOLS AND PRIVY VAULTS.

Rule 24. No owner of real estate shall construct, permit, or maintain upon his premises a cesspool or privy vault where a city sewer runs through a street or alley either in front or in the rear of such premises and contiguous thereto.

Rule 25. Where a cesspool or privy vault is permitted by law, in no case shall it be allowed within 100 feet of any well or cistern.

Rule 26. No cesspool or privy vault shall be constructed with less than 8 feet in depth and a cross section of 9 square feet. It shall be paved on the bottom and walled up with brick or stone laid in cement, so as to be made water tight.

Rule 27. The contents of a cesspool or privy vault shall not be permitted to accumulate within 2 feet of the surface of the ground at the top of the vault.

Rule 28. No person shall remove the contents of any cesspool or privy vault without a license from the board of health.

Rule 29. Such license shall be for one year, and shall be issued on a written application, and after the board is satisfied that the applicant is capable, trustworthy, and in possession of the proper facilities for his business. The fee for such license shall be $15, payable at the delivery of the license. The license may be forfeited by action of the board for violation of these regulations.

Rule 30. No cesspool or privy vault shall be emptied between sunset and sunrise. When begun the work shall be finished without intermission. Air-tight barrels shall be used, which shall be kept externally clean. Every precaution shall be observed to avoid noxious odors, either at the place cleaned or in transit through the public highway. When any privy vault is emptied it shall be emptied completely. No privy vault shall be filled up or abandoned without being emptied.

Rule 31. No cesspool or privy vault shall be emptied without a permit from the board of health. A fee of 25 cents shall be paid for each such permit, which permit shall be good for but one cesspool or vault.

Rule 32. The deposit of the removed contents of a cesspool or privy vault is forbidden within the city limits. (Regulations, board of health, adopted Jan. 22, 1910.)

DEAD ANIMALS.

Rule 33. The owner of any animal that shall die, whose carcass may be a menace to human health, shall have it properly removed and disposed of within 24 hours after its death, and at his own expense. If the owner can not be found, the carcass shall be removed by the board of health.

Rule 34. No dead animal shall be buried within the city limits.

Rule 35. Dead animals shall be disposed of under the direction of the board of health. [Regulations, board of health, adopted Jan. 22, 1910.]

PLUMBERS AND PLUMBING.

Rule 36. All plumbing and house drainage in the city of Altoona must conform to the requirements of the act of assembly, approved May 14, 1909, regulating the work of plumbing and house drainage in cities of the third class.

Rule 37. The fee for an original permit shall be $1, which fee shall be paid when the application is filed. No fee shall be charged for a supplementary permit. The fee for a certificate of approval, after final inspection, shall be 25 cents, and an additional fee of 25 cents each for the first 5 traps and 5 cents for each additional trap set in the operation. These fees must be paid in full to the secretary of the board of health before the certificate of approval shall be issued.

Rule 38. No work for which a permit has been issued shall be used or paid for by the owner until the certificate of approval from the plumbing inspector has been furnished to the owner or his or their representative. [Regulations, board of health, adopted Jan. 22, 1910.]

ABATTOIRS.

Rule 39. No cattle, swine, sheep, or lambs shall be slaughtered within the city of Altoona, and no fat shall be rendered, except in private families, for their own use, without a license granted annually by the board of health, to date from January 1. The application for such license shall be made on a blank furnished by the board, and

shall set forth the location of the slaughterhouse, the material of which it is constructed, the name and residence of the owner or owners, the name and residence of the applicant for license, the method proposed for disposing of the offal, the water supply, and the accommodation for drainage. Each applicant shall also file an affidavit in which he shall pledge himself to observe all the regulations adopted by the board of health for maintaining sanitation. No new slaughterhouse shall be built or existing slaughterhouse rebuilt, enlarged, or changed without a permit issued by the board of health. No such permit shall be issued until the applicant shall file with the board complete plans and specification of the proposed new or renewed slaughterhouse. No new or renewed slaughterhouse shall have its walls constructed of any other material than brick, stone, concrete, or cement, or its roof of any other material than slate, tile, or metal. No license for a new slaughterhouse shall be issued except on petition signed by not less than a majority of the owners in interest of real estate situated within a radius of 400 feet of the proposed slaughterhouse. No permit shall be issued unless notice shall be given to the owners of real estate as above at least three weeks before final action is taken by the board of health.

Rule 40. The floors of all places where animals are now slaughtered must be paved with asphalt, cement, or other impervious material, so constructed as to prevent leakage into the soil beneath. No wood floors are permitted.

Rule 41. All drainage from slaughterhouses and stables connected therewith must be into a city sewer.

Rule 42. There shall be no blood pit, dung pit, offal pit, or privy well within 20 feet of any slaughterhouse. All refuse from the stable pens where the cattle are kept must be removed twice a week.

Rule 43. Every slaughterhouse shall be well furnished with water and must be thoroughly cleansed with hot water and lye, with free use of disinfectants, at least once each week.

Rule 44. Every slaughterhouse shall be provided with covered water-tight vessels for the immediate reception of all offal, to be removed, emptied, and cleansed within 12 hours, from May 1 to November 1, and twice a week during the rest of the year. No slaughterhouse offal of any sort or untanned hides hall be transported through the city, except in tightly covered vessels or wagons which preclude the escape of noxious odors.

Rule 45. The apparatus used for rendering fat must retain and burn the gases generated. The premises must be kept free from noxious odor.

Rule 46. Receptacles for packing hides must be of cement, asphalt or other water-tight material.

Rule 47. All slaughterhouses must be inspected by the health officer at least once a month. [Regulations, board of health, adopted Jan. 22, 1910.]

DOMESTIC ANIMALS.

Rule 48. No swine shall be kept within the city of Altoona.

Rule 49. No dogs or cats shall be quartered or have entrance in houses where any contagious or infectious disease occurs. If exposed to such disease, or if any such disease be discovered upon the animal, it shall be the duty of the owner or custodian immediately to have such dog or cat humanely killed and the body removed and disposed of under direction of the board of health. But valuable dogs exposed to infection may be quarantined under the approval of the board.

Rule 50. All stables must be kept clean and sanitary. Manure must be stored and screened in such a manner as to prevent flies having access to same. Proper sewer connections must be made. [Regulations, board of health, adopted Jan. 22, 1910.]

BARBERS.

Rule 51. No person shall serve another as a barber in the city of Altoona, either as enployer or employee, without a license from the board of health. The license shall be valid for one year. The secretary shall keep a list of licensed barbers, on which list shall be recorded whether the licensee is an employer or an employee.

Rule 52 (as amended Mar. 30, 1911). No person shall be licensed as a barber without furnishing to the board of health a certificate from the physician appointed by the board, setting forth that after personal physical examination it is manifest that the applicant is free from tuberculosis of the respiratory organs, syphilis, in a communicable form, or any other infectious or contagious disease. Each applicant shall pay to said physician the sum of 50 cents for such examination.

Rule 53. It shall be unlawful for any barber to serve in his place of business any customer who to him seems to be suffering from any contagious or infectious disease; but such person may be so served, except in case of quarantine, at the applicant's own home, provided the implements used be furnished by himself and are exclusively used for him.

Rule 54. Barber shops and their contents, furniture, implements, etc., must be kept scrupulously clean.

Rule 55. Every barber on duty must keep his hands and fingers antiseptically clean and his finger nails cut short.

Rule 56. No towel or napkin shall be used by any barber on more than one customer without fresh laundering.

Rule 57. The barber's hands, his razors, scissors, shaving brushes, soap, and cups, must be thoroughly cleansed with hot water immediately before service of a customer.

Rule 58. These rules and the license of each barber must be kept publicly posted on the wall of each barber shop, on a card furnished by the board of health. (Regulations, board of health, adopted Jan. 22, 1910.)

MILK—REGULATION OF THE PRODUCTION AND SALE.

Rule 59. No person, firm, or corporation shall sell milk or cream, either at wholesale or retail, in the city of Altoona, without first having obtained a license from the board of health.

Rule 60. Such license shall be valid for one year from date of issue, subject to revocaby the board, if any of the rules governing the sanitary regulations of milk shall be shown to the board to have been violated by the licensee, his agent or employee.

Rule 61. No license to sell milk or cream, in the city of Altoona, shall be granted until the applicant shall file with the secretary of the board of health an affidavit executed by himself according to law, in which he shall agree to comply with the requirements of the board of health, as published in these rules, and setting forth the names of all persons from whom he proposes to purchase milk or cream, with their residence.

Rule 62. No milk vendor shall sell milk tickets in the city of Altoona, to be taken in exchange for milk or cream as delivered, except in coupon cards perforated for detaching, each such coupon to be exchangeable for one pint of sweet, unskimmed milk, or its equivalent in cream. Other units of sale, of course, are permissible. No card of such coupons shall be sold more than once, and no couopn shall be sold detached.

Rule 63. The "Fifty Dairy Rules" promulgated by the United States Department of Agriculture, shall be observed by vendors of milk in the city of Altoona, both by themselves, their agents, and by those from whom their dairy product has been purchased for resale. A copy of these rules shall be kept permanently posted in each dairy and stable from which milk is received for sale in Altoona.

Rule 64. No milk vendor shall sell or keep for sale any adulterated milk, whether the adulteration be by water or other harmless substance, nor milk from a sick cow, nor milk from a cow that has calved within 5 days, nor from a cow about to calve within 20 days, nor milk into which any sort of preservative has been placed.

Rule 65. No milk shall be sold from any vessel except that into which it was placed in the dairy immediately after cooling. The night and morning milk must not be placed in the same vessel.

This rule, however, is not intended to forbid a milk vendor to bottle his milk at his own dairy, provided the bottles are kept scrupulously clean; nor is it intended to forbid him to pour the milk, when not bottled, into his service vessel for immediate delivery from his wagon to a customer. It is understood in both cases that he is not to mix the night and morning milk unless the milk is pasteurized.

Rule 66. Skim milk must be sold only from vessels marked plainly "Skimmed milk."

Rule 67. Each licensee shall have his name, the location of his dairy, and the number of his license painted distinctly on each side of every wagon used for delivering his milk or cream.

Rule 68. In summer time each milk vendor must protect his milk vessels in transit for sale from the weather by cool or wet blankets or in other approved manner. [Regulations, board of health, adopted Jan. 22, 1910.]

MEAT, POULTRY, AND FISH—CARE AND SALE OF.

Rule 69. The owner or manager of any shop or store where meat, poultry, oysters, or fish of any kind are exposed for sale shall see that his person and the persons of his employees or agents and the premises where such articles are sold are kept scrupulously clean and free from offensive odor.

Rule 70. Every meat vendor when on duty in the sale of meat must be clad in a white frock or apron extending up to the neck, with sleeves, not to be worn more than two days without laundering.

Rule 71. No stale or tainted meats or poultry, oysters, or fish of any kind shall be sold or exposed for sale, and no meat, poultry, oysters, or fish which has been treated with any sort of preservatives except salt, smoke, heat, ice, or cold storage.

Rule 72. No meat of any kind shall be sold or exposed for sale from any animal that was diseased at the time of slaughter.

Rule 73. No veal or lamb shall be sold or exposed for sale from an animal that was slaughtered before it was 4 weeks old.

Rule 74. Every room where meat, poultry, oysters, or fish are sold or exposed for sale shall be properly and effectually screened so as to prevent the admission of flies.

Rule 75. No poultry, except live poultry, shall be sold or exposed for sale undrawn.

Rule 76. Where meats are sold in the same place with groceries there must be separate counters and meat blocks, as well as proper storage for protecting the meat. No dressed meat or poultry shall be hung outside the place of sale, exposed to the street atmosphere. [Regulations, board of health, adopted Jan. 22, 1910.]

FRUIT—CARE AND SALE OF.

Rule 77. No decayed or stale fruit or vegetables shall be sold or exposed for sale.

Rule 78. No person selling fruit or vegetables shall so expose them on the sidewalk or otherwise, except on tables or benches at least 2½ feet high. (Regulations, board of health, adopted Jan. 22, 1910.)

FOOD—SALE OF IMPURE OR ADULTERATED FORBIDDEN.

Rule 79. No person shall sell or expose for sale any impure or adulterated food or drink of any kind in the city of Altoona. (Regulations, board of health, adopted Jan. 22, 1910.)

BAKERS.

Rule 80. Every baker or vendor of bread or other meal food products shall file annually with the secretary of the board of health a certificate signed by a registered physician setting forth that after personal physical examination it is manifest that the person is free from tuberculosis or other contagious or infectious disease.

