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AN EPIZOOTIC AMONG MEADOW MICE IN CALIFORNIA, CAUSED BY THE BACILLUS OF MOUSE SEPTICEMIA OR OF SWINE ERYSIPELAS

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During the latter part of 1926 and the early months of 1927, the migration of large numbers of the native meadow mouse (*Microtus californicus estuarensis*) and of the house mouse (*Mus musculus*) from a land basin in Kern County, Calif., to outlying agricultural districts, caused much annoyance and considerable economic loss to the farmers of the communities affected.

Studies of the migrations were made by F. E. Garlough and W. P. Taylor, representatives of the United States Biological Survey. During their investigations of the causes and origin of the infestation, and of the application of suitable control measures, they observed many sick mice of each of the two species. The sick animals sat about with roached backs, roughened pelage, labored breathing, and with their eyelids glued together with purulent exudate, and were easily caught by hand. Carcasses which were partially destroyed, apparently by the cannibalistic feeding of the hordes of live mice, were also found. In order to determine whether these diseased animals were infected with *Bacillus pestis*, a number of specimens, which were apparently dying or had recently died, were collected and forwarded to the United States Public Health Service laboratory at San Francisco, engaged in plague-control measures in California. The specimens were shipped in ice packing to prevent putrefaction.

Forty-two meadow mice and 12 house mice were submitted for examination. Among these, 24 of the meadow mice and 6 of the house mice presented the gross pathology of a septicemia with the composite of the following lesions: Purulent conjunctivitis; congestion of the subcutaneous vessels producing a deep reddish-pink color in the subcutaneous tissues, with greatest intensity about the superficial lymph nodes; swelling, congestion, and infiltration of the superficial lymph nodes, with an occasional area of necrosis appearing as a white granule in the parenchyma of the node; scattered patches of deep red color, some of which were infiltrated (pneumonia) in the lungs, with a small amount of pleural effusion; enlargement of the spleen to two or more times its normal size, with congestion, and an occasional minute whitish area of necrosis; congestion of the liver with whitish dots of necrosis similar to those of the spleen; scattered subserous petechiae in the intestine.

Microscopic preparations from the blood of the heart, and from the viscera, contained large numbers of a slender rod approximately one by two-tenths microns in size, stained by aniline dyes and by Gram's method. Many of the rods were grouped within the protoplasm of the white blood cells.

The organism grew readily on the routine nutrient media, producing, on agar, discrete translucent colonies of approximately three-tenths to five-tenths millimeter diameter in 48 hours at 37° C. The colonies were thin and bluish when exmained by transmitted light, with thin entire edges. The centers were heaped up so as to produce a flattened and truncated or umbilicated shape. The consistency was soft, but not viscid. Microscopic preparations from cultures contained slender, nonmotile rods generally longer than those found in preparations made directly from the tissues, and some thread-like forms of 5 to 7 microns in length.

Growth occurred, likewise readily, on nutrient agar to which an aqueous solution of gentian violet was added in the proportion of 1:50,000 (a medium which inhibits some of the *Pasteurella* group). Nutrient bouillon cultures were diffusely cloudy, without pellicle formation. Nutrient gelatine stab cultures, held at approximately 20° C. for from four to six weeks, contained a growth along the stab of single round or ellipsoidal entire colonies, with alternating areas of tuftlike fine branching whorls which extended into the media, producing a branching fir tree or "test tube brush" effect. Individual colonies also produced fine branching processes which radiated into the media, giving the colonies the appearance of bone lacunæ. Growth did not occur at the surface of the gelatine, but was good a few millimeters below the surface and throughout the length of the stab. The gelatine did not become liquefied in six weeks, and after artificial liquefaction by heat it was readily solidified by cooling.

Dextrose, levulose, lactose, galactose, and maltose were fermented with acid formation in 48 hours, but without gas. Sucrose, dextrin, and inulin were not fermented. The sugars were dissolved in five-tenths per cent strength in neutral nutrient bouillon containing litmus. Growth in litmus milk produced no change in 10 days.

The organism was pathogenic to white mice and white rats, slightly pathogenic to a rabbit, and not pathogenic to guinea pigs. Pathogenicity was tested by subcutaneous and intracutaneous injections of bouillon cultures, by feeding the cultures, and by subcutaneous injection of the tissues of the infected wild rodents. Each of 10 white mice and 4 white rats was inoculated subcutaneously with from 0.3 cubic centimeter to 0.001 cubic centimeter of a 48-hour bouillon culture. All of these animals died in from three to five days after inoculation, with symptoms and lesions characteristic of those observed in the wild rodents. Two of three white mice, fed with bread cubes well moistened with the bouillon cultures, died with symptoms and findings similar to those found in the animals subcutaneously inoculated. A few drops of similar cultures were rubbed vigorously into the dorsal surface of the shaved, and lightly scarified ears of an 8 to 10 pound rabbit. On the second day following, the ears were drooped, and were swollen and red. The reddened swollen area extended beyond that on which the culture was applied. The reaction seemed to reach its maximum on the third day following the inoculation, and by the sixth day there was light incrustation and desquamation over the area. The ears appeared relatively normal by the tenth day, and the rabbit remained in good condition.

Three guinea pigs were inoculated by pocketing subcutaneously both spleen and lymph node tissue of the wild mice; three others were inoculated subcutaneously with 1 cubic centimeter of a suspension in physiological saline solution of similar tissues to an approximately 50 per cent strength. None of these pigs showed ill effects from the inoculations, and none presented gross pathology when autopsied two weeks later.

DISCUSSION

The symptoms and lesions observed in the wild mice, together with the reactions in the inoculated laboratory animals, and with the consistent bacteriological findings of a slender bacillus, appearing singly, in groups, and in thread forms, Gram positive, nonmotile, nonliquefying, non-gas-forming, facultatively aerobic and anaerobic, which grew in the gelatine stab in so characteristic a manner, seems adequate to establish the infection as that of *Bacillus murisepticus* or *Bacillus rhusiopathiae suis*.

Bacillus murisepticus was described by R. Koch (1) in 1876. He obtained the organism by injecting putrefying tissues into mice. He is consistently quoted as stating that it is nonpathogenic to field mice (Feldmause). However, the term "field mice" is too broad to permit of accurate deductions as to the species Koch concerned himself with.

Loeffler (2) later described the organism as a causative factor in a sporadic outbreak among his stock mice.

T. Smith (3), V. A. Moore (4), and C. Tenbroeck (5), have each reported its isolation from hogs.

F. J. Rosenbach (6) studied the bacilli of mouse septicemia, swine erysipelas, and of human erysipeloid; and though he found the three identical by serological tests, he believed there are biological and morphological differences which warrant the conclusion that they are three species of one group.

Rickman (7) challenged Rosenbach's conclusions after a study of a hundred strains of swine erysipelas, Rosenbach's strain from human erysipeloid, and an authentic strain of mouse septicemia. He concluded that the organisms are identical.

Hugo Preisz (8) reviewed the findings of Rosenbach and others, and made personal investigations and observations. He concluded from these studies that the separate identities of *B. murisepticus* and *B. rhusiopathiae suis* are not established.

The virulence of the organism apparently fluctuates greatly. It may be enhanced, and can be rapidly depressed by animal passage, especially through animals of different genus from those in which it is found as the excitant of clinical symptoms. Pasteur made use of this fact in preparing a vaccine against swine erysipelas. The organism has also been considered a saprophyte which is ubiquitous in soil. In fact, it is generally conceded that the fluctuation of the virulence of the organism in nature is undertermined. Further evidence in substantiation of this conclusion is afforded by the findings in this epizootic among meadow mice and house mice. Field mice have been regarded as immune, and spontaneous outbreaks of the infection among house mice as of rare occurrence.

Preisz (8) and numerous others have determined it to be the cause of outbreaks of erysipelas, arthritis, and septicemia in hogs, in Europe, with large numbers of fatalities and great economic losses.

G. T. Creech (9) investigated its prevalence in the United States and determined that it was the etiologic factor in the "diamond skin disease of swine," which he describes as a chronic form of swine erysipelas, widespread in the United States.

J. V. Klauder (10) has reviewed the subject of swine erysipelas in the United States, and its relation to erysipeloid diseases in man. He cites, and apparently accepts, the opinion of German investigators who have attributed these human infections to accidental inoculations from the tissues of animals affected with swine erysipelas. Such infections of man occur most frequently among those involved in animal husbandry, or in the slaughtering of hogs, and in the processing of their tissues for food purposes.

The exact manner of dissemination of the organism in nature has not been determined, but it is assumed that the soil and other environs of infected swine are contaminated by their dejecta, since the organism has been found in the tonsil and in the intestinal contents of infected animals. It is also thought that mice or rats are likely to become infected through contact with, or feeding upon, the inoculum spread by infected hogs. This view is based largely on the results of laboratory experiments with hogs and mice. The limited field and laboratory observations in this mouse epizootic suggest that the feeding by mice on infected mouse carcasses might spread the infection.

The possibility of an ectoparasitic vector was also considered in this epizootic, and a careful search was made for such parasites, after precautions were taken to avoid their escape from the animal or its paper wrappings. One *microtus* was found to harbor a number of fleas of the species *Ceratophyllus fasciatus*, a few had one or two of the same species. On most of them no fleas were discovered. Several of both species of mice contained many mites, which were identified by Dr. H. E. Ewing, Entomologist of the United States Department of Agriculture, as a species of *Laelaps*, not the common *echidinus* Berl. Experimental attempts to transmit the infection by these parasites were not practicable, but the scarcity of the fleas and mites on the sick animals captured alive is not suggestive of their probable importance in this instance as vectors.

CONCLUSIONS

There has been found in Southern California an epizootic among meadow mice and house mice caused by *B. murisepticus*. The differentiation of *B. murisepticus* and *B. rhusiopathiae suis* has never been definitely determined, and the organisms are very closely related or identical. The virulence of the organism is subject to such vagaries, and the pathogenicity of some strains to swine and to man seems so well established, that this unusual epizootic may be of importance both to the public health and to the hog industry of California.

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THE FOOD OF ANOPHELINE LARVAE—FOOD ORGANISMS IN PURE CULTURE

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Food is an important factor in the growth of anopheline larvae; and, since the numbers of adult mosquitoes produced, their size, and possibly their longevity, may depend on the nourishment of the larvae, food may have an important bearing on the transmission of malaria.