Rule 81. Every room where meal food products are either baked or sold shall be subject to inspection by the health officer at any time. Bakers' wagons must be covered. Implements and receptacles for meal food products must be kept in a sanitary condition. Meal food products must be screened from flies at all times. (Regulations, board of health, adopted Jan. 22, 1910.)

COMMUNICABLE DISEASES—NOTIFICATION, PLACARDING, QUARANTINE, DISINFECTION OF HOUSES AFTER.

Rule 82. The following diseases are communicable within the purposes of these rules, viz: Actinmycosis, anthrax, bubonic plague, cerebro-spinal meningitis, chicken pox, cholera, diphtheria, epidemic dysentery, erysipelas, german measles, glanders, hydrophobia, leprosy, malarial fever, measles, mumps, pneumonia (true), puerperal fever, relapsing fever, scarlet fever, smallpox, tetanus, trachoma, trichinasis, tuberculosis (specify form), typhoid fever, typhus fever, whooping cough, yellow fever, or any eruptive skin diseases. It shall be the duty of every physician who discovers a person suffering with any of the diseases catalogued above to report the same to the department of health within six hours of the time of his diagnosis.

Rule 83. If the diagnosis reveal smallpox, scarlet fever, or diphtheria, the health officer shall immediately post in the most conspicuous place on the outside of the residence of the patient a placard stating the name and character of the disease and warning the public and the occupants of the house against breaking quarantine. The board of health at its discretion may quarantine a house containing a patient suffering from any other contagious or infectious disease.

Rule 84. If the diagnosis reveal typhoid fever, mumps, measles, chicken pox, or whooping cough, the health officer shall place one or more placards bearing the name of the disease, in a conspicuous place or places upon the premises within which the disease has appeared. Quarantine is not enforced in any of the above-mentioned diseases except measles, in which modified quarantine shall be observed. The patient is simply isolated. No person suffering from any of the above diseases will be permitted to attend school prior to recovery. Other persons of such a household may return to school if well at the expiration of 21 days from date of last exposure, except in case of typhoid fever, in which there shall be no school exclusion.

Rule 85. No person shall tear down or in any way deface any placard or signal of warning placed under direction of the board of health.

Rule 86. Any person found to be suffering from smallpox in any form shall be immediately removed by the health officer to the contagious disease hospital, there to be isolated and confined and properly cared for until finally discharged. If, however,

in any case, in the opinion of the attending physician, such removal would be unsafe to the patient, and such opinion is confirmed by the judgment of a physician of the board of health, the patient may remain in quarantine in his home.

Rule 87. Every house wherein there has been found to be any person suffering from smallpox, scarlet fever, or diphtheria shall be strictly quarantined in the case of smallpox until 14 days; in the case of the others until immediately after disinfection of the house by the health officer, when either the patient has died and been buried, removed to the hospital, or recovered.

Rule 88. When it becomes necessary to establish quarantine for scarlet fever or diphtheria in any building where the arrangement of the rooms and the facilities for caring for the patient are such that the patient and the nurse can be isolated from the rest of the house, the health officer may permit the adult members of the household to follow their daily occupations, provided such occupation does not bring them in close contact with children. No person enjoying the privileges granted in this rule shall enter the room of the patient, and any violation shall be sufficient reason for quarantining the entire household and be punished by the penalty hereinafter prescribed. When a case of scarlet fever or diphtheria develops in a house from which other children attend school, the children who show no evidence of the disease may be removed to another house, but shall not attend school until 10 days shall have elapsed from the date of their removal, nor shall any other children in the house to which they were removed attend school for the same period.

Rule 89. When any house infected by the presence of a person suffering from any disease enumerated in rule 82 shall no longer contain a patient so suffering it shall be the duty of the attending physician to so report to the board of health, when the infected house shall be thoroughly disinfected by the health officer.

Rule 90. It shall be the duty of the managers of public libraries to have all books known to have been in infected houses thoroughly disinfected before being again placed in circulation.

Rule 91. No person having tuberculosis shall serve as principal or teacher in any public or private school in this city or admitted as a pupil therein.—(Regulations, board of health, adopted Jan. 22, 1910.)

VACCINATION.

Rule 92. No person shall attend or be permitted to attend any school in the city of Altoona, either as teacher or pupil, unless either he shall have had the smallpox or have been successfully vaccinated. It shall be the duty of each teacher or superintendent or other person or persons having charge of such school before admitting any person to attendance to receive a certificate from a registered physician on a blank furnished by the board of health setting forth that such person has been vaccinated with successful result. Indorsement after personal examination in each case by the physician of the board of health shall be required on the school board's docket opposite the name of the party vaccinated in order to validate the vaccination and permit attendance at school.

Rule 93. Where any person desiring to attend school in the city of Altoona appears to any registered physician to be immune after a second attempt at successful vaccination has been made by him, then such person shall be vaccinated by or in the presence of the physician of the board of health. If this attempt shall also fail, then the physician of the board, acting in his official capacity, shall authorize the admission of such person to the school for one year only.

Rule 94. It shall be the duty of the superintendent of the public schools and the person or persons in charge of any other schools to keep a register of pupils and teachers admitted to the schools on vaccination certificates with blank space after such name for a validation indorsement, as required in rule 92. It shall not be required of a pupil once properly and lawfully enrolled on this register to present a second certificate of vaccination.—(Regulations, board of health, adopted Jan. 22, 1910.)

PENALTY FOR VIOLATING REGULATIONS OF BOARD OF HEALTH.

Rule 95. Any person guilty of violating any of these rules or regulations, or who shall neglect or refuse to comply with the provisions and duties therein set forth, upon conviction before the mayor or any alderman of the city of Altoona, shall for each such violation be liable to a fine of not less than $5 nor more than $20, or in default of payment of such fine he shall undergo an imprisonment in the county jail for a period not exceeding 20 days. But in cases where by act of assembly other penalties are prescribed such penalty shall be construed to be in lieu of the penalty laid down in this rule. (Regulations, board of health, adopted Jan. 22, 1910.)

PLAGUE-PREVENTION WORK.

Precautionary Measures at Seattle.

Because of the finding of a plague-infected rat in Seattle on August 26, 1911, the city health authorities have undertaken thorough precautionary measures. The block in which the infected rat was found has been carefully inspected, concrete floors have been put in where indicated, and all small wooden buildings have been destroyed. A general cleaning of the premises in surrounding blocks is in progress.

Up to August 26, 1911, no plague-infected rat had been found in Seattle since February 8, 1910, although in the interval rats were caught and examined daily, and the number thus caught and examined amounted to many thousands.

Plague-infected Ground Squirrels Found in California.

During the week ended September 16 a diagnosis of plague was made in 24 squirrels found in Contra Costa County. The squirrels had been obtained as follows:

Nunes ranch, 3 miles east of Stege, Rancho El Sobrante, 3 ground squirrels—2 on August 26 and 1 on September 9, 1911.

Peoples Water Co., 3½ miles east of Stege, Rancho El Sobrante, Brissac tract, 21 ground squirrels—1 on August 22, 1 on August 24, 2 on August 25, 3 on August 26, 1 on August 28, 1 on August 29, 2 on August 30, 1 on August 31, 2 on September 1, 4 on September 2, 2 on September 9, and 1 on September 11, 1911.

Distribution of Poison.

In connection with the making and maintenance of a squirrel-free zone around the cities of California on San Francisco Bay, 6,327 acres of land in Alameda County and 1,550 acres in Contra Costa County were covered with poison during the week ended September 16, 1911.

During the same period 1,000 acres of land in San Joaquin County and 1,308 acres in Stanislaus County were covered with poison for the purpose of eradicating plague foci.

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	Oct. 17, 1909	Aug. 9, 1911	108 squirrels, 1 wood rat.
Contra Costa	July 21, 1911	None	Sept. 11, 1911	359 squirrels.
Merced	None	do	July 13, 1911	5 squirrels.
Monterey	do	do	Aug. 6, 1911	Do.
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:				
City—				
Seattle	Oct. 30, 1907	Aug. 26, 1911	None	23 rats.

Rats Collected and Examined for Plague Infection.

Places.	Week ended—	Found dead.	Total collected.	Examined.	Found infected.
California:					
Cities—					
Berkeley	Sept. 16		[1] 129	91	None.
Oakland	do	30	[2] 608	421	Do.
San Francisco	do	37	[3] 1,632	1,174	Do.
Washington:					
City—					
Seattle	do		822	730	

[1] Identified, Mus norvegicus 113, Mus musculus 16.
[2] Identified, Mus norvegicus 481, Mus musculus 109, Mus rattus 11, Mus alexandrinus 7.
[3] Identified, Mus norvegicus 910, Mus musculus 337, Mus rattus 245, Mus alexandrinus 140.

Squirrels Collected and Examined for Plague Infection.

Places.	Week ended—	Shot or trapped.	Found dead.	Examined.	Found infected.
California:					
Counties—					
Alameda	Sept. 16	64	85	119	None.
Butte	do	102		91	None.
Colusa	do	121		86	None.
Contra Costa	do	75	88	158	24
Glenn	do	289		190	None.
Kern	do	41		41	None.
Lake	do	87		87	None.
Mendocino	do	184		133	None.
Merced	do	68		68	None.
San Benito	do	21		21	None.
San Joaquin	do	146	10	106	None.
Shasta	do	43		43	None.
Sonoma	do	93		88	None.
Stanislaus	do	203	4	102	None.
Yolo	do	121		31	None.
Oregon:					
County—					
Jackson	do	13		13	None.
Total		1,671	187	1,377	24

Other Animals Collected and Examined.

Places.	Week ended—	Animals collected.	Examined.	Found infected.
California:				
City—				
San Francisco	Sept. 16	1 gopher	0	None.
Counties—				
Glenn	...do...	6 rabbits, 1 wood rat	7	None.
Kern	...do...	2 weasels	2	None.
Merced	...do...	5 rabbits	5	None.
San Joaquin	...do...	2 rabbits	2	None.
Stanislaus	...do...	8 rabbits	8	None.
Shasta	...do...	6 rabbits	6	None.
Total			30	

SMALLPOX IN THE UNITED STATES.

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

Reports Received During Week Ended Oct. 6, 1911.

Places.	Date.	Cases.	Deaths.	Remarks.
Arizona:				
County—				
Cochise	July 1-31	7		Aug. 1-31. No cases.
California:				
Counties—				
Alameda	Aug. 1-31	1		
Fresno	...do	4		
Los Angeles	...do	2		
Sacramento	...do	1		
San Bernardino	...do	2		
San Francisco	...do	2		
San Joaquin	...do	2		
Siskiyou	...do	1		
Tulare	...do	1		
Ventura	...do	1		
Total for State		17		
Florida:				
Counties—				
Duval	Sept. 10-23	8		
Jefferson	Sept. 16-23	20		
Gadsden	Sept. 10-16	3		
Madison	...do	2		
Marion	...do	1		
Total for State		34		
*Missouri:				
Kansas City	Aug. 1-31	5	1	
Oregon:				
Counties—				
Linn	July 1-31	1		
Multnomah	...do	5		
Union	...do	2		
Total for State		8		
Cass	Aug. 1-31	1		
Grant	...do	3		
Josephine	...do	1		
Union	...do	5		
Total for State		10		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from July 1 to Sept. 29, 1911.

[For reports received from Dec. 31, 1910, to June 30, 1911, see Public Health Reports for June 30, 1911. In accordance with custom, the tables of epidemic diseases are terminated semiannually and new tables begun.]