Numerous observations have been recorded regarding the food of mosquito larvae, most of them based on feeding habits observed in nature, on plankton surveys, and on gut contents found at dissection. Good summaries of previous observations may be found in the accounts given by Howard, Dyar, and Knab (1), Metz (2), Purdy (3), Lamborn (4), Rudolfs (5), and Coggeshall (6). Such observations, however, do not furnish wholly complete and satisfactory information, since anopheline larvae will ingest any substance, not distinctly repugnant, which is small enough to enter the mouth. Particles of sand and other indigestible substances are frequently found in the gut, and microorganisms and other organic substances may be discharged undigested in the feces. Further, the gut may contain a great variety of organisms, and one does not know which of them may be an essential or sufficient source of nourishment. So it seemed worth while to attempt to obtain some fundamental knowledge regarding the food of larvae by means of testing food organisms in pure culture.

Mosquito eggs are, of course, not sterile, and the organisms on them must first be eliminated. Insect eggs have been successfully sterilized in a variety of ways; but, so far as I know, there is in the literature but one account of the sterilization of mosquito eggs, that of Atkin and Bacot (7), who used lysol in dilutions of 2.0 and 0.5 per cent in sterilizing the eggs of *Aëdes aegypti*. I have tried various germicides with more or less success and finally devised a method which proved very simple and gave me workable results.

A tin teaspoon is perforated by many small holes and fixed in a lens holder or other convenient support. (See Fig. 1.) The spoon may be easily sterilized by means of a Bunsen flame. In the hollow of the sterilized spoon is placed a piece of sterilized cloth. Eggs are transferred from the water on which they were laid and placed on the cloth by means of a platinum loop, about 6 mm. in diameter, bent at right angles to its shaft. This loop is easily sterilized in the flame and will transfer the eggs with a minimum amount of water. Then 80 per cent ethyl alcohol is dripped over the eggs for a period of two to three minutes. The alcohol is not only germicidal, but to some extent it also washes the eggs. During sterilization the eggs are moved about by the falling drops and at the completion of sterilization they should be spread more or less evenly over the cloth to facilitate drying. Immediately after being sterilized the eggs are dried as rapidly as possible. A portion of the alcohol may be drained away by means of a wad of asbestos wool, sterilized in the Bunsen flame, cooled, and placed under the spoon for a few seconds. Then the cloth is lifted with a pair of forceps, the alcohol is burned away from the spoon, and the cloth is held at a safe distance above the heated spoon until cloth and eggs are fully dry. Fully dried eggs are not only free from alcohol, but when transferred to a liquid they float on the surface where they are more likely to hatch.

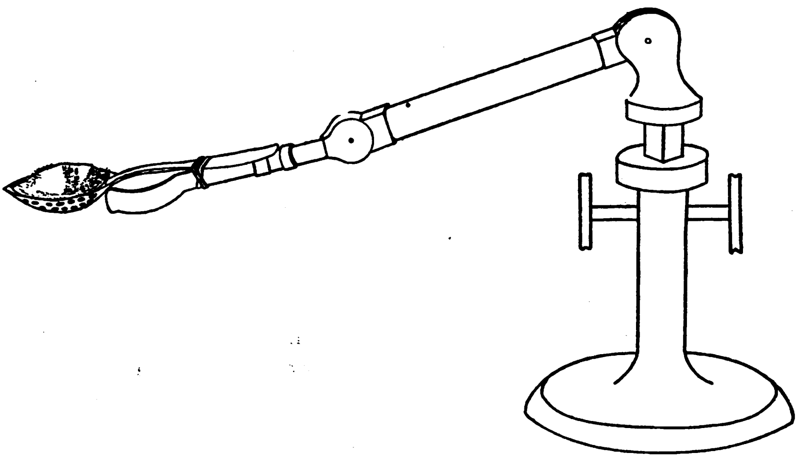

FIG. 1.—Spoon and cloth used in sterilizing eggs of Anopheles

The pieces of cloth are kept in 80 per cent alcohol and may be placed on the spoon while wet, or they may be sterilized by dry heat and kept ready for use in a sterile Petri dish or other receptacle. It is easier to transfer the eggs to the cloth when it is dry, or nearly dry, since they are then less likely to adhere to the platinum loop.

After sterilization, the eggs are taken up in small parcels and transferred to a series of test tubes containing a broth favorable for the growth of bacteria. A fine platinum spatula, moistened in some sterile fluid to make the dry eggs adhere to it, is suitable for transferring the eggs. The test tubes are then incubated or kept at high room temperature for several days, and larvae from those which remain clear are pipetted into cotton-plugged flasks or other larger receptacles containing a sterile medium suitable for the growth of the larvae and for the living food organisms which are introduced with them.

The whole procedure may be varied in many ways. The alcohol may be removed with sterile water before transferring the eggs to test tubes; or the eggs may be washed into a heap at the close of the sterilization and thereafter simply drained with the asbestos wool. The small amount of alcohol transferred with the eggs does not seem to inhibit their hatching or the growth of the larvae, but a large proportion of the eggs will sink if transferred wet to the test tubes. Denatured alcohol, instead of the 80 per cent ethyl alcohol, gave good results and was used as a routine in some series. Formalin, lysol, chlorine, and other germicides were tried; but, on the whole, the alcohol proved most effective and convenient.

The number of eggs transferred to each test tube necessarily varied; they may have averaged 40 to 50 per tube. The batch obtained at one sterilization was usually distributed among five or six test tubes. Of course, the fewer eggs transferred to each tube the better the chances of obtaining a proportion of sterile cultures, for usually one or more of the test tubes will show contamination. In some cases the preliminary tests for sterility were omitted and the eggs were transferred directly to the larger receptacles. In such cases these had to be subsequently tested for contamination.

The medium used for testing the sterility of the eggs was, as a rule, beef broth made according to the usual formula for bacterial cultures but with the omission of salt. Most lots contained 1 per cent peptone, and to some was added 1 per cent or one-half of 1 per cent glucose. A drop or two of raw or inactivated serum was added to many tubes to promote bacterial growth. Agar slants, with an abundance of water of condensation, or a very soft agar were occasionally used instead of broth.

Usually on the first or second day after the eggs had been placed in the broth or water of condensation the larvae hatched out and swam freely about at the surface of the liquid. The tubes were often kept a day or two after the larvae had hatched before transfer to the flasks; but it was found that if they were kept too long in the sterile broth the chances for successful growth in the flasks were diminished.

The proportion of tubes remaining sterile after inoculation with eggs varied greatly. Sometimes a whole series of five or six tubes from a batch of eggs would remain clear, while all from another batch would become clouded. It was found that a larger proportion of the eggs were sterilized if the water in which the eggs were to be laid was first autoclaved, or, at least, boiled.

As a routine, anopheline eggs were obtained in abundance by placing over a cup of water, lantern-chimney cages in which gravid female mosquitoes were confined. In some experiments bobinet netting was tied on both the bottom and the top of the cage, the cage placed over a cup of water and the whole autoclaved. Mosquitoes were then introduced into the cage, precautions being taken to include a minimum amount of dust with them. It was found that the females would lay their eggs through the netting, allowing them to drop a distance of some millimeters onto the water beneath. Eggs were sometimes laid within three hours after the introduction of the mosquitoes into the cage. In one experiment, eggs thus obtained were distributed unsterilized on various tubes of nutrient media. In five out of seven transfers, bacterial growth appeared promptly. In two, transferred to agar, no growth appeared for four or five days, then a *Streptococcus* appeared in one. The other remained sterile. It is possible, of course, that bacteria would have appeared in all the eggs if they had been tested under a great variety of conditions of media and temperature, but it would seem that some of them were nearly, if not quite, sterile when laid.

In routine work, however, it was found most convenient to use alcohol for sterilizing the eggs rather than to depend on a chance natural sterility. The preliminary boiling of the water in which the eggs were to be laid, as well as the sterilization of the cloth and spoon, simply diminished the number of bacteria with which the alcohol had to deal.

The containers into which sterile larvae were placed for subsequent development were usually 250 c. c. or 500 c. c. Erlenmeyer or Florence flasks, or 500 c. c. Mason fruit jars. The fruit jars were fitted with a cover perforated by a large glass tube through which the larvae could be introduced. All containers were plugged with cotton and, together with the culture medium, autoclaved before inoculation with the larvae and food organisms.

A great variety in quantity and kind of culture media was employed in the flasks or jars, the chief aim being to get a medium favorable to both larvae and food organisms. Some of the media employed were as follows: Beef broth in various dilutions, with and without unheated blood or serum; semifluid nutrient agar; rotten algae in water with or without the addition of broth; powdered bodies of adult *Anopheles* in various fluids; milk; ground-up beef brain in water; yeast cultures; rotten wood with pond or river water; etc. Frequently earth, limestone, *Sphagnum* or *Tillandsia* moss, sand, and wood or animal charcoal were added to the medium before sterilization. In some experiments, nutrient substances were dry-sterilized and added after the fluids in the flasks had been sterilized, the object being to test the value of food substances floating on the surface of the water in contact with the larvae.

Among the living food organisms tested were the following: An infusorian, *Colpidium*, isolated from cultures of rotting algae; a motile, unicellular, grass-green alga, possibly *Chlamydomonas* or a related form; and a large and a small variety of *Spirillum*. These organisms were isolated by means of the Barber pipette method (8) and the infusorian and the alga were grown in pure culture, bacteria free.[1] These organisms were chosen as representative of the protozoa, algae, and bacteria commonly found in the plankton of Anopheles-producing water. The *Spirilla* are especially favorable for these experiments because they grow at the surface of the medium and seem less likely than other bacteria to pollute the medium. I also employed various other species of bacteria and algae and some yeasts and molds.

The results of the cultures appear in Table 1. This table includes only cultures in which were bred out *Anopheles* adults capable of flying after emergence. Cultures in which adults died before complete emergence from the pupa cases are not included. After the emergence of the adults the flasks were tested for contaminants. A group in which such contaminations occurred is included in separate columns of the table, since the results are of interest in showing the possibility of rearing *Anopheles* to maturity in alga-free cultures containing usually only a single kind of bacterium or yeast, in addition to the microorganism originally inoculated.