Places.	Date.	Cases.	Deaths.	Remarks.
*Alabama:				
Mobile	June 18–24	3		
Montgomery	June 25–Aug. 19	4		
Total for State		7		
Arizona:				
County—				
Cochise	July 1–31	1		
California:				
Counties—				
Los Angeles	May 1–June 30	7		
Santa Cruz	May 1–31	1		
San Diego	do	1		
San Francisco	May 1–June 30	2		
Total for State		11		
Colorado:				
Counties—				
Archuleta	Aug. 1–31	1		
Boulder	June 1–July 31	3		
Chaffee	June 1–30	3		
Clear Creek	June 1–July 31	8		
Conejos	do	4		
Costilla	June 1–30	1		
Delta	do	7		
Denver	June 1–Aug 31	31		
Fremont	Aug. 1–31	2		
El Paso	June 1–30	2		
Huerfano	June 1–Aug. 31	7		
Jefferson	Aug. 1–31	1		
Kiowa	July 1–Aug. 31	4		
Lake	June 1–Aug. 31	9		
La Plata	June 1–July 31	7		
Larimer	June 1–Aug. 31	10		
Las Animas	Aug. 1–31	1		
Lincoln	June 1–30	2		
Mesa	do	1		
Morgan	Aug. 1–31	3		
Montrose	July 1–31	2		
Otero	do	1		
Phillips	June 1–30	1		
Pueblo	June 1–Aug. 31	7		
San Miguel	June 1–30	1		
Washington	June 1–July 31	11		
Weld	July 1–31	1		
Total for State		131		
Connecticut, entire State				May 1–31, no cases.
Middlesex County	July 1–Aug. 31	2		
District of Columbia	July 2–8	5		
Florida:				
Counties—				
Alachua	Aug. 20–26	3		
Bradford	July 17–Sept. 9	6		
Citrus	July 9–22	2		
Columbia	July 2–8	1		
De Soto	June 16–Aug. 26	7		
Duval	do	36	1	
Escambia	do	7		
Gadsden	July 9–Sept. 9	69		
Hillsboro	June 16–Aug. 26	3		
Jackson	July 2–8	31		
Leon	June 16–July 8	11		
Levy	July 9–16	1		
Manatee	June 16–July 8	8		
Marion	July 9–16	1		
Orange	June 16–July 16	2		
Pasco	July 9–16	20		
Polk	June 16–July 16	5		
Santa Rosa	July 9–16	6		
Sumter	Aug. 1–6	1		
Volusia	July 9–16	1		
Washington	Aug. 1–26	8		
Total for State		229	1	

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from July 1 to Sept. 29, 1911.

Places.	Date.	Cases.	Deaths.	Remarks.
Indiana:				
Counties—				
Adams	Aug. 1–31	1		
Allen	June 1–30	1		
Bartholomew	July 1–31	1		
Benton	June 1–30	2		
Blackford	do	4		
Boone	Aug. 1–31	1		
Cass	do	1		
Clarke	July 1–31	2		
Clinton	June 1–30	7		
Delaware	June 1–Aug. 31	14		
Franklin	July 1–31	1		
Henry	June 1–Aug. 31	2		
Howard	do	41		
Jay	June 1–30	2		
Lake	Aug. 1–31	3		
Laporte	June 1–30	2		
Madison	June 1–Aug. 31	21		
Marion	do	4		
Orange	Aug. 1–31	2		
Parke	June 1–July 31	4		
Posey	June 1–30	3		
Rush	Aug. 1–31	3		
Shelby	June 1–30	3		
Tippecanoe	July 1–31	2		
Tipton	June 1–Aug. 31	6		
Vanderburg	do	1	1	
Vigo	July 1–31	8		
Wabash	June 1–30	2		
Wayne	June 1–July 31	13		
Total for State		157	1	
Iowa:				
Counties—				
Adams	June 1–July 31	19		
Appanoose	June 1–30	1		
Blackhawk	do	4		
Carroll	do	1		
Davis	do	3		
Decatur	June 1–July 31	2		
Fremont	June 1–30	11		
Henry	do	1		
Johnson	July 1–31	13		
Lee	June 1–30	1		
Linn	July 1–Aug. 31	9		
Marshall	June 1–Aug. 31	9		
Mills	June 1–30	1	1	
Polk	June 1–Aug. 31	13		
Pottawattamie	do	19		
Scott	June 1–July 31	6		
Sioux	do	8		
Taylor	do	9		
Wapello	June 1–Aug. 31	5		
Wright	June 1–30	1		
Woodbury	July 1–31	1		
Total for State		137	1	
Kansas:				
Counties—				
Allen	May 1–31	7		
Anderson	June 1–30	15		
Atchison	May 1–June 30	2		
Barton	do	8		
Clark	July 1–31	1		
Clay	May 1–31	1		
Cloud	do	1		
Crawford	May 1–July 31	19		
Dickinson	May 1–31	13		
Doniphan	do	15		
Douglas	May 1–July 31	4		
Elk	May 1–31	15		
Ellsworth	June 1–30	1		
Franklin	May 1–31	4		
Graham	May 1–June 30	3		
Harvey	May 1–July 31	30		
Haskell	May 1–31	19		
Jefferson	May 1–July 31	9		
Jewell	July 1–31	5		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from July 1 to Sept. 29, 1911.

Places.	Date.	Cases.	Deaths.	Remarks.
Kansas—Continued.				
Counties—Continued.				
Johnson	May 1–June 30	5		
Kearny	June 1–July 31	2		
Labette	May 1–July 31	13		
Lane	June 1–30	11		
Leavenworth	May 1–June 30	3		
Lyon	July 1–30	2		
Marion	May 1–31	3		
Marshall	do	3		
Miami	do	3		
Mitchell	do	6		
Montgomery	do	5		
Norton	June 30	9		
Osage	May 1–31	1	3	
Pottawatomie	do	2		
Reno	do	3		
Republic	do	1		
Rice	June 30	13		
Riley	May 1–June 30	9		
Rooks	May 1–July 31	13		
Saline	May 1–June 30	7		
Sedgwick	May 1–July 31	12		
Shawnee	do	49	11	
Sherman	June 1–30	1		
Smith	May 1–31	18		
Thomas	do	2		
Washington	do	1		
Wyandotte	May 1–June 30	25		
Total for State		394	14	
*Kentucky:				
Covington	July 2–22	10		
Louisville	May 1–31	4		
Total for State		14		
*Louisiana:				
Parishes—				
Ascension	Mar. 1–31	21		
Morehouse	Apr. 1–30	4		
Orleans—				
New Orleans	June 25–Aug. 13	4		
St. Tammany	Mar. 1–31	3		
Tangipahoa	Mar. 1–Apr. 30	21		
Total for State		53		
Maine, entire State				July 1–31, no cases.
Counties—				
Androscoggin	Aug. 1–31	3		
Somerset	June 1–30	3		
Total for State		6		
Maryland:				
Counties—				
Frederick	July 1–31	3		
Prince Georges	do	1		
Washington	June 1–30	1		
Total for State		5		
Massachusetts				Do.
County—				
Middlesex	June 1–30	1		
Michigan:				
Counties—				
Antrim	do	2		
Calhoun	June 1–July 31	12		
Cheboygan	July 1–31	*10		
Grand Traverse	June 1–30	6		
Isabella	do	1		
Mackinac	June 1–July 31	3		
Marquette	June 1–30	1		
Milford	July 1–31	1		
Montcalm	do	6		
Muskegon	do	2		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from July 1 to Sept. 29, 1911.

Places.	Date.	Cases.	Deaths.	Remarks.
Michigan—Continued.				
Counties—Continued.				
Oakland	June 1–30	1		
Ottawa	do	1		
St. Clair	June 1–July 31	9		
Shiawassee	June 1–30	1		
Washtenaw	June 1–July 31	6		
Wayne	June 1–30	5		
Total for State		67		
Minnesota:				
Counties—				
Ramsey	Mar. 1–31		1	Cases in March, reported on p 683, vol. 1.
	May 1–31		1	
Brown	June 20–26	2		
Carver	June 1–5	1		
Dodge	July 4–21	4		
Faribault	June 6–17	2		
Fillmore	June 6–12	1		
Goodhue	July 25–31	1		
Hennepin	June 1–July 17	32		
Houston	July 25–31	1		
Lac qui Parle	June 1–19	4		
Mille Lacs	June 1–5	1		
Otter Tail	June 1–July 31	6		
Ramsey	June 1–5	26		
St. Louis	June 21–July 31	7		
Wadena	July 11–17	1		
Yellow Medicine	June 1–26	35		
Total for State		124	2	
*Missouri:				
Kansas City	June 1–30	17		
St. Louis	June 18–Sept. 2	2		
Total for State		19		
Montana				June 1–30, no cases.
Counties—				
Beaverhead	July 1–31	1		
Cascade	do	1		
Jefferson	do	4		
Park	do	1		
Powell	do	2		
Silver Bow	do	3		
Teton	do	3		
Yellowstone	do	1		
Total for State		16		
*Nebraska:				
Lincoln	Feb. 1–June 30	200		July 1–31, no cases.
Omaha	June 19–Aug. 19	4		
South Omaha	Aug. 20–26	1		
Total for State		205		
New Jersey				No cases in June and August.
County—				
Middlesex	July 1–31	1		
New York	June 1–30	1		
Counties—				
Cattaraugus	July 1–31	1		
Erie	June 1–July 31	18		
Clinton	June 1–30	1		
Franklin	do	1		
Monroe	do	4		
Onondaga	June 1–July 31	7		
Otsego	June 1–30	1		
St. Lawrence	do	4		
Schoharie	July 1–31	11		
Steuben	do	1		
Tioga	June 1–30	1		
Ulster	do	5		
Wayne	July 1–31	1		
Wyoming	do	1		
Total for State		58		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from July 1 to Sept. 29, 1911.

Places.	Date.	Cases.	Deaths.	Remarks.
North Carolina:				
Counties—				
Alamance	June 1–July 31	2		
Avery	do	56		
Bertie	do	2		
Catawba	June 1–30	1		
Chatham	do	2		
Craven	do	3		
Cumberland	June 1–July 31	5		
Currituck	July 1–31	1		
Duplin	do	3		
Durham	do	4		
Edgecombe	June 1–30	4		
Granville	July 1–31	5		
Haywood	June 1–30	3		
Henderson	do	4		
Johnston	July 1–31	1		
Mecklenburg	do	3		
New Hanover	June 1–July 31	7		
Pasquotank	June 1–30	2		
Robeson	July 1–31	2		
Rowan	June 1–July 31	2		
Sampson	July 1–31	1		
Warren	do	2		
Watauga	June 1–30	2		
Wayne	July 1–31	1		
Wilmington	do	3		
Total for State		121		
North Dakota:				
Counties—				
Billings	June 1–July 31	8		
Cass	Aug. 1–31	1		
Lamoure	July 1–31	1		
McKenzie	Aug. 1–31	1		
Morton	June 1–30	1		
Mountrail	do	6		
Nelson	Aug. 1–31	4		
Ward	June 1–30	1		
Total for State		23		
Ohio:				
Counties—				
Ashtabula	June 1–July 31	3		
Brown	June 1–30	4		
Clark	July 1–31	19		
Clermont	June 1–30	3		
Defiance	do	1		
Franklin	July 1–31	44		
Geauga	June 1–30	2		
Hamilton	July 1–Aug. 31	19		
Licking	July 1–31	1		
Lorain	do	5		
Lucas	July 1–Aug. 31	6		
Pickaway	July 1–31	3		
Ross	Aug. 1–31	9		
Sandusky	June 1–30	4		
Total for State		123		
Oklahoma:				
Counties—				
Bryan	June 1–30	1		
Caddo	May 1–31	1		
Carter	June 1–30	1		
Cleveland	May 1–June 30	49		
Comanche	June 1–30	1		
Craig	do	6		
Custer	May 1–31	5		
Dewey	do	6		
Ellis	June 1–30	3		
Garvin	May 1–31	19		
Haskell	May 1–July 31	9		
Hughes	do	4		
Jefferson	May 1–June 30	7		
Johnson	May 1–31	3		
Kay	do	6		
Kingfisher	do	1		
Kiowa	do	1		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from July 1 to Sept. 29, 1911.

Places.	Date.	Cases.	Deaths.	Remarks.
Oklahoma—Continued.				
Counties—Continued.				
Le Flore	May 1–June 30	3		
Logan	June 1–30	1		
McClain	May 1–31	18		
McIntosh	do	1		
Nowata	May 1–June 30	2		
Okfuskee	May 1–31	1		
Oklahoma	May 1–June 30	10		
Pittsburg	June 1–30	1		
Pontotoc	May 1–31	5		
Pottawatomie	June 1–30	3		
Pushmataha	May 1–31	2		
Roger Mills	May 1–June 30	6		
Rogers	July 1–31	1		
Seminole	May 1–June 30	16		
Tulsa	do	10		
Wagoner	May 1–31	1		
Washington	June 1–30	1		
Washita	May 1–June 30	2		
Woodward	May 1–31	1		
Total for State		208		
Oregon:				
Counties—				
Baker	June 1–30	1		
Benton	May 1–31	1		
Douglas	Apr. 1–30	1		
Linn	do	1		
Morrow	May 1–31	1		
Multnomah	Apr. 1–June 30	10		
Union	June 1–30	1		
Wasco	do	1		
Washington	Apr. 1–June 30	7		
Yamhill	June 1–30	1		
Total for State		25		
Pennsylvania	May 1–June 30	79		
Rhode Island:				
Providence	June 15–July 14	3		
* **South Carolina:**				
Port Royal	July 22	1		
South Dakota:				
Counties—				
Aurora	June 1–July 31	3		
Beadle	May 1–31	13		
Brookings	Apr. 1–30	9		
Brown	Apr. 1–June 30	10		
Brule	Apr. 1–May 21	6		
Charles Mix	June 1–30	1		
Codington	June 1–July 31	7		
Davison	May 1–July 31	7		
Day	June 1–30	1		
Dewey	do	4		
Fall River	Apr. 1–May 31	18		
Grant	do	4		
Hanson	May 1–31	1		
Hughes	June 1–30	1		
Hutchinson	Apr. 1–30	1		
Jerauld	May 1–June 30	6		
Kingsbury	Apr. 1–May 31	8		
Lawrence	Apr. 1–July 31	7		
Lincoln	do	1		
Lyman	Apr. 1–May 31	16	1	
McCook	do	11		
Miner	Apr. 1–June 30	5		
Minnehaha	do	15		
Pennington	do	48		
Sanborn	May 1–31	3		
Spink	Apr. 1–July 31	7		
Tripp	Apr. 1–June 30	7		
Turner	July 1–31	5		
Total for State		225	1	

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from July 1 to Sept. 29, 1911.

Places.	Date.	Cases.	Deaths.	Remarks.
*Tennessee:				
Counties—				
Knox—				
Knoxville	June 18-July 22	9		
Shelby	June 1-Aug. 31	10		
Total for State		19		
Texas	May 1-31	12		
	July 1-31	1	1	
Counties—				
Brazoria	Aug. 1-31	2		
Bell	June 1-30	2		
Cameron	May 1-Aug. 31	34		
Childress	June 1-30	1		
Collin	May 1-31	5		
Dallas	do	13		
Denton	do	1		
	Apr. 1-30	4		
Eastland	Aug. 1-31	5		
El Paso	May 1-July 31	11		
Floyd	May 1-31	3		
Galveston	May 1-June 30	7		
Hall	do	4		
Harris	May 1-Aug. 31	6		
Hidalgo	May 1-31	3		
Hunt	June 1-July 31	5		
Marion	May 1-31	1		
McLennan	do	1		
Navarro	do	32		
Nueces	do	5		
Tarrant	May 1-June 30	9		
Titus	May 1-31	5		
Victoria	July 1-31	1		
Wayne	June 1-30	5		
Wichita	May 1-31	6		
Total for State		184	1	
Utah:				
Counties—				
Beaver	May 1-July 31	18		
Boxelder	do	31		
Cache	May 1-June 30	14		
Carbon	May 1-Aug. 31	113	2	
Emery	do	88	1	
Garfield	do	20		
Juab	July 1-Aug. 31	5		
Piute	May 1-31	9		
Rich	July 1-31	16		
Salt Lake	May 1-Aug. 31	40		
Sanpete	do	35		
Sevier	do	48		
Tooele	May 1-June 30	33		
Uinta	May 1-Aug. 31	9		
Utah	May 1-July 31	18	1	
Washington	do	1		
Weber	do	11		
Total for State		509	4	
Virginia:				
Counties—				
Augusta	Aug. 1-31	1		
Brunswick	Mar. 1-May 31	49		
Campbell	May 1-Aug. 31	2		
Dinwiddie	Apr. 1-May 31	19		
Essex	Aug. 1-31	1		
Fairfax	Mar. 1-Aug. 31	6		
Fauquier	Apr. 1-May 30	6		
Greenville	July 1-31	4		
Halifax	Aug. 1-31	1		
Hanover	Mar. 1-July 31	3		
Henrico	Mar. 1-Aug. 31	17		
Henry	do	77		
Isle of Wight	May 1-31	1		
Lancaster	do	1		
Lee	Mar. 1-Aug. 31	107		
Loudoun	Mar. 1-31	1		
Mecklenburg	Mar. 1-June 30	18		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from July 1 to Sept. 29, 1911.

Places.	Date.	Cases.	Deaths.	Remarks.
Virginia—Continued.				
Counties—Continued.				
Nansemond	Mar. 1–Aug. 31	24		
Norfolk	Apr. 1–May 31	26		
Northampton	Apr. 1–30	1		
Page	do	8		
Pittsylvania	Mar. 1–July 31	46		
Prince William	Mar. 1–31	1		
Princess Anne	do	1		
Roanoke	May 1–31	1		
Southampton	Mar. 1–Apr. 30	9		
Surry	Mar. 1–31	2		
Sussex	Mar. 1–June 30	7		
Wise	do	15		
Total for State		455		
Washington:				
Counties—				
Benton	July 1–31	2		
Chehalis	May 1–July 31	4		
Chelan	do	2		
Columbia	May 1–31	5		
Cowlitz	May 1–July 31	4		
Garfield	do	5		
King	do	42		
Kittitas	July 1–31	2		
Mason	May 1–31	28		
Pierce	May 1–July 31	11		
San Juan	May 1–31	1		
Skagit	May 1–July 31	5		
Spokane	do	9		
Thurston	May 1–31	1		
Whatcom	do	5		
Whitman	do	17		
Yakima	May 1–July 31	69		
Total for State		212		
Wisconsin:				
Counties—				
Ashland	June 1–30	1		
Barron	do	3		
Douglas	do	2		
Iowa	do	8		
Milwaukee	do	1		
Vilas	do	1		
Wood	do	2		
Total for State		18		
Grand total for the United States		3,848	25	

PLAGUE IN THE UNITED STATES.

Reports Received from July 25 to Sept. 29, 1911.

Places.	Date.	Cases.	Deaths.	Remarks.
California:				
Counties—				
Alameda—				
Oakland	Aug. 9	1		Infection received at Pinol Cañon, Contra Costa County, Cal.
Contra Costa	July 25–26	1	1	1 mile nw. of Lafayette.
San Joaquin	Sept. 18	1		2 miles ne. of Ripon.

MORBIDITY AND MORTALITY.

Morbidity and mortality table, cities of the United States, for week ended Sept. 16, 1911.

Cities.	Population, United States census 1910.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Smallpox.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Cities having over 500,000 inhabitants.														
Baltimore, Md	558,485	169	17	2	1	....	8	1	....	....	22	22	63	15
Boston, Mass	670,585	213	21	....	23	3	20	....	....	....	55	22	24	3
Chicago, Ill	2,185,283	573	134	11	5	1	141	8	....	....	188	63	68	10
Cleveland, Ohio	560,663	131	35	1	6	....	39	3	....	....	50	14	32	6
New York, N. Y	4,766,883	1,208	123	12	77	5	33	2	....	....	430	149	102	19
Philadelphia, Pa	1,549,008	401	30	3	5	....	10	2	....	....	115	40	48	7
Pittsburgh, Pa	533,905	122	27	1	6	1	25	....	....	....	19	6	19	6
St. Louis, Mo	687,029	213	17	3	10	....	7	1	....	....	25	17	28	5
Cities having from 300,000 to 500,000 inhabitants.														
Buffalo, N. Y	423,715	138	17	4	2	....	4	1	....	....	10	12	16	2
Cincinnati, Ohio	364,463	103	14	2	2	....	31	2	....	....	30	10	6	1
Los Angeles, Cal	319,198	90	2	1	....	....	7	....	....	....	11	13	6	3
Milwaukee, Wis	373,857	92	12	1	1	....	8	....	....	....	14	9	6	1
Newark, N. J	347,469	91	26	1	....	....	5	....	....	....	26	7	7	2
New Orleans, La	339,075	124	5	....	5	....	5	....	....	....	16	11	7	1
San Francisco, Cal	416,912	140	4	....	31	....	4	....	1	....	11	14	3	2
Washington, D. C	331,069	94	3	....	2	....	2	....	....	....	17	12	34	3
Cities having from 200,000 to 300,000 inhabitants.														
Denver, Colo	213,381	47	21	1	....	....	4	....	2	....	....	5	4	....
Jersey City, N. J	267,779	60	....	2	....	....	....	....	....	....	....	1	....	....
Providence, R. I	224,326	55	5	1	1	....	6	1	....	....	....	5	12	1
Seattle, Wash	237,194	....	4	1	....	....	....	....	1	....	5	6	5	1
Cities having from 100,000 to 200,000 inhabitants.														
Bridgeport, Conn	102,054	26	....	1	....	....	....	....	....	....	....	3	....	....
Cambridge, Mass	104,839	26	6	1	2	....	....	....	....	....	4	4	5	....
Columbus, Ohio	181,548	48	7	....	1	....	3	....	....	....	4	4	6	....
Dayton, Ohio	116,577	....	....	....	....	....	....	....	2	....	....	4	1	....
Fall River, Mass	119,295	49	1	....	....	....	2	....	....	....	4	6	7	1
Grand Rapids, Mich	112,571	33	2	....	3	....	....	....	....	....	....	1	3	....
Lowell, Mass	106,294	31	....	....	....	....	5	1	....	....	4	1	....	....
Nashville, Tenn	110,364	....	2	....	....	....	2	....	....	....	4	4	15	2
Omaha, Nebr	124,096	....	....	....	....	....	1	....	....	....	....	2	1	....
Spokane, Wash	104,402	28	1	....	....	....	....	....	....	....	....	2	24	4
Toledo, Ohio	168,497	49	14	2	....	....	3	....	....	....	....	4	4	2
Worcester, Mass	145,986	48	14	....	1	....	4	1	....	....	3	4	8	2
Cities having from 50,000 to 100,000 inhabitants.														
Altoona, Pa	52,127	9	1	....	....	....	2	....	....	....	1	....	2	....
Bayonne, N. J	55,545	15	2	....	3	....	....	....	....	....	1	....	....	1
Brockton, Mass	56,878	11	2	....	....	....	1	....	....	....	4	2	2	....
Camden, N. J	94,538	....	1	....	....	....	....	....	....	....	....	....	....	....
Covington, Ky	53,270	9	1	....	....	....	1	....	....	....	....	2	1	....
Duluth, Minn	78,466	20	....	....	....	....	1	....	....	....	2	3	5	2
Elizabeth, N. J	73,409	22	2	....	....	....	3	....	....	....	....	1	1	....
Erie, Pa	66,525	15	1	....	1	....	1	....	....	....	8	1	3	1
Evansville, Ind	69,647	17	1	....	....	....	....	....	....	....	....	1	....	....
Harrisburg, Pa	64,186	17	2	....	3	....	....	....	....	....	9	3	3	....
Hartford, Conn	98,915	21	5	1	....	....	7	....	....	....	5	1	1	....
Hoboken, N. J	70,324	5	4	....	....	....	1	....	....	....	....	....	....	....
Houston, Tex	78,800	29	3	....	....	....	1	....	....	....	....	3	....	....
Jacksonville, Fla	57,699	....	1	....	....	....	1	....	....	....	....	....	2	3
Johnstown, Pa	55,482	16	3	....	....	....	....	....	....	....	....	....	5	....
Kansas City, Kans	82,331	....	4	....	....	....	1	....	3	....	8	....	12	....
Lawrence, Mass	85,892	24	2	....	....	....	5	....	....	....	6	4	6	1
Lynn, Mass	89,336	21	3	1	1	....	3	....	....	....	7	....	2	1
Manchester, N. H	70,063	24	3	....	1	....	....	....	....	....	....	....	1	1
Mobile, Ala	51,521	15	1	....	....	....	....	....	....	....	....	2	6	1
New Bedford, Mass	96,652	33	1	....	3	....	1	....	....	....	5	2	5	1

MORBIDITY AND MORTALITY—Continued.

Morbidity and mortality table, cities of the United States, for week ended Sept. 16, 1911—Continued.