As shown in Table 1, the *Colpidium* alone, the small *Spirillum* alone, the large *Spirillum* alone, the unicellular alga alone, and various combinations of these proved to be sufficient living food to bring to healthy maturity one or both of two species of *Anopheles*.

The adults which emerged in the cultures were sometimes small, but in most cases they were strong and of normal size. At room temperature they usually died on the second or third day after emergence, although in one case a mosquito, *A. crucians*, lived six days in the container. Among cultures kept in the ice box longevity was, of course, much greater. The growth rate of the mosquitoes, counting the growth period from the night when the eggs were laid to the night of emergence, varied from nine days at high room temperature to several weeks when the mosquitoes were bred in the refrigerator. The largest number emerging in any one flask was 45, all *A. quadrimaculatus*.

[1] In the case of the *Colpidium*, special tests were devised to prove that the cultures were actually bacteria free, since a few bacteria associated with the infusorian may be so far kept down by it as to fail to show visible colonies on agar or to appear in broth cultures. The special tests were as follows:

1. Cultures were embedded in stiff agar so as to afford conditions unfavorable for the *Colpidium* but favorable for bacterial growth.

2. Hanging drop cultures were made in a soft agar where the growth of the *Colpidium* could be kept under observation.

3. Broth cultures of *Colpidium* were centrifugalized lightly. The infusorians were thrown down, but the supernatant fluid proved to be sterile.

4. Cultures were passed through sterile cotton filters so packed that the broth passed through freely but the infusorians were held back. The filtrate proved to be bacteria free. In none of these tests was it possible to find any organism except the *Colpidium*. The freedom of the alga from bacteria could be easily shown.

Table 1.—*Cultures in which healthy imagoes emerged, the food organisms, and the numbers and species of Anopheles*

Food organism	Uncontaminated cultures			Contaminated cultures			
	Number of cultures	Species and number of Anopheles		Number of cultures	Species and number of Anopheles		
		A. crucians	A. quadrimaculatus		A. crucians	A. quadrimaculatus	A. punctipennis
Colpidium only	7	10	13	15	9	21	2
Small *Spirillum* only	1	1					
Large *Spirillum* only	1	2	2				
Unicellular alga only	1		2	1	1		
Colpidium plus unicellular alga	1		2	1		1	
Colpidium plus small *Spirillum*	6		66	4	2	5	2
Colpidium plus both *Spirilla*				2	2		
Colpidium plus yeast				2			6
Colpidium plus a bacillus				1		1	
Total	17	13	85	26	14	28	10

Certain of the tests for contaminants are given in more detail. A relatively large quantity of the culture medium, one-half to 1 cubic centimeter, was pipetted to broth, agar slants, or other suitable medium for bacteria. In case the original culture contained living infusoria, I preferred as a test medium melted nutrient agar, cooled to 40° C., and subsequently sloped in test tubes, since conditions in the depth of the agar offered better opportunities of growth to a chance contaminant, which at the surface of the medium might be overgrown or ingested by the infusoria. In all tests a sample of the liquid transferred was also examined microscopically to detect the presence of any motile contaminant and to determine the numbers and activity of the food organisms originally introduced.

Larvae of various sizes were occasionally tested for contaminants in culture media under both aerobic and anaerobic conditions. In one case an anaerobe was found. The mosquito culture medium was in some flasks tested at different times during the development of the larvae.

In a certain flask inoculated with a pure culture of *Colpidium*, the medium after the emergence of mature *Anopheles* gave no evidence in test cultures or microscopically of the presence of contaminants. The flask still contained large living larvae. Several of these and one adult mosquito were dissected. The guts of the larvae contained particles of the earth originally placed in the flask and sterilized with the medium, but neither larvae nor adult contained any bacteria. The absence of bacteria in these larvae is significant, since the guts of larvae grown under natural conditions are usually swarming with them.

In this culture a further test was made of the medium, a dextrose broth, to determine whether it was still favorable for bacterial growth, as there remained the possibility that it had been contaminated at an earlier period, and that the contaminants had died out through the exhaustion of the medium. So the flask was purposely contaminated and left at the same temperature as that at which the mosquitoes had developed. Both bacteria and yeasts promptly appeared, showing that the medium had not been exhausted or otherwise made unfavorable for ordinary contaminants.

In this connection it may be of interest to review some of the tests made of the sterility of the eggs after treatment with germicides. Broth tubes containing eggs or young larvae remained clear for many days; in one case a living larva in a test tube of broth plus a small amount of agar showed no contamination after four weeks at room temperature. Alcohol-treated eggs were plated out in agar and compared with untreated batches. The eggs of the treated batch hatched out in the agar but showed no colonies of bacteria, while the controls showed numerous colonies.

One experiment, designed to test both the sterility of young larvae and their behavior on a moist surface, will be described in more detail: A medium consisting of an infusion of chopped beef containing 1½ per cent agar and 1 per cent peptone, pH 7.0, was filled in test tubes, autoclaved and sloped. Each tube of this soft agar then received one or two drops of human serum inactivated at 56° C. Eggs of *A. quadrimaculatus* were treated three minutes with 80 per cent ethyl alcohol and dried thoroughly on the cloth and spoon, according to the usual routine method. These were placed on the surface of the agar in six test tubes at distances varying from 1 to 3 centimeters above the water of condensation. On an average about 65 eggs were placed in each tube. The tubes were placed upright in a rack. Approximately 6 per cent of the eggs hatched. In nearly every case the larvae started directly downwards toward the water of condensation, as shown by the tiny trails which they left on the surface of the agar. One or two of the larvae started upwards, then turned down.

To this series were added two controls in which the eggs were placed directly on the water of condensation. In these controls about 17 per cent of the eggs hatched.

One of the eight tubes early showed bacterial contamination. The other seven were closed, to protect them from evaporation, and kept for two months, part of the time at room temperature and part of the time in the incubator. At the end of that period no macroscopical evidence of contamination could be seen in any.

The numbers and variety of microorganisms are infinite, however; and, as stated by Atkin and Bacot, we can not absolutely exclude the possibility that some microorganism may have appeared in the cultures and subsequently died out. The "sterility" of cultures containing living insects is based on negative evidence, as we can not test all manner of media and possibilities of growth. So far as ordinary tests for bacteria can show, however, we were dealing with bacteria-free eggs, and these developed to adult mosquitoes in pure cultures of certain food organisms.

The proportion of "successful" cultures, that is, those which produced healthy mosquitoes capable of flying, was not large. Some 45 of such cultures were obtained, including those which became contaminated, hardly one-seventh of the total number of attempts. In many cultures the larvae died when very small. In others they grew rapidly and gave every promise of success, and then died when full-grown or in the pupal stage. Many died during emergence. When a success was scored, a repetition of the experiment under similar conditions would often result in failure.

I made many attempts to devise conditions under which success might be more uniformly obtained. Very promising results were afforded by two series of experiments (lots Nos. 136 and 138), some details of which will be given.

In lot 136 the medium was filamentous algae incubated 3 to 4 days at about 30° C. until well rotted. This material was mixed with tap water and autoclaved in Florence and Erlenmeyer flasks of 250 and 500 cubic centimeters capacity, each containing about 200 cubic centimeters of the medium. Eggs of *A. quadrimaculatus* were sterilized with alcohol in the usual manner and placed in tubes of nutrient medium. The food organisms were added to the broth tubes the day after the eggs were put in. They were put in thus early in order to furnish the young larvae with food as soon as they had hatched.

In most of the flasks no broth was added to the infusion of rotten algae, except such amounts as were introduced with the test tube cultures of larvae. This addition consisted of 10 to 15 cubic centimeters per flask of beef broth media of various composition, the exact nature of which did not seem to be essential. One of the most successful cultures of the series received about 15 cubic centimeters of a broth containing one-half of 1 per cent peptone, one-tenth of 1 per cent meat extract, and one-tenth of 1 per cent blood albumen.

As food organisms, four flasks received *Colpidium* plus a small *Spirillum*, and 2 flasks, *Colpidium* alone. All cultures were placed in a refrigerator, the temperature of which varied from about 13° C. to 20° C.; the higher temperature occurred only occasionally when there was insufficient ice in the container. Nearly all received an abundance of young larvae.

The results of these cultures follow:

Of four flasks inoculated with *Colpidium*, plus the small *Spirillum*, mosquitoes came to maturity in three, the number emerging being, respectively, 20, 26, and 1 per flask. The single unsuccessful culture had received but few larvae when inoculated. Of the two receiving *Colpidium* alone, one produced six mosquitoes, the other failed. So in the series of six flasks, four were successful.

Cultures were made of the contents of the four successful cultures after the maturity of the mosquitoes and no evidence of contamination was found. In all of them the food organisms were still abundant and apparently thrifty.

This experiment was repeated (lot No. 138). The conditions were essentially similar, except in the following respects: Instead of filamentous algae, which were not available at that season, zoogloea-forming algae, in part blue-green, were used. One-pint Mason jars were used in place of the flasks, and the cultures were kept at low room temperature, 17°–26° C. Of four cultures which had received as food organisms *Colpidium* plus a small *Spirillum*, three produced healthy mosquitoes, the numbers being, 8, 14, and 26, respectively, per flask. Of four which received *Colpidium* only, three were successful, the numbers of mosquitoes produced being 1, 1, and 45 per flask.

All containers of lot 138 received ½ to 1 cubic centimeter of human serum after inoculation. In lot 136, a part of the flasks received one or two drops of serum, the others, including 2 of the successful ones, received none.

In sum, the results of these rotten-algae-broth cultures were 10 successful out of 14 attempts, a much higher proportion than the average and a much larger average output of *Anopheles* per flask.

Another particularly successful culture consisted of tap water containing a small amount of the ground-up and sterilized bodies of adult *Anopheles*, a small quantity of broth and a mass of *Tillandsia* moss, all sterilized in the autoclave. Thirteen healthy *A. quadrimaculatus* emerged in this culture. The food organisms were *Colpidium* plus a small *Spirillum*, and the culture was kept at low room temperature.

The factors common to these three series were a comparatively "thin" culture medium containing masses of dead algae or moss, food organisms consisting of an infusorian or of the infusorian plus *Spirilla*, and cultivation at relatively low temperatures.

Certain of the factors which determined the success or failure of our cultures will be discussed severally, in the hope that such study may help to elucidate some of the problems of the growth of anopheline larvae both under laboratory and natural conditions.

Aeration.—The containers in which our cultures were kept differed from ordinary laboratory receptacles in which mosquitoes are bred only in the fact that they were kept closed. Preliminary cultures on unsterilized food in cotton-plugged flasks showed rapid growth of larvae to mature adults, although not in every case. It is unlikely that failures were due to a lack of oxygen. In our "pure" cultures there was always a large air space above the culture medium which was automatically changed by the contraction and expansion of the air with the changes in room temperature. A successful culture in which 13 adults emerged was closed by a cork perforated only by a small tube plugged with cotton. Larvae survived 12 days and grew to nearly half size in a flask sealed with paraffin. Artificial aeration of cultures gave little indication of improvement in the growth of larvae. Larvae died at various stages of growth, although in cultures abundantly supplied with living algae and kept in the light. Gases formed by bacteria and partially confined in the receptacles may have inhibited the growth of larvae in some cultures, but it seemed unlikely that this factor was a common cause of failure. Many successful emergences were obtained in contaminated cultures and many failures in those provided with pure cultures of algae or infusoria.

The size of the containers seemed ample. In several cases healthy adults, both *A. crucians* and *A. quadrimaculatus*, were obtained in cotton-plugged test tubes of the ordinary size. But few emergences occurred in test tubes, however, and larger receptacles were commonly employed.

Oxygen was apparently necessary for the hatching of the eggs. When a batch of eggs was purposely made to sink to the bottom of a test tube containing broth a smaller proportion hatched out than in batches floating on the surface. Eggs placed under anaerobic conditions—in glucose broth boiled under a layer of vaseline—failed to hatch.

The temperature at which the cultures were kept had much to do with the proportion of successes obtained. High room temperatures, 80° or 85° F. in the daytime, favored the rapid development of the mosquitoes and a number of successful cultures were obtained under such conditions. Usually, however, mortality was high at such temperatures and the chance of success much greater when cultures were kept at low room temperatures or in a refrigerator at 15° to 20° C. The effect of the products of decomposition in the media seemed to be greater at the higher temperatures.

Light, as might be expected, was not an essential factor when larvae were fed on infusoria, bacteria, or other organisms lacking chlorophyll. Larvae of *A. quadrimaculatus* were brought to maturity in cultures kept in a closed refrigerator.

The hydrogen-ion concentration of cultures was usually adjusted when the media were prepared and often retested at the close of an experiment. Except in some special experiments, it was kept within the range of pH 6.5 to pH 8.5, concentrations at which the anopheline larvae of our species are known to thrive under natural conditions. In one experiment the medium, consisting of rotten algae in dilute broth, was divided into two lots—one of pH 6.4, the other of pH 8.6. In cultures from both lots, healthy adults of *A. quadrimaculatus* were obtained, the food organism consisting of *Colpidium* alone, or, in some cases, of *Colpidium* plus a small *Spirillum*. In one culture the hydrogen-ion concentration rose from pH 6.4 to pH 6.8 during the development of the mosquitoes to adults; in two others it rose from pH 6.4 to pH 8.2.

In another experiment, larvae hatched in a broth of pH 4.4 and survived in it for 25 days at room temperature. The medium was unfavorable to the food organisms and the larvæ grew but little. This test and similar tests indicated that a concentration as low as pH 5.0 was not *per se* harmful to larvæ so long as the food supply and other conditions were favorable. Within the range of pH 6.5 to pH 8.5, at all events, I could not detect any measurable effect of the hydrogen-ion concentration on the growth and development of the larvae.

The salts necessary for larvae growth must have been present, since, in many cultures, earth, sand, or mud from breeding places was supplied. In one culture, *A. crucians* grew to maturity in physiological salt solution.

Inherent differences in the vitality of larvae undoubtedly played an important part. Some batches of larvae seemed much stronger than others; and when a number of living larvae were inoculated into a culture, some individuals often rapidly outstripped the others. There was no evidence that the stronger ones commonly fed on their dead comrades. Such differences in vitality in larvae of the same age are often seen in open laboratory cultures and doubtless exist under natural conditions. Moreover, both in laboratory cultures and in nature but a small percentage of eggs usually reach the adult stage. In my cultures the larger the number of larvae transferred to a flask, the better the chances of success. So I frequently transferred the larvae of several test tubes to one flask.

The food supply of the larvae proved to be a most important factor in the success or failure of my cultures. On the theory that the accessibility of food might be of importance to surface-feeding larvae, I employed many devices for keeping the food tested at the surface of the liquid in the flask. It was doubtful whether any of these devices were of advantage in the case of nonliving food substances. The use of the surface-growing *Spirilla*, infusoria, or other living food was probably of advantage. A pure culture of the alga *Scenedesmus*, which sinks to the bottom of the medium, proved to be less suitable as food than motile surface-growing algae.

Our cultures showed strikingly that dead food is far less suitable for larval growth than living. Cultures containing living infusoria, algae, and *Spirilla* were compared with those supplied with the same microorganisms killed at low temperatures (55° C.); the growth of larvae was consistently better in the presence of the living food. Larvae would often survive long on dead food, just as they did in sterile broth, but they almost invariably failed to grow to any extent. In one case a larva survived one month on dead *Colpidium* and at the close of this period was but little larger than it was when newly hatched. Larvae in contaminated cultures usually developed further than those in sterile broth, where growth was always inconsiderable.

In cultures made on autoclaved foods of various kinds the mosquitoes never produced adults. In one culture, autoclaved, consisting of a shallow layer of broth containing an abundance of powdered bodies of adult *Anopheles*, there was considerable growth of larvae, some reaching nearly full growth. Growth was slow; nearly a month was required to reach the stage of half-grown larvae. Over a month before the death of the larvae, samples were pipetted out of the flask and cultured for bacteria, and such sampling was continued at different times almost up to the time of the death of the larvae. Transfers were made to broth and agar, and to cultures under anaerobic conditions, and the samples were examined microscopically for bacteria. In no sample was there evidence of bacterial or other contamination. One can not exclude the possibility that the larvae were favored by the transient growth of a contaminant, but it seemed most probable that the larvae grew on dead food. Several attempts were made to repeat this experiment, but all failed to give any considerable growth of larvae.

The addition of sterile, unheated foods, such as white and yolk of eggs, plant tissues containing chlorophyll, pulp of fruits, or red blood corpuscles did not measurably promote the growth of larvae. In one experiment, mosquitoes were brought to maturity on a culture of living yeast plus *Colpidium*. A vigorous growth of yeast alone in a rich medium was unfavorable to larval growth.

In sum, our experiments agree with those of Atkin and Bacot (7), who found that the larvae of *Aëdes aegypti* only exceptionally grow on dead foods, and that living bacteria are a much more suitable food than dead. Metz (2) reported that dead foods are suitable for the growth of *Anopheles* larvae; but in his experiments unsterilized larvae were transferred directly to the food substances, boiled algae and other vegetable matter, and the cultures were kept at August temperatures, so that the possibility of the presence of living bacteria in sufficient numbers to promote growth could not be excluded. Our experiments indicate that dead food is much less suitable than living for the growth of *Anopheles* larvae, but do not exclude the possibility that dead foods may sometimes be a sufficient or an accessory source of nutriment. It is not within the scope of this paper to go into theoretical considerations regarding necessary or accessory factors in the food of insect larvae. Glaser (9) has recently summarized the literature on this subject.

The failure of many of our cultures to reach maturity, however, could not be attributed to the lack of living food. Living microorganisms often persisted long after the death of the larvae. The possible exhaustion of the food of the microorganisms was provided for in some cultures by adding broth from time to time after the introduction of the larvae. Earth, charcoal, sand, and clay were added to the cultures in the hope that, becoming impregnated with the nutrient fluids, they might gradually add to the food supply of the microorganisms. In various sorts of cultures, living algae and infusoria remained viable for long periods, sometimes for many weeks. Further, lack of food would hardly account for the sudden death of larvae which had grown rapidly until just before pupation. Larvae insufficiently nourished may fail to grow but often survive many days.

Excretory products.—Roubaud (10) has suggested that the urinary excretory products of larvae may inhibit their growth, and this factor may be alleged as important in the death of our mature larvae. But *Anopheles* can be bred in a tea cup or other small receptacle containing but a small amount of liquid, and they will develop in nature in the hoof tracks of animals. In our cultures, considerable numbers of anopheline adults were sometimes obtained in a flask (in one case 45 were obtained in a 1-pint Mason jar). Often larvae would die when only a few were present in a relatively large amount of liquid, and in some cases they reached maturity in a test tube. So it would seem that excretory products of larvae, unless a somewhat varying and transient factor, could hardly have been of much influence.

The products of decomposition of the food organisms were certainly deleterious to larvae in cultures containing bacteria growing in a comparatively rich broth. A very abundant growth of *Colpidium* on a rich substratum also seemed to be unfavorable to them. But in many cultures larvae failed to develop in very thin media, sufficiently rich, however, to support the food organism, and failures were not unknown in pure cultures of algae. Some cultures in which the larvae had died out were reinoculated with new larvae without resterilization, and the larvae reached maturity. In such cases there did not appear to be an accumulation of products harmful to larvae, and when such products of decomposition came into play they must have been of a transitory nature. In many cultures, earth or charcoal was added in the hope that it might modify the medium in which the larvae grew. Such cultures seemed to give a higher proportion of successes than those composed of liquid alone, but not notably higher than those containing masses of sterilized algae or of moss.

In sum, the conditions which gave the larger proportion of successes in "pure" cultures of anopheline mosquitoes were the following: The presence of living food, the use of eggs or young larvae of sufficient initial vitality, and the absence of an excess of certain products of decomposition, the formation of which was promoted by higher temperatures. The mortality observed in many experiments, especially that in pure cultures of algae, could hardly have been due to an excess in quantity of products of decomposition. Some of the fouler cultures, judged by appearances, odor, and the numbers of bacteria, were successful; while others, apparently sweet, failed. It is probable that the quality, as well as the quantity, of products of decomposition were of weight, and that the presence of such deleterious substances was often transient. In experiments such as these, we deal with many factors difficult to evaluate; but it would seem that success depends much on the maintenance of a proper balance between a sufficient supply of living food and freedom from certain products of decomposition. In practice, the use of infusoria, alone or combined with *Spirilla*, of a substratum relatively poor in organic substances, and of low temperatures, gave the largest proportion of successes in these experiments.