Cities.	Population, United States census 1910.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Smallpox.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Cities having from 50,000 to 100,000 inhabitants—Con.														
Passaic, N. J.	54,773	17	3	1	....	....	....	....	....	....	1	1	....	1
Peoria, Ill.	66,950	20	1	....	....	....	1	....	....	....	....	2	....	2
Reading, Pa.	96,071	26	5	....	2	....	3	1	....	....	2	1	7	....
San Antonio, Tex.	96,614	23	2	....	....	....	1	....	1	....	....	3	4	1
Schenectady, N. Y.	72,826	13	3	....	....	....	....	....	....	....	3	....	6	....
South Bend, Ind.	53,684	16	2	....	....	....	....	....	....	....	....	....	3	2
Springfield, Ill.	51,678	19	....	....	....	....	....	....	....	....	....	....	....	....
Springfield, Mass.	88,926	29	1	....	3	....	....	....	....	....	1	....	3	....
Terre Haute, Ind.	58,157	14	1	....	....	....	....	....	....	....	....	....	4	....
Trenton, N. J.	96,815	30	1	....	....	....	....	....	....	....	2	2	1	1
Wilkes-Barre, Pa.	67,105	19	4	1	....	....	....	....	....	....	3	1	....	....
Wilmington, Del.	87,411	16	....	....	....	....	....	....	....	....	....	4	....	2
Yonkers, N. Y.	79,803	21	1	....	2	....	9	....	....	....	3	1	....	1
Cities having from 25,000 to 50,000 inhabitants.														
Atlantic City, N. J.	46,150	17	....	....	....	....	....	....	....	....	1	....	4	....
Aurora, Ill.	29,807	....	1	....	....	....	....	....	....	....	....	....	....	....
Berkeley, Cal.	40,434	10	....	....	....	....	....	....	....	....	....	2	1	....
Binghamton, N. Y.	48,443	14	....	....	....	....	....	....	....	....	1	1	....	....
Brookline, Mass.	27,792	4	....	....	....	....	....	....	....	....	....	....	1	....
Butte, Mont.	39,165	16	....	....	....	....	1	....	....	....	....	1	....	1
Chattanooga, Tenn.	44,604	....	....	....	....	....	2	....	....	....	....	....	2	....
Chelsea, Mass.	32,452	10	3	....	1	....	....	....	....	....	....	....	1	....
Chicopee, Mass.	25,401	6	....	....	....	....	....	....	....	....	....	....	....	....
Danville, Ill.	27,871	9	2	....	....	....	2	1	....	....	1	1	....	....
Dubuque, Iowa.	38,494	3	11	1	....	....	....	....	....	....	....	....	....	....
East Orange, N. J.	34,371	4	....	....	....	....	....	....	....	....	1	1	....	....
Elmira, N. Y.	37,176	11	6	....	....	....	2	....	....	....	....	....	5	....
El Paso, Tex.	39,279	31	2	....	....	....	....	....	2	1	....	6	7	1
Everett, Mass.	33,484	2	....	....	....	....	....	....	....	....	2	....	....	....
Haverhill, Mass.	44,115	20	....	....	....	....	....	....	....	....	1	....	1	....
Kalamazoo, Mich.	39,437	11	....	....	....	....	....	....	....	....	....	....	2	1
Knoxville, Tenn.	36,346	11	1	....	....	....	....	....	....	....	....	1	....	2
La Crosse, Wis.	30,417	4	4	....	....	....	....	....	....	....	1	....	....	....
Lancaster, Pa.	47,227	....	1	....	....	....	4	....	....	....	2	....	3	....
Lynchburg, Va.	29,494	11	4	....	....	....	4	....	....	....	3	....	4	....
Montgomery, Ala.	38,136	20	6	....	1	....	1	....	....	....	3	2	1	....
Newcastle, Pa.	36,280	....	9	....	1	....	1	....	....	....	1	....	4	....
Newport, Ky.	39,309	4	3	....	....	....	1	....	....	....	....	....	1	1
Newton, Mass.	39,806	9	....	....	....	....	....	....	....	....	1	1	....	....
Niagara Falls, N. Y.	30,445	7	3	....	1	....	2	....	....	....	....	1	4	....
Norristown, Pa.	27,875	13	2	1	....	....	1	....	....	....	2	....	3	1
Orange, N. J.	29,630	8	4	....	....	....	....	....	....	....	2	....	1	....
Pasadena, Cal.	30,291	9	....	....	....	....	1	....	....	....	....	2	....	....
Pittsfield, Mass.	32,121	17	7	....	2	....	....	....	....	....	1	1	....	....
Portsmouth, Va.	33,190	4	2	....	....	....	....	....	....	....	....	....	2	....
Roanoke, Va.	34,874	4	4	....	....	....	3	....	....	....	....	....	8	....
Rockford, Ill.	45,401	11	2	....	....	....	....	....	5	....	....	2	9	....
Sacramento, Cal.	44,696	9	1	....	....	....	1	....	....	....	....	2	4	....
Salem, Mass.	43,697	15	....	....	....	....	....	....	....	....	....	2	....	....
San Diego, Cal.	39,578	19	....	....	....	....	....	....	....	....	3	2	1	1
South Omaha, Nebr.	26,259	5	....	....	....	....	....	....	....	....	....	....	....	....
Superior, Wis.	40,384	6	6	....	....	....	....	....	....	....	....	1	....	1
Taunton, Mass.	34,259	16	....	....	....	....	....	....	....	....	....	2	1	....
Waltham, Mass.	27,834	12	....	....	....	....	....	....	....	....	2	....	1	....
West Hoboken, N. J.	35,403	5	....	....	....	....	....	1	....	....	....	....	....	....
Wheeling, W. Va.	41,641	14	2	....	....	....	1	....	....	....	....	2	1	....
Williamsport, Pa.	31,860	7	....	....	2	....	....	....	....	....	....	....	3	....
Wilmington, N. C.	25,748	14	....	....	....	....	....	....	....	....	....	2	....	....
York, Pa.	44,750	....	1	....	....	....	....	....	....	....	....	....	10	....
Zanesville, Ohio	28,026	6	5	....	....	....	5	....	....	....	....	....	4	....

MORBIDITY AND MORTALITY—Continued.

Morbidity and mortality table, cities of the United States, for week ended Sept. 16, 1911—Continued.

Cities.	Population, United States census 1910.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Small pox.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Cities having less than 25,000 inhabitants.														
Ann Arbor, Mich.	14,817	7										2		
Bennington, Vt.		2	1											
Braddock, Pa.	19,357	4	4								1	1	2	
Butler, Pa.	20,728	3					1						7	
Cambridge, Ohio.	11,327	2									1		5	
Camden, S. C.		2										1		
Carbondale, Pa.	17,404	4											1	
Clinton, Mass.	13,075	2									1			
Columbus, Ga.	20,554	9										1		
Columbus, Ind.							2						3	
Concord, N. H.	21,497	9												
Cumberland, Md.	21,839	10	6				1				2		23	2
Dunkirk, N. Y.		5									1			
Galesburg, Ill.	20,089	9	2											
Gloucester, Mass.	24,398	6										1		
Greensboro, N. C.	15,895	3											1	
Harrison, N. J.	14,498	5	3	1										
Homestead, Pa.	18,713	5	22											
Hyde Park, Mass.	15,507	1					1					1	1	
Kearny, N. J.	18,659	4	1		1									
Kokomo, Ind.	17,012	4	1	1									1	1
La Fayette, Ind.	12,081	2												
Lebanon, Pa.	19,240		2	1							1			
Marinette, Wis.	14,610	2												
Marlboro, Mass.	14,579	5	1									1	3	
Massillon, Ohio.	13,879	3												
Medford, Mass.	23,150	4	1				1						1	
Melrose, Mass.	15,715	5												
Moline, Ill.	24,199	5										1	2	1
Montclair, N. J.	21,150	2									3			
Morristown, N. J.	12,507	2									1	1	3	
Nanticoke, Pa.	18,877	8	1									1		
Newburyport, Mass.	19,949	9										3		
North Adams, Mass.	22,019	6	1											2
Northampton, Mass.	19,431	5												
Oklahoma City, Okla.		13					2				1	1	15	1
Ottumwa, Iowa.	22,012	11												
Palmer, Mass.		3												
Peekskill, N. Y.		5												
Pottstown, Pa.		6										1		
Rutland, Vt.	13,546	3											1	
Saratoga Springs, N. Y.		5										2		
South Bethlehem, Pa.	19,473	23	3	1								1	4	
South Pasadena, Cal.					1						3			
Steelton, Pa.	14,246	8	13	2							1	2		
Warren, Pa.	11,080	4												
Wilkinsburg, Pa.	18,924	5	1	1			1						1	1
Woburn, Mass.	15,308	4	1								1	1		

FOREIGN AND INSULAR.

AUSTRIA-HUNGARY.

Cholera.

According to official reports 4 cases of cholera were reported at Ujpest in Hungary (1 each on August 24, 26, and 27, and September 3), at Budapest 5 cases from August 27 to September 4, at Süly 1 case September 2, and in the district of Arbe in Dalmatia 3 cases from August 28 to September 3.

BRAZIL.

Manaos—Yellow Fever.

Four cases of yellow fever were reported at Manaos on October 2.

Pernambuco—Plague, Yellow Fever, Smallpox.

According to official reports the total number of deaths from all causes in Pernambuco for the two weeks ended July 31, 1911, was 555, of which 200 were due to smallpox, 3 to yellow fever, and 2 to plague. The population of the city is approximately 225,000.

CHINA.

Hongkong—Plague and Plague-infected Rats.

Surg. Brown reports, August 22, that during the week ended August 19, 1911, one case of plague occurred in Hongkong, and that of 1,710 rats collected and examined, 3 were found to be plague-infected.

Shanghai—Plague.

During the week ended August 26 two cases of plague were reported at Shanghai.

CUBA.

Transmissible Diseases.

The National Department of Sanitation gives the following report of transmissible diseases in the Republic:

AUG. 21-30, 1911.

	New cases.	Deaths.	Remaining under treatment.
Tuberculosis	62	88	2,143
Leprosy	1	.....	346
Malaria	37	6	124
Typhoid fever	23	8	93
Diphtheria	21	5	17
Scarlet fever	3	.....	6
Measles	27	2	98
Varicella	4	.....	6
Tetanus in the new born	11	11	.....
Filariasis	2	.....	2
Icterus gravis	1	.....	1

FRANCE.

Marseille—Cholera.

Surg. Eager reports, September 18, that the municipal reports record 70 deaths from cholera in Marseille during the month of August, and that the total number of deaths from all causes during August, 1911, was 1,134, and during August, 1910, 720.

The steamship *Germania* cleared September 16 for New York via Almeria, Lisbon, and the Azores. The steerage passengers from Marseille were detained under observation for five days before embarking. Their effects were disinfected and their baggage examined to eliminate foodstuffs.

HAWAII.

Record of Plague Infection.

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

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

At Hilo the last case of human plague occurred March 23, 1910. A fatal case occurred at Honokaa, 60 miles from Hilo, April 20, 1911; 2 fatal cases were reported January 31, 1911, and 1 fatal case was reported April 19.

The last plague-infected rat was found at Honokaa February 2, 1911. A plague-infected rat was found at Hilo during the week ended June 10, 1911.

Chief Quarantine Officer Ramus reports, September 11:

Honolulu—Plague-Prevention Work.

WEEK ENDED SEPTEMBER 9, 1911.

Total rats and mongoose taken	555
Rats trapped	477
Mongoose trapped	26
Rats shot from trees	52
Examined bacteriologically [1]	473
Classification of rats trapped:	
Mus alexandrinus	55
Mus musculus	181
Mus norvegicus	27
Mus rattus	214
Classification of rats shot from trees:	
Mus alexandrinus	6
Mus rattus	46
Average number of traps set daily	1,720

ITALY.

Milan—Cholera.

With further reference to the appearance of cholera in Milan, Surg. Geddings at Naples reports September 12 that the mayor of Milan had that day reported that during the preceding few days three cases of cholera had appeared in Milan, of which one was imported from Genoa, one from Sori, and one from Sampierdarena; that the cases had been isolated and proper measures to prevent the spread of the disease taken. At Gratosolio, a village 3 kilometers from Milan, 16 cases of cholera with 8 deaths were recorded from August 9 to 25.

[1] All negative as to plague.

Naples and Palermo—Examination of Emigrants.

Dr. Geddings reported September 12:

Vessels inspected week ended September 9, 1911.

NAPLES.

Date.	Name of ship.	Destination.	Steerage passengers inspected and passed.	Pieces of baggage disinfected.
Sept. 4	Oceania	New York	275	500
6	Hamburg	do	216	490
6	Principe di Piemonte	do	178	400
7	Perugia	do	115	215
	Total		784	1,605

PALERMO.

Aug. 30	San Giorgio	New York	285	550
Sept. 7	Principe di Piemonte	do	135	480
8	Perugia	do	62	100
	Total		482	1,130

JAPAN.

Cholera on Vessel.

Surg. Irwin, at Yokohama, reports September 11, that a case of cholera was reported on the steamship *Kasuga Maru*, then at Nagasaki. This vessel plies between Yokohama and Shanghai.

MEXICO.

Merida—Yellow Fever.

The Superior Board of Health of Mexico reports that during the week ended September 16, 7 confirmed cases of yellow fever with 2 deaths were recorded in Merida; that the total number of cases from August 1 to September 16, was 20, with 7 deaths, and that active measures are being continued to prevent the spread of the disease.

RUSSIA.

Status of Cholera.

According to the official reports of the Russian foreign office during the period August 20 to 26, there were in Russia 174 cases of cholera with 80 deaths, distributed as shown in table on page 1554.

The foreign office states further that the Khirgiz portion of the Lbistchensky and Ural regions are considered unsafe as regards cholera. The Ural region itself is also threatened with that disease.

SERVIA.

Cholera.

Consul Bergh, at Belgrade, reports, September 8, that since September 3, 8 cases of cholera have been reported at Rachka with 3 deaths, and that orders have been issued forbidding the shipping of foodstuffs and parcels from Rachka to neighboring cities; also that a quarantine has been established to prevent the spread of the disease.

TURKEY.

Kerassund and Erzinghan—Cholera.

Consul Jewett at Trebizond reports September 13 that a case of cholera had been reported at Kerassund and that the disease was also present at Erzinghan in the province of Erzeroum.

Mekka—Cholera.

Official reports state that from September 1 to 10, inclusive, 231 cases of cholera, with 198 deaths, were recorded in Mekka.

Saloniki—Cholera.

Official reports state that from August 11 to September 10, inclusive, 110 cases of cholera, with 50 deaths, were recorded in Saloniki.

Smyrna—Cholera.

The American vice consul general at Smyrna reports that from August 28 to September 3, inclusive, there were 188 cases of cholera, with 86 deaths, recorded at Smyrna.

VENEZUELA.

Caracas—Yellow Fever.

Consul Manning at La Guaira reports that during the week ended August 26, 3 cases of yellow fever were recorded in Caracas.

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX.

Reports Received During Week Ended Oct. 6, 1911.

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

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Austria-Hungary:				
Budapest	Aug. 27-Sept. 3	5	3	
Dalmatia—				
Arbe	Aug. 28-Sept. 3	3		
Krizovljan	do	2		
Susac	do	1		Near Fiume.
Süly	Sept. 2	1	1	
Ujpest	do	4	3	Near Budapest.
China:				
Manchuria—				
Dalny	Aug. 19-Sept. 2	35	19	
Swatow	Aug. 26			Decreasing.
France:				
Marseille	Aug. 1-31		70	
India:				
Calcutta	Aug. 6-19		28	
Madras	Aug. 20-Sept. 2	4	3	
Indo-China:				
Saigon	Aug. 7-20	11	2	
Japan:				
Nagasaki	Sept. 11	1		On s. s. Kasuga Maru.
Java:				
Batavia	Aug. 13-19	11	5	
Russia				Total: Aug. 20-26: Cases, 174; deaths, 80.
Governments—				
Astrakhan	Aug. 20-26	87	43	
Baku—				
Baku	do	1	1	
Chernomonsk, district—				
Novoryssisk	do	1	1	
Jaroslav	do	8	3	
Kouban	do		1	
Moscow—				
Moscow	do	1	1	

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

Reports Received During Week Ended Oct. 6, 1911—Continued.

CHOLERA—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Russia—Continued.				
Rostov on Don, city	Aug. 20–26	11	4	
Samara	do	8	4	
Saratov	do	38	10	
Simbirsk	do	14	10	
Tambov	do	5	2	
Servia:				
Rachka	Sept. 3–8	8	3	Studenitza district.
Siam:				
Bangkok	July 9–Aug. 5	47	47	
Straits Settlements:				
Penang	Aug. 6–12	1	1	
Singapore	do	3	4	
Turkey in Europe:				
Constantinople	Sept. 5–11	258	145	
Medua	Aug. 24–Sept. 1	5	1	
Salonica	Aug. 11–Sept. 10	110	50	
Valona	Aug. 27–Sept. 7	28	8	
Turkey in Asia:				
Bagdad	Aug. 27–Sept. 9	103	62	
Basra	Aug. 26–Sept. 9	46	34	
Erzeroum, vilayet	Sept. 13	.....	.....	Present in Erzinghan and Kerassund.
Harput	Aug. 20–26	15	12	
Mekka	Sept. 1–10	231	98	
Smyrna	Aug. 28–Sept. 10	344	150	
Zongouldak	do	20	12	

YELLOW FEVER.

Brazil:				
Manaos	Oct. 2	4	.....	
Para	Sept. 3–9	1	.....	
Mexico:				
Merida	Sept. 10–16	7	2	
Venezuela:				
Caracas	Aug. 20–26	3	.....	

PLAGUE.

Brazil:				
Para	Sept. 3–9	2	2	Barbadians.
Rio de Janeiro	Aug. 6–26	7	2	
British East Africa:				
Kismayu	July 30–Aug. 5	.....	2	
China:				
Hongkong	Aug. 13–19	1	1	
Shanghai	Aug. 20–26	2	.....	
India:				
Bombay	Aug. 13–Sept. 2	53	48	
Calcutta	Aug. 6–12	.....	19	
Kurrachi	Aug. 20–Sept. 8	11	10	
Rangoon	July 1–31	249	331	
Indo-China:				
Saigon	Aug. 7–20	11	4	
Java:				
Pasoeroean Residency	Aug. 13–19	36	10	
Siam:				
Bangkok	July 9–Aug. 5	21	21	

SMALLPOX.

Brazil:				
Rio de Janeiro	Aug. 6–26	7	.....	
France:				
Marseille	Aug. 1–31	.....	1	
Germany	.....	.....	.....	Total for Germany, Sept. 3–9: Cases, 2.
Gibraltar	Sept. 4–10	1	.....	
India:				
Bombay	Aug. 20–Sept. 2	7	5	
Madras	do	24	10	
Rangoon	July 1–31	32	9	

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

Reports Received During Week Ended Oct. 6, 1911.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Indo-China:				
Saigon	Aug. 7–20	8	5	
Italy:				
Palermo	Aug. 27–Sept. 2	52	38	
Java:				
Batavia	Aug. 13–19	3	1	
Mexico:				
Mexico	Aug. 27–Sept. 2	4	2	
Russia:				
Libau	Sept. 4–10	2		
Siam:				
Bangkok	July 9–Aug. 5	18	18	
Spain:				
Malaga	July 1–31		17	
Valencia	Sept. 3–16	7		
Straits Settlements:				
Penang	Aug. 6–12	1	1	
Singapore	do	4	1	
Turkey:				
Constantinople	Sept. 4–10		1	

Reports Received from July 1 to Sept. 29, 1911.

[For reports received from Dec. 31, 1910, to June 30, 1911, see PUBLIC HEALTH REPORTS for June 30, 1911. In accordance with custom, the tables of epidemic diseases are terminated semiannually and new tables begun.]

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Hodeida	June 16–30	21	17	Among the civil and the military population. Aug. 5, present among troops.
Austria-Hungary				Total Austria-Hungary, May 24–Sept. 3, 65 cases, 26 deaths.
Arbe Salle Sampiero	Aug. 21–27	2	2	District of Zara.
Campodistria	July 23–Aug. 13	7	4	
Chittanuova	Aug. 21–27	1	1	
Fiume	Aug. 9–17	3		
Trieste	June 4–Aug. 26	42	16	July 8, the second case from s. s. Oceania. Case July 21, from s. s. Bandiera Moro.
Cattaro	July 6–20	4	1	
Muggia	Aug. 7–13	2	1	
Vienna	Aug. 14–20	1	1	
Waltendorf	May 31	1		Second case. Near Gratz.
Bulgaria:				
Kalondjik	June 18–20	1	1	Vicinity of Choumen. From the ship Cyrille, bound from the coast of Asia Minor.
Varna	July 4–Aug. 5	2	2	From Asia Minor via Constantinople.
Ceylon:				
Colombo	May 21–July 29	16	11	
China:				
Amoy	May 28–July 1		4	Aug. 5, present.
Hankow	July 22			Present.
Hoihow	June 2			Do.
Manchuria—				
Dalny	Aug. 19–Sept 2	35	19	Sept. 5 present.
Kinchow	Aug. 15–Sept. 2	10		
Nanking	July 22–Aug. 19			Present.
Swatow	do			Do.
Dutch East Indies:				
Java—				
Batavia	May 14–Aug. 12	393	188	June 15–28: Present in Borneo at Pamank and Singkawang; Sumatra at Telopakedai, and in Lombok at Geroeng.
Beloe	June 15–28			Present.
Surabaya	Apr. 10–May 6	44	22	

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

Reports Received from July 1 to Sept. 29, 1911.

CHOLERA—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
France:				
Marseille	June 26–Aug. 31		76	Mainly in the asylum. To Aug. 23: Cases, 95; deaths, 35.
Greece:				
Laurium	July 5–8	3	1	Case July 5, from a German vessel via Naples.
Piræus, quarantine station	July 30–Aug. 8	3		Case July 30, from s. s. Margarita.
India:				
Bassein	May 7–July 8	2	2	
Bombay	June 25–July 1	3	3	
Calcutta	May 7–Aug. 5		407	
Madras	June 4–Aug. 19	12	7	May 1–July 31: Cases, 17,559; deaths, 9,514.
Moulmine	May 7–June 17	4	4	
Negapatam	June 11–July 15		35	
Rangoon	May 1–June 30	31	26	
Indo-China:				
Saigon	May 15–Aug. 6	59	41	
Italy				Total for Italy, June 8–Sept. 9: Cases, 11,676; deaths, 4,619.
Provinces—				
Alessandria	Aug. 1–26	97	23	
Aquila	do	47	14	
Avellino	July 12–Aug. 26	161	56	
Benevento	July 22–Aug. 26	56	13	
Caltanisetta	July 17–Aug. 26	152	27	
Campobasso	do	418	116	
Caserta	June 18–Aug. 26	1,372	557	
Catania	July 22–Aug. 26	455	199	
Catanzaro	July 26–Aug. 26	108	48	
Chieti	Aug. 1–26	42	19	
Cosenza	Aug. 20–26	14		
Foggia	do	4	3	
Genoa	July 21–Aug. 26	265	85	
Genoa, city	July 13–Aug. 26	223	117	
Girgenti	July 22–Aug. 26	34	10	
Leghorn	July 13–Sept. 2	634	319	
Lucca	Aug. 1–5	2	2	
Massa	Aug. 13–26	14	13	
Messina	July 17–Aug. 26	65	17	
Milan	Aug. 27–Sept. 2	18	6	
Naples				The Province outside of Naples, June 10–Sept. 9: 1,308 cases; 550 deaths.
Naples, city	June 11–Sept. 9	910	263	
Salerno	June 17–Aug. 26	1,190	282	
Palermo	June 18–Sept. 9	399	187	
Palermo, city	June 15–Sept. 9	1,292	420	
Pesaro	Aug. 20–26	18	2	
Pisa	do	11	4	
Potenza	July 31–Aug. 26	40	12	
Reggio	Aug 6–19	2		
Rome	June 27–Sept. 2	146	90	
Salerno	June 18–Aug. 26	1,190	282	
Sircusa	Aug. 6–26	21	2	
Trapani	July 17–Aug. 26	102	50	
Venezia	Aug. 6–26	82	27	
Japan:				
Kobe	Aug. 30	2		
Osaka	do	3		
Montenegro	Aug 14–17	4		Among troops.
Cettinje	July 29	2		
Persia:				
Mohammerah	July 28–Aug. 12	94	76	Case July 28, from the cruiser Persepolis.
Philippine Islands				First quarter, 1911: Manila, no cases. Provinces, 199 cases and 160 deaths.
Manila	July 23–29	1	1	
Provinces—				
Rizal	do	1		
Union	July 23–Aug. 5	4	3	
Roumania:				
Braila	Sept. 14	3		
Russia				New outbreak Apr. 21–Sept. 11: Cases, 1,402; deaths, 739, including 7 cases and 2 deaths, p. 1044, vol. 1. Sept. 17–23: Cases, 112; deaths, 80.

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

Reports Received from July 1 to Sept. 29, 1911.