A few cultures were made with the eggs of culicines. The eggs were sterilized and tested in the same way as were those of *Anopheles*, except that when eggs were formed into boats they were dissected apart before applying the alcohol. Eggs of *Aëdes aegypti* hatched out clear in broth. In one culture they were brought to mature imagoes in bacteria alone, and in another a culture of *Colpidium* alone. In a boat-forming species, probably *C. quinquefasciatus*, eggs were apparently sterilized, although a smaller proportion of them came through clear than in the case of *Anopheles* eggs. This *Culex* was brought to maturity in a culture of mixed bacteria. As mentioned by Atkin and Bacot, culicines are voracious for bacteria and quite capable of clearing up a clouded culture so that such cultures may, for a time, simulate sterility.

There was no indication in any of our cultures of bacteria pathogenic to *Anopheles* larvae.

An observation on the colors of larvae is worth mentioning. In several instances both green and dark colored *Anopheles* larvae appeared in alga-free cultures. Here, of course, the formation of the green color was quite independent of the presence of green food.

In order to correlate our laboratory findings with the larval food found in nature, I made a series of observations on the plankton of Anopheles-producing waters in the rice fields of Louisiana and Arkansas and in various pools and streams in Mississippi. Purdy (3) made a thorough study of the plankton occurring on the surface and in the depths of the water of rice fields in California. My observations were limited to such small nonfilamentous organisms as are found on the very surface of the water, and the idea was merely to determine the most common organisms probably suitable for anopheline food in nature. Some 40 observations were made and a great variety of waters examined—those in the sun and in the shade, and those with abundant and with scanty filamentous algae and other microscopic material.

The technique was simple. By means of a wire loop, such as that used in taking up mosquito eggs, samples were looped from the surface of the water in the immediate vicinity of *Anopheles* larvae. The samples were placed on a slide and examined immediately under the lower powers of the compound microscope. In some cases samples were subsequently dried, stained, and examined under the oil immersion. Data as to water temperatures and the hydrogen-ion concentration were recorded. Dippings were made to determine the numbers of anopheline larvae at the place where the samples were taken.

The results may be briefly summarized as follows: Aside from bacteria, which were universal, unicellular algae constituted the predominant surface organism. Colorless protozoa, usually infusoria, were next in order. Diatoms, desmids, *Euglena*, rotifers, and small crustacea were often abundant. The organisms which we found suitable as food in our laboratory cultures were, then, plentiful in nature.

DISCUSSION

Laboratory cultures of anopheline larvae have proved of value in the explanation of some problems in anopheline production in nature, especially those having to do with the effect of physical agents, of food, and of products of decomposition. In regard to the last-named factor, the behavior of the larvae in my cultures has shown some similarity to that of larvae in natural breeding places. It is well known that a breeding place may become too foul for the development of *Anopheles* larvae, but the absence of these larvae in certain permanent waters, apparently fresh and favorable for them, has not been clearly explained. It is possible that here, as in our cultures, the quality of the products of vegetable decomposition may be of weight, although such products may be too small in quantity to be easily recognized. These substances when they occur in nature may act directly on mosquito larvae or may simply deter female mosquitoes in their search for suitable places for laying eggs.

Ordinary laboratory cultures suffice for many experiments. In our "pure" cultures the food factor is kept under more precise control.

The results obtained in our cultures have a bearing on certain antimosquito measures. It has been proposed that the use of some algicide, as copper sulphate, might render waters unsuitable for anopheline larvae, a measure based on the assumption that algae form the bulk of larval food. Since, as shown by our experiments, infusorians alone or bacteria alone may constitute a sufficient source of food, an algicide would be effective only to the degree to which it might reduce the supply of available food. Decomposing algae afford a good pabulum for bacteria and infusoria, and their removal might act indirectly in diminishing larval food; but it is doubtful whether an algicide, even if wholly effective in killing all algae, could give entirely satisfactory results, since much food available for bacteria and infusoria would remain. The exposure of waters to sunlight usually brings about an increase in anopheline production, but with the increase in algae there is usually an increase in all sorts of vegetation, the decay of which augments the supply of colorless microorganisms. In demonstrating the adaptability of *Anopheles* larvae to a variety of foods, our experiments would tend to bring out more clearly the limitations of measures designed to starve out larvae by a chemical attack on their foods. The mechanical removal of débris from water is, of course, an effective measure; in this we remove not only sources of food, but the protection of the larvae as well.

SUMMARY

1. Algae alone, bacteria alone, or infusoria alone may constitute a sufficient source of food for *Anopheles* larvae.
2. Dead organic material, in cultures at least, is far less suitable than living organic material as a source of food.
3. Antilarval measures based on the destruction of available food must take into consideration the adaptability of larvae to various food organisms.

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CURRENT WORLD PREVALENCE OF DISEASE

REVIEW OF THE MONTHLY EPIDEMIOLOGICAL REPORT ISSUED APRIL 15, 1927, BY THE HEALTH SECTION OF THE LEAGUE OF NATIONS' SECRETARIAT [1]

Plague.—Plague incidence in most of the important endemic centers was relatively low during the months of February and March, so far as reports to the Health Section of the League of Nations' Secretariat, published in the Monthly Epidemiological Report for April, had been received for this period. Comment in the report calls attention to the exceptionally favorable situation in both India and Java.

With regard to plague in India, the comment is as follows:

In Northern India, it is in February and March that the sharp rise of the plague incidence takes place which determines the situation for the whole plague year. The greatest interest attaches therefore to the fact that plague was much less prevalent in February than during the corresponding month of any year since the disease spread throughout the Indian peninsula during the closing years of last century. During the present century the most favourable year on record has hitherto been 1922, when India's plague death toll amounted to 4,667 for the second and third weeks of February; during the corresponding period of the current year only 2,632 deaths were ascribed to plague.

The only important plague centre in Northern India in February last was an area including the eastern districts of the United Provinces and the western districts of Bihar and situated in the plain of the Middle Ganges, where it is joined by the Gogra, the Gandak, and the Son.

TABLE 1.—*Deaths from plague in the Provinces of India*

Province	1922, Feb. 5–18	1923, Feb. 4–17	1924, Feb. 10–23	1925, Feb. 8–21	1926, Feb. 7–20	1927, Feb. 6–19
North-West Frontier Province	0	0	100	2	1	0
Punjab	165	488	4,004	1,799	2,780	264
Delhi	0	107	186	16	1	0
United Provinces	1,331	4,774	3,037	2,851	2,106	920
Bihar and Orissa	838	2,293	1,012	603	443	413
Bengal	1	1	1	0	0	0
Assam	0	0	0	0	0	0
Central Provinces	360	809	1,330	539	455	403
Madras Presidency	768	645	280	239	181	87
Hyderabad State	82	634	209	293	700	33
Mysore	178	131	74	27	280	29
Bombay Presidency	203	732	636	361	649	107
Burma	719	837	771	267	354	236
Other Indian States	22	212	674	277	834	140
Total	4,667	11,663	12,404	7,274	8,784	2,632

[1] From the Office of Statistical Investigations, United States Public Health Service.

"The January plague returns for Java are the most favorable since 1921," states the Report. "The incidence may now be expected to decrease until July, which is the month of seasonal minimum."

TABLE 2.—*Deaths from plague in the Provinces of Java*

Province	Four-week period ended—			
	Jan. 28, 1924	Jan. 28, 1925	Jan. 30, 1926	Jan. 29, 1927
Preanger	0	0	1	4
Cheribon	31	86	223	103
Pekalongan	55	197	195	114
Semarang	77	249	15	2
Banjumas	0	397	269	49
Kedu	371	411	570	303
Jokjakarta	40	19	29	19
Surakarta	341	732	187	91
Surabaya	11	9	4	4
Passoeran	0	9	0	0
Kediri	0	6	16	1
Total	926	2,115	1,509	690

At Colombo, Ceylon, there were 20 cases of plague reported in the five weeks ended April 2, as compared with two cases in the corresponding period of 1926.

In Northern Africa plague conditions were also favorable. No case of plague was reported in Algeria during the month of March. In Egypt only two cases were reported—one at Port Said in the week ended March 19 and one at Alexandria in the week ended April 2. In Tunisia there were 34 cases reported in the district of Sfax during March, but no cases were reported from any other district.

The plague incidence in Madagascar continued high in the first half of March, when 141 cases were reported as compared with 363 in the preceding month. In Uganda the number of deaths from plague decreased during January; 84 deaths were reported in the four weeks ended January 22 as compared with 166 in the preceding four weeks.

In Guayaquil, Ecuador, an increase in plague cases occurred at the beginning of the current year, and 5, 12, and 26 cases, respectively, were reported for the first three half-month periods. The number of infected rats found was less than in the preceding two years.

In Peru only 79 cases were reported during January and February of 1927 as compared with 290 cases in the corresponding months of 1926.

Cholera.—"Cholera was more prevalent in March than in February in Calcutta and Bangkok, but less prevalent at Rangoon and apparently disappearing at Madras," according to the Report. "Ports farther east and north reported no cholera."

In India the seasonal increase in cholera begins usually in March, and the incidence in February is not very significant. The number of deaths in the different Provinces during the two weeks from February 6 to 19 is shown in Table IV, as compared with the corresponding period of previous years. As usual, Bengal and Madras Presidency were the main centers of infection, but in Assam and Burma the deaths were unusually numerous for the time of year.

TABLE 3.—*Cholera deaths reported in the Provinces of India*

Province	1924, Feb. 10–23	1925, Feb. 8–21	1926, Feb. 7–20	1927, Feb. 6–19
North-West Frontier	0	0	0	0
Kashmir	0	6	0	0
Punjab and Delhi	0	0	0	0
United Provinces	27	1	8	8
Bihar and Orissa	88	99	371	103
Bengal	621	537	1,233	792
Assam	55	31	53	288
Central Provinces	4	1	230	10
Madras Presidency	421	1,442	1,340	1,010
Bombay Presidency	0	0	0	1
Burma	16	47	12	132
Other Indian States	0	0	21	0
Total	1,232	2,164	3,268	2,344

Typhus fever.—An increase in typhus fever in Poland occurred toward the end of February, when 258 cases were reported in the two weeks ended March 5 as against 154 cases in the preceding two weeks; but the incidence in January and February was lower than in the preceding year.