CHOLERA—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Russia—Continued.				
Governments—				
Astrakhan	July 12–Aug. 19	117	52	
Baku—				
Baku, city	July 8–15	2	.....	
Dagestan	Aug. 13–19	27	.....	
Khasan—				
Kosmodemiansk	July 2	1	.....	
Kherson	May 3–July 22	2	.....	
Kuban	Aug. 13–19	1	1	
Moscow	....do	1	.....	
Novoryssik	July 28–Aug. 3	6	.....	On British steamer Wakefield in Black Sea.
Odessa	Aug. 6–12	2	1	
Poltava	June 24	1	.....	
Rostov on Don	Aug. 6–19	5	3	From a Turkish ship from Trebizond.
Samara	June 29–Aug. 12	672	315	Including Nikolayevsk.
Saratov	July 18–Aug. 19	17	18	
Nikolayevsk	June 29–July 3	15	1	
Siberia—				
Omsk	June 20–26	2	.....	
Simbirsk	Aug. 6–19	46	21	
Stavropol	July 23–Aug. 19	7	1	
Tambov	June 26–Aug. 19	12	5	
Vilna—				
Disna	June 13	1	.....	On the Duna.
Vitebsk—				
Lepel district	June 19	1	1	
Tver and Kursk	Aug. 6–12	1	.....	
Voronesch	Apr. 28–Aug. 12	5	4	
Yeketerinislav	July 8–19	2	1	
Zarizyn	July 12–15	1	1	
Servia:				
Belgrade	Sept. 9	.....	.....	Present.
Siam:				
Bangkok	Apr. 16–July 8	892	892	
Spain:				
Tarragona	Aug. 30	.....	.....	In vicinity.
Straits Settlements:				
Began Dotah	June 16–20	11	.....	
Jenderata	July 1–8	20	13	
Penang	May 7–July 15	7	10	
Perak	May 16–June 21	.....	.....	Present among Maylays and Chinese.
Singapore	May 7–Aug. 5	77	82	
Tunis:				
Tunis	Aug. 1–7	.....	6	Sept. 26, present.
Turkey:				
Constantinople	May 21–Sept. 4	1,542	837	And vicinity.
Soloniki	Aug. 11–Sept. 10	110	50	Among troops.
Turkey in Asia:				
Alatsham	June 19	2	.....	
Amara	June 21	.....	.....	Present.
Bagdad Vilayet	May 29–Aug. 26	193	150	New outbreak.
Basra	July 17–Aug. 25	176	120	Aug. 9, 1 case, s. s. Budrie.
Beirut	Aug. 21	.....	.....	Present among pilgrims.
Ezra's Tomb	June 17	6	.....	70 miles from Basra.
Foglieri	July 26	2	1	In the Gulf of Smyrna.
Kamaran	May 28–July 11	8	5	Among troops.
Kavak	June 5–11	1	.....	Aug. 8, present.
Samsun	May 29–July 30	225	204	And district.
Smyrna	Apr. 26–Aug. 27	560	308	Including 24 cases and 14 deaths p. 1911, vol. 2.
Zongouldak	July 1–Aug. 27	38	25	And vicinity.
At sea	June 23	1	1	On s. s. Goeben, bound from Southampton for Suez. Case developed one day after leaving Naples.
Do	July 25	.....	.....	Two cases from s. s. Zar Nicolaus from Algiers.

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

Reports Received from July 1 to Sept. 29, 1911.

YELLOW FEVER.

Places.	Date.	Cases.	Deaths.	Remarks.
Brazil:				
Ceara	July 1-31		1	
Manaos	June 4-Aug. 26		10	Aug. 31-Sept. 16, 7 cases.
Para	June 21-Sept. 2	4	1	
Pernambuco	June 15-July 31		6	Sept. 4, present.
Bissagos Islands:				
Bulama	May 27			Present.
British Gold Coast:				
Accra	May 23-27	3		Among natives.
Ecuador:				
Babahoyo	July 16-Aug. 15	2	2	
Calaroma	July 16-31	1	1	
Guayaquil	June 1-Aug. 31	30	10	
Milagro	June 1-Aug. 15	17	13	
Naranjito	July 1-15	2		
Yaguachi	June 16-July 15	1	1	
Gambia:				
Bathurst	May 23-27	5	2	Among Europeans.
Mexico:				
Merida	Aug. 8-Sept. 8	13	5	
Venezuela:				
Caracas	July 1-Aug. 19	16	1	
La Pastora	Aug. 5			Present.
Maiquetia	July 22	2		
San Juan	Aug. 5	1		

PLAGUE.

Arabia:				
Maskat	May 21-June 15	4	2	
Brazil:				
Para	July 2-29	2	1	Aug. 4, 1 fatal case, and Sept. 16, 2 cases.
Pernambuco	June 15-July 31		3	Sept. 4, present.
Rio de Janeiro	July 16-29	2		Aug. 28, 4 cases, and Sept. 16, 2 cases.
British East Africa:				
Kismavu	Apr. 24-Aug. 5	52	42	
Nairobi	May 27-Aug. 5	34	19	
Port Florence	Apr. 26	1	1	
Chile:				
Arica	June 12-July 28	4	3	
Iquique	May 14-Aug. 26	23	13	
China:				
Amoy	May 21-July 17		20	To May 28: Cases, 61; July 8, present in the district.
Kulangsu	June 17-July 22		5	
Canton				
Hongkong	May 14-Aug. 12	204	153	
Shanghai	Aug. 10-18	29	19	In vicinity. May 14-27, 3 cases.
Swatow	May 21-July 22			Still present in the district. May 21-June 2, epidemic in Chaochow-fu. Hweilai, Kit-yang, and in Chao-Yang Jan. 1-June 30, 6,000 deaths.
Ecuador:				
Guayaquil	June 1-Aug. 31	28	11	
Egypt:				
Alexandria	May 31-Aug. 12	39	18	
Cairo	Feb. 12-May 31	1	1	
Port Said	May 27-Aug. 19	31	13	On s. s. Yeddo, bound for Calcutta from New York, via Naples and Torrevieja, Spain.
Provinces—				
Assiout	May 31-July 9	7	5	
Beni Souef	May 23-Aug. 10	4	1	
Dakahlieh	May 29-June 11	2	1	
Fayoum	May 28-June 17	8	5	
Galioubeh	June 1-Aug. 22	2	2	
Girgeh	Apr. 19-July 7	5	4	
Kena	May 30-June 12	5	5	
Minich	June 1-July 27	29	11	

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

Reports Received from July 1 to Sept. 29, 1911.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
India:				
Bahrein Island	May 15–July 16	.....	1,720	In Persian Gulf.
Bombay	May 21–Aug. 12	535	469	
Calcutta	May 7–Aug. 5	.....	580	
Kurrachee	May 28–Aug. 19	200	198	
Rangoon	May 1–June 30	587	558	
Bombay Presidency and Sind.	May 7–July 29	9,494	6,777	
Madras Presidency	do	1,262	845	
Bengal	do	2,470	2,233	
United Provinces	do	18,025	17,470	
Punjab	do	60,819	53,307	
Burma	do	1,481	1,384	
Central Provinces	May 7–July 29	127	97	
Mysore State	do	2,580	1,782	
Hyderabad State	do	105	87	
Central India	do	84	66	
Rajputana and Ajmere Merwara.	do	1,614	1,414	
Kashmir	do	624	425	
North West Province	do	110	79	
Grand total		98,795	85,966	
Indo-China:				
Saigon	May 15–Aug. 6	306	92	
Japan:				
Formosa	May 21–July 1	115	106	In Kagi Province from Jan. 1–June 15: Cases 355, including report, p. 1047, vol. 1.
Java:				
Kediri	Mar. 31–May 10	42	3	
Madioen	June 1	1	.....	
Pasoeroean Residency	May 14–Aug. 12	523	210	
Surabaya	Apr. 30–May 18	21	4	
Mauritius	Mar. 1–July 10	10	6	
Morocco:				
Mazagan	July 13	.....	.....	Present among the Doukala, 5 hours distant.
New Zealand:				
Auckland	May 1–8	5	.....	Total since Mar. 21: Cases 8, deaths 1.
Paraguay:				
Asuncion	Aug. 1–9	.....	8	Present.
Persia:				
Buchir	May 14–June 25	94	80	
Lingah	May 18–28	7	.....	From Debai, on opposite Arabian coast.
Peru:				
Departments—				
Ancachs	Apr. 30–June 17	9	2	
Arequipa	Apr. 23–June 17	20	4	
Cajamarca	do	.....	.....	Aug. 10, present.
Callao	do	5	2	Sept. 24, 1 case.
Chiclayo	Apr. 30–July 22	14	5	
Lambayeque	Apr. 23–June 3	24	12	
Libertad	Apr. 23–July 22	17	7	Aug. 21, present in Moche.
Lima	do	47	17	
Pacasmayo	Apr. 30–June 3	3	2	
Philippine Islands		.....	.....	First quarter, 1911; Manila, no cases; Provinces, no cases.
Mariveles quarantine station.	May 25–26	1	1	From s. s. Taisang from Amoy.
Russia:				
Odessa	June 18–Aug. 8	8	2	
Astrakhan Government—				
Ujaly	July 3	.....	.....	Present.
Saraltschin	June 18–24	3	3	
Kirghis Steppe—				
Akbulak	July 13–Aug. 2	5	2	Pneumonic.
Kjubekudik	July 15	5	4	Do.
Narvma	June 24	4	4	
Siam:				
Bangkok	Apr. 16–July 8	51	51	
Straits Settlements:				
Singapore	May 21–Aug. 5	5	5	

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

Reports Received from July 1 to Sept. 29, 1911.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Turkey in Asia:				
Adalia	July 7–Aug. 30	4		
Basra	May 21–31	4	2	
Beirut	Aug. 21			Present among pilgrims, and present in the Lebanon district.
Brusa	Aug. 2–15	2		
Venezuela:				
Caracas	May 29–Aug. 19	8		
Santa Rosalia	Aug. 5	1		

SMALLPOX.

Algeria:				
Departments—				
Algiers	Mar. 1–May 31	5		July 1–31, 5 deaths.
Constantine	do	74		
Arabia:				
Aden	Apr. 11–July 18	205	7	And vicinity.
Argentina:				
Buenos Aires	Apr. 1–June 30		89	
Rosario	do		125	
Austria-Hungary:				
Bohemia	May 28–June 17	5		
Galicia	May 28–July 15	3		
Brazil:				
Bahia	Apr. 1–30		1	
Ceara	June 1–30		1	
Para	June 25–Aug. 5	7	2	
Pernambuco	June 1–July 15		331	
Rio de Janeiro	May 28–Aug. 5	12	1	
Sao Paulo	May 15–21		1	
Canada:				
British Columbia—				
Vancouver	July 9–Aug. 31	6		
Victoria	May 1–31	10		
Manitoba—				
Fort Alexander	July 8	19		Among Indians.
Lac du Bonnet	do	1		
Point du Bois	do			Epidemic.
Selkirk	do	1		From Mapleton.
Winnipeg	July 23–29	1		
New Brunswick—				
Newcastle	July 15–Aug. 5			Present in vicinity.
Ontario—				
Ottawa	June 11–Aug. 12	23		
Nova Scotia—				
Halifax	May 23–Sept. 9	3		
Prince Edward Island—				
Charlottetown	June 14–20	1		
Quebec—				
Montreal	July 9–29	2		
Quebec	June 18–Sept. 16	9		
Yukon—				
Dawson	June 4–July 1	15		
Ceylon:				
Colombo	May 21–Aug. 12	32	2	
Chile:				
Caldera	June 24	2	1	
Punta Arenas	June 1–July 31	3	1	
Talcahuano	June 27–Aug. 11	51	13	
Valparaiso	June 24–Aug. 26	193		
China:				
Chungking	May 28–Aug. 19			Present.
Hongkong	May 21–Aug. 12	24	18	
Nanking	May 28–Sept. 2			Do.
Shanghai	May 24–July 16	2	8	Deaths among natives.
Swatow	May 28–July 22			Present in the district.
Colombia:				
Cartagena	May 22–July 9			Present.
Egypt:				
Alexandria	Apr. 1–July 31	64	32	
Cairo	May 22–Aug. 19	11	4	
Port Said	May 29–Aug. 19	14	13	
France:				
Havre	July 16–22	1	1	
Paris	June 18–Aug. 26	9		