Both Algeria and Morocco have reported a somewhat higher incidence of typhus fever than for the first quarter of 1926. In Algeria, cases in the first three months of the current year numbered 280, as against 89 in the same period of 1926; and in Morocco the cases for the first three months numbered 460 as against 270 in 1926. In Tunis there were 170 cases reported during the first quarter of the year, which was approximately the same number as was reported during the preceding year. In Egypt a marked decline in typhus fever is noted; there were 69 cases in the first 9 weeks of 1927 as compared with 205 during the corresponding period of 1926.

Smallpox.—Smallpox prevalence continued low in practically all parts of the European Continent. The incidence in northern England during March declined only very slightly, 1,650 cases being reported in the four weeks ended April 2 as compared with 1,792 in the preceding four weeks.

In India, smallpox was very prevalent, especially in Bihar and Orissa, and Bengal, where the disease was seriously epidemic. "The outbreak seems to have reached its maximum at Calcutta during the week ended March 26, when there were 300 deaths from smallpox in this town. During the first quarter of 1927 there have been 1,904 deaths from smallpox at Calcutta. Smallpox is now increasing also at Bombay and Rangoon."

Other places in the Far East have shown a decline in smallpox. In Siam there were 50 cases during the first eight weeks of the year as compared with 233 during the corresponding period of the preceding year. In Java and Madura, 14 cases were reported during the four weeks ended January 29, as against 113 and 387 cases, respectively, during the corresponding period of the two preceding years. Only 2 smallpox cases were reported in the Philippine Islands in 1926, and none since March of that year. The report states:

The smallpox incidence in the United States differs but little from last year; 3,914 cases were reported during the four weeks ended March 19, as against 4,234 cases during the preceding four weeks and 3,823 cases during the corresponding period of 1926.

Influenza.—The report states:

The influenza epidemic came to an end in March practically everywhere in Europe. In 105 towns of England and Wales, 155 deaths were attributed to influenza during the week ended February 26. In these towns, 7,472 deaths were ascribed to influenza during the first quarter of the year. Scotland was only slightly affected by the epidemic.

In Germany the peak was reached during the first week of February, when 485 deaths from influenza were reported in 46 towns; the corresponding figure for the week ended March 19 was 95.

In Czechoslovakia 143 deaths were attributed to influenza in January and 1,020 in February; 253,662 cases were reported during the two months.

Deaths from influenza in Bulgaria numbered 3,001 during the six weeks ended March 12. In the Kingdom of the Serbs, Croats, and Slovenes, 1,708 deaths were attributed to this disease up to March 21.

Measles.—The report notes:

Measles has been less prevalent than usual during the past winter in most countries for which information is available.

Recent statistics for the Union of Socialist Soviet Republics also shows a lower incidence of measles, which, however, still causes a very considerable mortality. In Leningrad there were 473 deaths from measles in 1926 and 664 deaths in 1925, which is more than the corresponding number reported in 1926 in 46 German towns, which have a population ten times greater than that of Leningrad.

Malaria.—Statistics of malaria in the Union of Socialist Soviet Republics during 1926 are still incomplete, but the figures published in the Epidemiological Report indicate a much lower incidence than in either of the preceding two years. The improvement was most marked in the spring and early summer months. In the Ukraine, where the returns for the whole year are most nearly complete, the cases were as numerous in October, November, and December as in the preceding years. This continued high incidence in the late summer and autumn is particularly interesting, because the more severe tropical forms prevail then and the benign tertian type is most prevalent in the spring.

Tuberculosis.—A continued decline in tuberculosis in 1926 was clearly marked in most European towns. In Table 4, the per cent decrease, or increase, in 1926 as compared with 1925 is shown for a large number of towns in Europe and a few American towns.

TABLE 4.—*Mortality from tuberculosis (all forms) in various cities in 1925 and 1926*

City	Population in thousands, 1926	Deaths, 1925	Death rate per 100,000, 1925	Deaths, 1926	Death rate per 100,000, 1926	Increase or decrease,[1] per cent
EUROPE						
Lille	202	506	252	397	197	−21.5
Budapest	961	2,798	291	2,237	233	−20.1
Oslo	256	431	167	356	139	−17.4
Dresden	624	759	123	628	101	−17.3
Cologne	711	883	121	730	103	−17.3
Lyons	562	1,465	261	1,218	217	−16.9
Breslau	561	729	131	614	109	−15.8
Edinburgh	427	566	133	478	112	−15.5
Berlin	4,110	4,867	121	4,154	101	−14.6
Dublin	419	814	185	697	166	−14.4
Hamburg	1,111	1,234	114	1,066	96	−13.6
Tallin	127	348	274	306	241	−12.1
Munich	685	800	117	704	103	−12.0
Glasgow	1,051	1,413	134	1,294	123	−8.4
London	4,602	4,932	107	4,554	99	−7.7
Trieste	249	700	281	667	268	−4.7
30 Swiss cities[2]	1,177	1,458	125	1,399	119	−4.0
Belfast	415	752	172	724	174	−3.7
Copenhagen	587	634	108	612	104	−3.5
Prague	725	1,244	174	1,204	166	−3.2
The Hague	403	341	87	323	80	−2.3
Paris	2,906	8,134	280	8,013	276	−1.5
Stockholm	443	675	154	666	150	−1.3
Amsterdam	714	693	97	686	96	−1.0
Rotterdam	556	602	110	599	108	−0.5
Venice	201	416	207	416	207	0.0
Milan	857	1,376	191	1,380	161	+0.3
Leningrad	1,614	3,078	223	3,090	191	+0.4
Genoa	320	734	219	748	234	+1.9
Barcelona	764	1,366	185	1,394	182	+2.0
Madrid	783	1,983	253	2,102	268	+6.0
Bologne	221	378	169	410	186	+8.4
Cracow	187	432	200	474	253	+9.7
Sofia[3]	213	646	419	743	348	−15.0
AMERICA						
St. Louis	830	615	75	468	56	−23.9
San Francisco	567	645	116	485	86	−15.2
New Orleans	414	762	184	664	158	−12.9
Sao Paulo	790	911	107	904	114	−0.8
Boston	782	786	101	790	101	+0.5
Chicago	3,048	2,492	83	2,528	83	+1.4
New York[3]	5,873	5,047	84	4,863	83	−3.6
Montevideo[3]	423	1,057	272	1,063	251	+0.6

[1] Per cents are based on increase or decrease in number of deaths.
[2] In 1925, 26 cities only.
[3] Pulmonary only.

The decrease in tuberculosis mortality in 46 German towns since 1923 has been remarkable. The rate in 1923 was 170 per 100,000 population, whereas, following a consistent sharp drop in each year, the rate in 1926 was 99 per 100,000.

ITALIAN SCHOOL OF MALARIOLOGY OPENS JUNE 15, 1927

Official announcement has been made that courses in the Advanced School of Malariology which the Italian Government has opened in Rome will begin June 15, 1927. A brief outline of the purpose of this school and the scope of instruction was published in Public Health Reports for April 8, 1927.

COURT DECISIONS RELATING TO PUBLIC HEALTH

Quarantine affecting herd of cattle not tested for tuberculosis upheld.—(New York Supreme Court; People *v.* Teuscher, 221 N. Y. S. 20; decided February 21, 1927.) Section 76 of the farms and markets law provided as follows:

Whenever 90 per centum of the herds of cattle or whenever 90 per centum of the total number of cattle in any town have been subjected to the tuberculin test for the purpose of ridding such herds of the disease known as tuberculosis, and the owner of any untested herd in such town refuses or neglects to have his herd tuberculin tested, then the commissioner may order the premises or farm on which such untested herd is harbored to be put in quarantine, so that no domestic animal shall be removed from or brought to the premises quarantined, and so that no products of the domestic animals on the premises so quarantined shall be removed from the said premises.

Ninety per cent of the herds of cattle in the township where the defendant conducted his farm and maintained a herd of cattle had been tuberculin tested, but the defendant refused to have his herd tested. Upon such refusal, the commissioner of farms and markets issued a quarantine order against the defendant's herd and premises, which order, in substance, provided that no bovine animal should be removed from or brought to the said premises and that no products of the bovine animals on the said premises should be removed therefrom. For several months the requirements of the quarantine were conformed to, and then on two separate occasions the defendant, in violation of the order, transported milk, conceded to be a product of his herd, from his farm to certain milk stations. In an action against the defendant for the recovery of a penalty and for an injunction, the holding of the court was adverse to the defendant. It was contended on defendant's behalf that the farms and markets law, in so far as it related to the matters at issue, was unconstitutional, but the court was "of the opinion that the statute is, in all respects, constitutional, and that it is in no way an unreasonable or unwarranted exercise of the police power upon the part of the legislature of this State."

Harrison Narcotic Drug Act upheld.—(United States Supreme Court; Alston *v.* United States; decided May 16, 1927.) An amendment to section 1 of the Harrison Narcotic Act imposed a stamp tax on certain narcotic drugs, and made it "unlawful for any person to purchase, sell, dispense, or distribute any of the aforesaid drugs except in the original stamped package or from the original stamped package." Section 9 of the act, providing penalties for its violation, remained as originally enacted. A prosecution was brought charging a violation of section 1 of the Harrison Act by the purchase of morphine and cocaine from unstamped packages. The defendant pleaded guilty and was sentenced to the penitentiary. The case was taken to the circuit court of appeals, eighth circuit, on a writ of error, which court asked the Supreme Court's instruction upon certain questions. The latter court then required the entire record to be sent up for final determination of the whole matter. The following quotation from the Supreme Court's opinion shows the defendant's contentions and the holding in the case:

The judgment of the trial court is assailed upon two grounds: That Congress has failed to prescribe any punishment for the purchase of drugs from unstamped packages, forbidden by amended section 1. And, that the entire act, as amended, is invalid because Congress has undertaken thereby to regulate matters beyond its powers and within exclusive control of the States.

Section 9, above quoted, obviously applies to the requirements of the amended act as well as to those found in the original. The first objection has no merit.

The present cause arises under those provisions of section 1 which impose a stamp tax on certain drugs and declare it unlawful to purchase or sell them except in or from original stamped packages. These provisions are clearly within the power of Congress to lay taxes and have no necessary connection with any requirement of the act which may be subject to reasonable disputation. They do not absolutely prohibit buying or selling; have produced substantial revenue; contain nothing to indicate that by colorable use of taxation Congress is attempting to invade the reserved powers of the States. The impositions are not penalties.

The judgment of the trial court must be affirmed.

PUBLIC HEALTH ENGINEERING ABSTRACTS

The Incidence and Intensity of Hookworm Infestation in the Various Soil Provinces of Tennessee. E. R. Richard and J. A. Kerr. *Journal of Preventive Medicine*, vol. 1, No. 2. November, 1926, pp. 185–203. (Abstract by Norman R. Stoll.)

In surveys previously made in Tennessee (1910–1914) with the plain smear method of diagnosis, hookworm was shown to be prevalent in all parts of the State, certain counties showing a much higher incidence than others. This article summarizes the results of a survey begun in November, 1925, in which incidence was determined by the Caldwell modification of the Willis floatation, and egg counts were made by the antiformin-sugar method of Caldwell and Caldwell. Following the plan of Smillie and Augustine, in Alabama, the State was divided according to soil provinces. Ten provinces were determined, and in each of these it was attempted to examine feces from at least 100 white rural school children of the ages 6 to 16. The highest incidence in any soil province was 76.8 per cent, in the Cumberland Plateau, comprising about 10 per cent of the total area of the State. The next highest incidence, 69.0 per cent, was found in the Unaka Mountain Range, a smaller area. The latter region is a narrow strip following the eastern boundary of the State; the former a north and south band in east central Tennessee. These are the only two areas that have a distinct hookworm problem, and are also the only areas with a high percentage of very sandy soils. Except for one small contiguous area with an incidence of 33.3 per cent, all the other soil provinces with clay or silt soils predominating showed infection rates of less than 17 per cent. The incidence figures are thus highly correlated with the type of soil, only those soils with a relatively large amount of sand producing appreciable hookworm. A reexamination of the 1910–1914 incidence figures show that they may be similarly interpreted.

From the intensity figures, only the Cumberland Plateau and the Unaka Mountain Range revealed heavy infestations, and they were few.

The results of the fecal examinations were correlated with results of experimentally culturing hookworm larvae, using the various soils of the selected "provinces." As it is held that the sanitary habits of the people, the temperature, and the rainfall are such that they affect the dissemination of hookworm about equally, the nature of the top soil is thus the outstanding variable among the factors which influence the incidence and intensity of hookworm infestation in Tennessee.

In regard to other parasites, the incidence of *Ascaris* and *Trichuris*, in general, is parallel with that of hookworm, while that of *Enterobius vermicularis* and *Hymenolepis nana* seems to bear no relation to that of the other three.

Filtration Plant with New Features. Anon. *Contract Record*, vol. 40, No. 37, September 15, 1926, pp. 879–883. (Abstract by Rudolph E. Thompson.)

An illustrated description of the new filtration plant of the Metropolitan Water Board of London, England, at Walton, consisting of a system of double filtration, rapid-sand primary filters, and slow-sand secondary filters. Equipment has been provided for treating the water with chlorine, should this be found necessary. There are 18 rapid sand filters of 1 to 2 m. g. d. capacity when operated at a rate of 100–200 gallons per square foot per hour, and 6 slow-sand filters each five-sixths acre in area. It is expected that the latter will be operated at 3 to 4 times the normal rate for slow sand filters. The rapid sand filters are of two types. One type is equipped with an arrangement which automatically closes the filtered water outlet when the water reaches the correct level for washing after the raw water has been shut off, and which gradually opens the filtered water outlet when washing has been completed. This apparatus and the Module, or rate controller, and the Paterson patented filter underdrain system are described in detail and illustrated.

Of What Significance is the Presence of a Chromogenic Organism Resembling B. Pyocyaneus in a Water Supply. B. A. Adams. *The Medical Officer*, No. 976 (vol. 37, No. 15), April 9, 1927, pp. 167–168. (Abstract by C. T. Butterfield.)

The author describes a *pyocyaneus*-like organism isolated from polluted well water and from river water, and reviews the literature on this organism as found in water. He considers that the occurrence of this organism in water may be comparatively common, but that it will be difficult to isolate it if other bacteria are numerous, as he isolated it readily from very small portions of water tested and found it impossible to isolate it from larger portions of the same sample. The methods given by Thresh and by Mollieux for isolating the organism were found unsatisfactory and a method which was found workable is given.

The author concludes that the organism is practically always associated with typical *B. coli*, that it is readily killed by chlorine, and that while it is not desirable in a drinking water, there is considerable doubt as to its pathogenicity under these conditions.

"Water Dogs" in a City Water Supply. R. A. Polglaze. *Public Works*, vol. 58, No. 3, March, 1927, pp. 97, 98. (Abstract by R. J. Faust.)

For several years the water consumers of an Alabama city of 40,000 population have been finding "water dogs" in the water, later identified as the tiger salamander. These findings were not confined to any definite season. However, they were more prevalent in the spring. The question of "water without dogs" gained such strength that it became a political issue.

The city water supply is obtained from a large spring from which the water is lifted to an open reservoir which supplies the city by gravity. The spring is housed over.

Investigation proved that the adult salamanders, which are from 8 to 12 inches in length, were using the reservoir as a breeding place. Here they laid their eggs, and the tadpoles, after hatching, lived until the following year, at which time they lost their gills and became land animals, returning to the water only to lay their eggs.

In the spring of 1926 the reservoir was thoroughly disinfected and a 56-inch fence, with the bottom 30 inches made of quarter-inch mesh, was placed around it. No further complaints have been reported after one year's service.

Sludge Digestion—Reaction and Control. Gordon M. Fair and C. L. Carlson. *Journal of the Boston Society of Civil Engineers*, vol. 14, No. 2, February, 1927, pp. 82–130. (Abstract by E. C. Sullivan.)

The purpose of this paper, including the discussion of the same by Almon L. Fales, H. W. Clark, Edmund B. Besselievre, and Willem Rudolfs, is to discuss the changes and reactions that take place during the progress of sludge digestion and their apparent relation to digestion activities, and also to show the effect of reaction adjustment by means of certain alkaline substances upon the rate of digestion. The influence of temperature is not considered. The discussion of reaction and its control is based upon experimental studies and is, therefore, subject to the limitations of the experiment which are set forth in the paper. The term "reaction" is used to describe the acidity or alkalinity of the sludge, and is reported quantitatively as hydrogen-ion concentration expressed as pH.

Parts of two series of experiments (Series III and V of the Harvard Studies) are discussed in the paper. Both deal with the digestion at 20° C. of mixtures of fresh sewage solids with well-digested Imhoff sludge. The main purpose of the experiments was to obtain information on the nature of progressive sludge digestion under various conditions of pH control. A secondary object was to determine whether sterilization of the fresh sludge would exert an influence upon the course of digestion.

Data on the experimental technique are given. The fresh sewage solids used in the experiments were obtained from the Brockton, Mass., sewage disposal works. The Imhoff sludge was drawn from the Fitchburg, Mass., tanks. The gas production was chosen as the criterion of the progress of digestion. The sludge mixtures were placed in 4-liter bottles so equipped that the gas given off during digestion could be collected for measurement and analysis. A sketch of the apparatus is given.

The article includes a description of the results and is illustrated with a number of graphs. Normal digestion, or digestion without reaction control, which serves as the standard on the basis of which the pH adjustment is evaluated, is taken up. The results achieved by adjustment with lime, which has frequently been used in sewage treatment as a means of chemical precipitation or as a corrective of Imhoff tank trouble, is described. Likewise, adjustments with marble dust or calcium carbonate, dolomite dust containing calcium and magnesium carbonates, and adjustment with sodium hydroxide and sodium carbonate are discussed. A comparison of the results is given and discussed. Likewise, the nature of sludge digestion, effect of reaction control on the rate of digestion, and the practical application of reaction control to sludge digestion are considered.

The results of the experiments are summarized as follows: (1) The course of pH uncontrolled sludge digestion as measured by rate of gas production, reaction changes, and composition of the gases was fairly constant in nature but varied in time in accordance with the character of the sludge; (2) reaction adjustment was not beneficial unless accomplished by the use of suitable chemicals. Lime, marble, dolomite, and calcium carbonate produced an accelerated digestion. Soda ash and caustic soda retarded the progress of digestion; (3) calcium carbonate yielded the best results. Its ease of application and its self-regulating character recommend it particularly for use in small treatment works; (4) the period of digestion was reduced by suitable reaction control to one-third the normal period required. The shortest time observed for 90 per cent digestion at 20° C. was six weeks; (5) the quantity of adjusting chemical required in terms of calcium carbonate varied from 100 to 500 pounds per million gallons of sewage; (6) the lower critical pH for methane fermentation was near 6.8, the optimum in the vicinity of 7.2; (7) the yield of methane was about 8 cubic feet per pound of fresh organic matter. For the city of Brockton this would mean an available yield of methane equal to 7,900 cubic feet per million gallons of sewage, or one-third cubic foot per capita per day.

Chlorine Gas in the Technique of Sewage Purification. Dr. H. Bach, chief chemist Emscher Corporation of Essen, Germany. Technisches Gemeindeblatt, vol. 28, 1925, pp. 159–167. (Abstract by J. K. Hoskins.)

Because of the impoverished condition of the country, Germany is forced to forego the construction of complete sewage treatment works; chlorine gas disinfection appears to the author to supply the needs of health protection. A review of the properties and applications of chlorine to this end are presented in some detail.

The complex action of chlorine gas and of hypochlorites upon other substances in aqueous solution is discussed. "Materials in gaseous form are destroyed more rapidly by chlorine than are liquids, and these, in turn, more rapidly than solids." In addition to oxidation of organic matter, reaction products are probably generated by chlorine, which are effective as plant and animal poisons even after the exhaustion of the free chlorine content.