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

Reports Received from July 1 to Sept. 29, 1911.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Germany				Total for Germany, June 4–Aug. 19: Cases, 22.
Bremen	July 9–15	1		
Hamburg	Aug. 6–19			3 cases on s. s. Prinz Regent.
Gibraltar	June 4–11	1		
Great Britain:				
Birmingham	July 2–15	1	1	
Dundee	June 11–Aug. 12	10	3	
Liverpool	June 18–July 8	2		
London	June 4–24	13		
Plymouth	July 2–8		1	
Sheffield	June 18–24		1	
India:				
Bombay	May 21–Aug. 19	109	82	
Calcutta	May 7–June 24		6	
Madras	May 21–Aug. 19	105	43	
Rangoon	May 1–June 30	301	152	
Indo-China:				
Saigon	May 15–Aug. 6	106	41	
Italy:				
Catania	July 19–Aug. 12		4	
Genoa	Aug. 1–15	2		
Naples	June 11–Sept. 2	68	10	
Palermo	June 4–Aug. 26	315	170	
Rome	Mar. 1–31	1	1	
Japan:				
Yokohama	June 13–19	1		
Java:				
Batavia	July 2–Aug. 12	14	6	
Malta:				
Valetta	June 6–12	1		
Mexico:				
Aguascalienties	Aug. 28–Sept. 3		1	
Cananea, mines	Sept. 12	20		
Chihuahua	June 28–Aug. 20	21	7	
Frontera	June 19–24	1		
Guadalajara	June 18–Aug. 19		3	
Juarez	July 9–Sept. 9	9	3	
Mazatlan	Aug. 6–Sept. 9	13	4	
Mexico	May 21–Aug. 26		153	July 23–Aug. 26, 51 cases.
Porfirio Diaz	July 23–Sept. 9	7	7	
San Juan Bautista	June 17–July 15			Present and in vicinity. Aug. 20 increasing.
San Luis Potosi	June 4–Aug. 19	14	15	
Tampico	June 11–Aug. 30		7	
Peru:				
Salaverry	Aug. 1–7			Present.
Philippine Islands				First quarter, 1911, Manila: Cases 93, deaths 0.
Portugal:				
Lisbon	June 4–Sept. 2	81		May 7–20, deaths 3.
Porto Rico:				
Ponce	Apr. 1–30		1	
Portuguese East Africa:				
Lourenco Marquez	do		1	
Russia:				
Batoum	May 1–June 30	3		
Libau	June 5–July 2	11	1	July 16, 1 death.
Moscow	May 28–Aug. 26	150	71	
Odessa	May 27–Aug. 19	6		
Reval	May 1–31	5		
Riga	May 27–Aug. 12	15		Apr. 1–May 31, deaths 14
St. Petersburg	May 21–Aug. 26	150	29	
Warsaw	Apr. 2–July 15	64	35	
Windau	June 25–July 1			Present.
Siam:				
Bangkok	Apr. 16–July 8	82	76	
Siberia:				
Omsk	May 29–July 14	3		
Vladivostok	May 14–June 30	12	5	
South Africa:				
Port Elizabeth	May 21–27	1		
South Australia:				
Adelaide	Apr. 15			1 case from Colombo on s. s. Mooltan.

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

Reports Received from July 1 to Sept. 29, 1911.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Spain:				
Barcelona	May 6–17	.....	4	
Madrid	June 1–July 31	.....	2	
Malaga	June 1–30	.....	18	
Seville	June 1–Aug. 31	.....	5	
Valencia	June 4–Sept. 2	48	10	
Straits Settlements:				
Penang	Apr. 30–Aug. 5	3	1	
Singapore	May 7–Aug. 5	127	36	
Switzerland:				
Ticino, canton	May 28–June 3	1	.....	
Turkey:				
Constantinople	June 4–Aug. 27	.....	9	
Turkey in Asia:				
Beirut	May 27–Sept. 2	57	5	
Kharput	May 21–June 10	34	3	
Uruguay:				
Montevideo	Apr. 1–June 30	38	10	
Zanzibar:				
Zanzibar	May 15–Aug. 6	22	13	
At sea	May 15	1	.....	On s. s. Narrung; vessel quarantined at Adelaide, Melbourne, and Sydney.

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	Sept. 9	163,084	49	....	....	....	....	....	....	....	2	1	1	....
Amoy	Sept. 2	8,000	5	1	....	....	....	....	....	1	....	....	....	....
Amsterdam	Sept. 16	577,346	112	13	....	....	....	....	....	2	....	....	....	1
Barcelona	Sept. 8	591,272	240	29	....	....	....	....	....	12	....	....	....	....
Basra	Aug. 26	20,000	20	....	....	8	....	....	....	....	....	....	....	....
Belfast	Sept. 9	385,492	18	....	....	....	....	....	....	2	....	....	....	1
Belgrade	Aug. 26	90,050	35	....	....	....	....	....	....	1	....	1	....	....
Berlin	...do....	2,066,339	672	19	....	....	....	....	....	5	8	8	2	19
Bombay	...do....	977,822	529	33	18	....	....	1	....	....	....	....	1	....
Do	Sept. 2	.....	557	46	10	....	....	4	....	....	....	....	....	....
Brussels	Sept. 9	739,684	195	16	....	....	....	....	....	....	....	....	1	....
Bradford	...do....	288,723	84	9	....	....	....	....	....	2	....	1	....	....
Cairo	Aug. 26	689,439	19	....	....	....	....	....	13	....	....	7	5	....
Calcutta	Aug. 12	890,493	366	29	19	10	....	....	....	....	....	....	....	....
Do	Aug. 19	.....	440	39	....	18	....	....	....	....	....	....	....	....
Canton	...do....	1,000,000	150	10	....	....	....	....	....	5	....	....	....	....
Do	Aug. 26	.....	150	15	....	....	....	....	....	7	....	2	....	....
Catania	Sept. 9	210,000	78	9	....	20	....	....	3	....	....	....	1	1
Christiania	...do....	245,000	52	2	....	....	....	....	....	....	1	....	1	....
Cologne	Sept. 9	520,529	212	16	....	....	....	....	....	....	....	2	2	5
Constantinople	Sept. 3	1,000,000	410	32	....	....	....	....	....	16	2	1	1	....
Do	Sept. 10	.....	399	33	....	....	....	1	....	11	2	2	6	....
Dalny	Aug. 26	46,233	.....	1	....	1	....	....	....	....	....	....	....	....
Do	Sept. 2	.....	36	4	....	18	....	....	....	....	....	....	....	....
Dardanelle	...do....	11,875	4	....	....	....	....	....	....	2	....	....	....	....
Ghent	Sept. 9	165,965	89	4	....	....	....	....	....	1	....	....	....	....
Gibraltar	Sept. 10	25,367	4	....	....	....	....	....	....	....	....	....	....	....
Glasgow	Sept. 15	784,655	262	....	....	....	....	....	....	1	....	3	2	4
Hamburg	Sept. 9	931,035	323	24	....	....	....	....	....	1	7	11	2	3
Harput	Aug. 26	21,000	12	....	....	12	....	....	....	....	....	....	....	....
Havre	Sept. 9	136,159	90	10	....	....	....	....	....	1	....	1	....	....
Hongkong	Aug. 19	336,488	.....	....	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.
Hull	Sept. 9	278,968	142	....	....	....	....	....	....	3	....	....	....	3
Do	Sept. 16	.....	111	....	....	....	....	....	....	4	....	....	....	....
Kurrachi	Aug. 26	148,000	49	....	2	....	....	....	....	....	....	....	....	....
Do	Sept. 2	.....	59	....	8	....	....	....	....	....	....	....	....	....
Leeds	Sept. 16	445,568	154	8	....	....	....	....	....	1	1	....	....	....
Leith	Sept. 9	80,674	22	2	....	....	....	....	....	....	....	2	....	....
Libau	Sept. 10	90,000	.....	....	....	....	....	....	....	1	....	....	....	....
London	Sept. 9	7,269,752	2,267	....	....	....	....	....	....	4	7	16	12	24
Lyon	Sept. 2	523,796	163	28	....	....	....	....	....	1	....	....	....	....
Do	Sept. 9	.....	184	25	....	....	....	....	....	5	....	....	....	....
Manchester	do	631,533	296	37	....	....	....	....	....	2	....	....	1	3
Mannheim	Aug. 26	196,207	54	3	....	....	....	....	....	....	....	....	....	1
Monterey	Sept. 17	100,000	73	10	....	....	....	....	....	....	1	....	....	....
Madras	Aug. 26	550,000	348	....	....	2	....	6	....	....	....	....	2	....
Do	Sept. 2	.....	300	....	....	1	....	4	....	2	....	....	....	1
Messina	Sept. 9	93,672	28	1	....	....	....	....	....	1	....	....	2	....
Milan	Aug. 31	602,236	200	143	....	....	....	....	....	44	....	3	4	....
Montreal	Sept. 23	450,000	150	13	....	....	....	....	....	6	....	3	....	....
Munich	Sept. 2	597,000	188	26	....	....	....	....	....	....	....	1	1	1
Nagasaki	Aug. 27	178,074	37	5	....	....	....	....	....	1	....	1	....	....
Trieste	Sept. 2	230,820	97	....	....	1	....	....	....	....	....	....	....	2
Newcastle-on-Tyne	Sept. 9	267,261	110	....	....	....	....	....	....	....	1	3	....	2
Ottawa	Sept. 23	90,000	28	2	....	....	....	....	....	1	....	2	....	....
Palermo	Sept. 2	340,000	173	11	....	....	....	18	....	4	2	....	....	....
Do	Sept. 9	.....	193	7	....	....	....	38	....	4	2	....	....	1
Para	Sept. 8	185,000	75	8	2	....	....	....	....	....	....	....	....	....
Paris	Sept. 9	2,846,986	937	191	....	....	....	....	....	11	1	6	11	5
Penang	Aug. 12	101,427	59	10	....	1	....	....	....	....	....	....	....	....
Rio de Janeiro	do	898,699	281	55	....	....	....	....	....	1	....	....	....	6
Do	Aug. 19	.....	293	58	....	....	....	....	....	....	....	1	....	4
Do	Aug. 26	.....	307	83	2	....	....	....	....	2	....	2	2	....
Rotterdam	Sept. 16	432,573	126	....	....	....	....	....	....	1	....	....	....	....
Saigon	Aug 13	206,000	12	....	2	7	....	3	....	....	....	....	....	....
Do	Aug. 20	.....	6	....	2	2	....	2	....	....	....	....	....	....
St. Johns, Quebec	Sept. 23	5,847	2	....	....	....	....	....	....	1	....	....	....	....
Seoul	Aug. 20	43,762	.....	2	....	....	....	....	....	2	....	....	....	....
Shanghai	do	492,000	122	17	....	....	....	....	....	....	1	....	....	....
Do	Aug. 27	.....	135	18	....	....	....	....	....	....	....	1	....	....
Singapore	Aug. 12	303,328	236	29	....	4	....	1	....	....	....	....	....	....
Smyrna	Aug. 19	400,000	95	6	....	37	....	....	....	....	....	....	....	....
Do	Aug. 26	.....	184	24	....	80	....	....	....	2	....	....	....	....
Do	Sept. 2	.....	217	18	....	96	....	....	....	3	....	1	1	....
Talcahuano	Aug. 19	28,000	.....	1	....	....	....	5	....	....	2	....	....	....
Do	Aug. 26	.....	.....	1	....	....	....	4	....	....	....	....	....	1
Do	Sept. 2	.....	.....	....	....	....	....	3	....	....	....	....	1	2
Trieste	Sept. 9	230,820	117	....	....	....	....	....	....	2	....	1	1	....
Toronto	Sept. 16	392,000	107	5	....	....	....	....	....	3	....	2	....	....
Turin	Sept. 10	401,555	114	5	....	....	....	....	....	4	....	....	....	....
Vancouver	Sept. 16	100,000	23	1	....	....	....	....	....	1	....	....	....	....
Valencia	Sept. 9	240,000	65	5	....	....	....	....	....	2	....	1	1	....
Do	Sept. 16	.....	71	5	....	....	....	....	....	1	....	1	....	....
Victoria	do	50,000	5	....	....	....	....	....	....	....	....	1	....	....
West Hartlepool	Sept. 2	63,932	27	....	....	....	....	....	....	1	....	....	....	....
Do	Sept. 9	.....	23	....	....	....	....	....	....	....	....	1	....	....
Winnipeg	Sept. 6	151,958	50	....	....	....	....	....	....	2	2	1	....	....
Do	Sept. 23	.....	28	....	....	....	....	....	....	1	....	3	....	....
Yokohama	Sept. 4	419,630	.....	2	....	....	....	....	....	1	....	....	....	....

By authority of the Secretary of the Treasury:

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