For many reasons given by the author, chlorine gas is to be preferred to hypochlorites for sewage disinfection, and is accordingly coming into more general use. The development of the indirect method of chlorine application (that is, the formation first of chlorine water by solution of measured amounts of gas to water, and then addition of this solution to the water to be treated), both in America and Germany, is outlined. This method is now used exclusively for treatment of municipal sewage by chlorine.

The history of sewage disinfection is briefly sketched. Extensive experiments of the Emscher Corporation have indicated that to produce a disinfection resulting in a 99 per cent reduction of the bacteria (growing on gelatin plates) in concentrated fresh municipal sewage which has not as yet decayed to any appreciable extent, the following additions of chlorine proved necessary: (*a*) For crude, unclarified sewage containing fecal matter, 25 to 30 g. per cubic meter; (*b*) for sewage briefly (one-half hour) clarified by sedimentation, 15 to 20 g. per cubic meter; (*c*) for well-clarified sewage, 10 to 15 g. per cubic meter.

If the sewage is stale, larger amounts of chlorine are required. In all cases a period of reaction is essential, generally from 15 to 30 minutes, depending on concentration, temperature, etc. Offensive odors of stale sewage, usually due to formation of sulphur compounds, may also be eliminated by chlorine treatment.

Chlorination of sewage as a substitute for biological treatment is discussed at length. Delay of decomposition may be obtained by chlorine frequently for a period long enough for the treated sewage to reach sufficiently large bodies of diluting water without the creation of a nuisance. However, "chlorinated sewage can not be considered the equal of effectually biologically purified effluents." Chlorine in combination with biological beds and rapid sewage filters and for clarification of sludge is also discussed.

Smoke and dust. **F. Bordas.** (Fumées et poussières.) *Annuaire d' Hygiène Publique, Industrielle et Sociale.* 1926, v. 4, 701–31. (Abstract by E. L. Collis, in *Bulletin of Hygiene,* vol. 2, No. 3, March, 1927. p. 178.)

This article deals essentially with atmospheric pollution by the products of combustion of coal. Smoke and dust may coexist, or either may be present alone. Ancient theories on the atmospheric origin of diseases are quoted, from Hippocrates onwards. Then come references to modern observations: In Pittsburgh 1,031 tons of soot are deposited annually on a square mile, 820 in Glasgow, and 539 in Leeds. Such facts have led to the smoke-abatement movement in England, which is equally required in other countries. We breathe six times more air by weight than we consume of food and liquid; hence the purity of the air is even more important than that of food and water. The finest of dust, of the order of 1 micron, may remain suspended in the air, say, after a volcanic eruption, for three or four years. Dust is attracted by cold, dry surfaces and repelled by warm, damp ones, such as the air passages. In fine weather in the country 500 dust particles may be present per cubic centimeter of air; but in the air of towns, like Glasgow, there are 3,500,000; on the Righi, in Switzerland, the particles vary from 500 to 3,400. Much can be done to improve the condition by care in burning coal, by teaching stokers how to stoke, and by using coke or gas for domestic fires.

The smoke from domestic fires is said to be three times as much as is liberated from industrial chimneys. Thousands of tons of benzol, heavy oil, and resin are being lost constantly into the air. Dust particles affect visibility; 1,000 particles per cubic centimeter prevent mountains 100 miles away from being seen; 100,000 particles reduce visibility to 1 mile; and 1,000,000 reduce it to one-tenth mile. Smoke also interferes with the sun's rays, reducing particularly long-wave radiations. Statistics are quoted from English data to show how much greater are death rates from respiratory diseases (other than tuberculosis) in smoky towns like Glasgow and Manchester than in rural areas, a condition also found in Germany. The observations made by Doctor Owen for the Air Ministry are quoted with approval in hope that other countries may follow suit. Economic advantages are to be gained from better use of coal fuel and the prevention of smoke, and simultaneously no small gain to the public health.

Public Health (Smoke Abatement) Act, 1926. Anon. *The Medical Officer*, vol. 37, No. 9, February 26, 1927, p. 98. (Abstract by Leonard Greenburg.)

This is a summary of the recent legislation enacted on proposal of the Ministry of Health. Following is a list of the section and subsection titles of this act: Extension of meaning of smoke; penalties; exempted processes; defense of "best practicable means"; notice of nuisance; by-laws as to smoke standards; alkali, extension of; works regulation act, 1906; by-laws as to new buildings; default powers; research and Crown premises.

It is quite impossible to abstract the contents of these sections, because the material as presented is in a very brief form and not amenable to further condensation. For the contents of the sections cited above the reader is referred to the original paper.

Anti-Smoke By-Law Claimed to be a Real Economic Measure. *Sanitary Engineer*, December 15, 1926, vol. 20, No. 24, p. 14. From abstracts of current public health literature, department of health, Ottawa, Canada, February, 1927, p. 12.

K. L. Dawson, A. M. E. I., of the Nova Scotia Tramway and Power Co., Halifax, in an address at St. John, New Brunswick, said that most stoves and furnaces waste 60 to 70 per cent of the energy in the coal they consume and that the average steam plant wastes 35 to 45 per cent. He estimates that for every ton of soft coal burned it costs $1 for extra laundry work, paint, etc. The smoke nuisance may be avoided by care and knowledge of proper methods of firing.

DEATHS DURING WEEK ENDED MAY 21, 1927

Summary of information received by telegraph from industrial insurance companies for week ended May 21, 1927, and corresponding week of 1926. (From the Weekly Health Index, May 26, 1927, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 21, 1927	Corresponding week 1926
Policies in force	67, 703, 113	64, 495, 026
Number of death claims	13, 565	12, 801
Death claims per 1,000 policies in force, anual rate	10. 4	10. 3

Deaths from all causes in certain large cities of the United States during the week ended May 21, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, May 26, 1927, issued by the Bureau of the Census, Department of Commerce)

City	Week ended May 21, 1927		Annual death rate per 1,000 corresponding week 1926	Deaths under 1 year		Infant mortality rate, week ended May 21, 1927 [2]
	Total deaths	Death rate [1]		Week ended May 21, 1927	Corresponding week 1926	
Total (66 cities)	6, 978	12. 4	[3] 13. 3	704	[3] 873	[4] 59
Akron	44			7	5	75
Albany [5]	37	16. 1	15. 3	3	1	63
Atlanta	68			7	6	
White	27			3	2	
Colored	41	(6)		4	4	
Baltimore [5]	240	15. 3	16. 7	20	33	62
White	178		14. 5	13	19	50
Colored	62	(6)	29. 8	7	14	109
Birmingham	77	18. 7	17. 8	10	4	
White	41		10. 6	8	1	
Colored	36	(5)	28. 9	2	3	
Boston	213	14. 0	16. 2	25	24	70
Bridgeport	31			3	5	56
Buffalo	175	16. 6	15. 2	24	26	101
Cambridge	24	10. 1	15. 4	3	5	53
Camden	23	9. 0	15. 1	4	2	69
Canton	18	8. 3	13. 7	1	11	24
Chicago [5]	711	12. 0	11. 3	71	62	61
Cincinnati	123	15. 6	17. 8	8	14	50
Cleveland	174	9. 2	10. 5	20	30	53
Columbus	97	17. 4	12. 1	7	8	65
Dallas	52	13. 0	11. 6	9	7	
White	38		9. 5	9	5	
Colored	14	(6)	25. 1	0	2	
Dayton	43	12. 5	16. 8	7	11	115
Denver	78	14. 0	10. 8	5	1	
Des Moines	26	9. 1	9. 3	1	1	17
Detroit	303	11. 8	14. 1	42	60	66
Duluth	33	15. 0	9. 2	2	3	43
El Paso	28	12. 8	17. 2	10	8	
Erie	29			4	3	78
Fall River [5]	22	8. 6	10. 3	3	4	53
Flint	26	9. 5	13. 4	3	7	49
Fort Worth	34	10. 8	9. 2	5	2	
White	23		7. 4	5	2	
Colored	11	(6)	22. 0	0	0	
Grand Rapids	32	10. 5	10. 4	7	6	103
Houston	52			3	8	
White	39			2	5	
Colored	13	(6)		1	3	
Indianapolis	78	10. 9	14. 9	8	9	63
White	64		14. 2	6	8	54
Colored	14	(5)	20. 1	2	1	122
Jersey City	73	11. 8	10. 8	6	10	45

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 65 cities.
[4] Data for 61 cities.
[5] Deaths for week ended Friday, May 20, 1927.
[6] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

Deaths from all causes in certain large cities of the United States during the week ended May 21, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, May 26, 1927, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended May 21, 1927		Annual death rate per 1,000 corresponding week 1926	Deaths under 1 year		Infant mortality rate, week ended May 21, 1927
	Total deaths	Death rate		Week ended May 21, 1927	Corresponding week 1926	
Kansas City, Kans.	30	13.4	10.3	2	2	39
White	24		9.2	2	1	45
Colored	6	(6)	15.3	0	1	0
Kansss City, Mo.	115	15.7	13.5	10	14	
Knoxville	23	11.8		3		
White	20			3		
Colored	3	(6)		0		
Los Angeles	244			31	19	89
Louisville	76	12.4	14.3	1	10	9
White	62		12.0	1	8	10
Colored	14	(6)	26.6	0	2	0
Lowell	23	10.9	12.3	3	2	58
Lynn	18	8.9	13.0	3	1	79
Memphis	76	22.1	18.9	5	4	
White	41		17.8	1	2	
Colored	35	(6)	20.7	4	2	
Milwaukee	113	11.2	12.1	15	16	70
Minneapolis	96	11.3	11.2	11	14	62
Nashville [5]	42	15.9	21.3	0	6	
White	23		17.0	0	4	
Colored	19	(6)	32.1	0	2	
New Bedford	25	10.9	11.3	1	7	17
New Haven	34	9.6	7.7	3	4	42
New Orleans	153	18.8	14.8	14	9	
White	93		12.8	6	4	
Colored	60	(6)	20.6	8	5	
New York	1,432	12.5	13.6	152	171	63
Bronx Borough	156	8.8	10.1	13	15	41
Brooklyn Borough	491	11.3	12.3	56	57	58
Manhattan Borough	602	17.3	18.0	67	80	79
Queens Borough	145	9.3	9.7	13	17	56
Richmond Borough	38	13.5	19.0	3	2	56
Newark, N. J	75	8.4	12.7	10	25	50
Oakland	52	10.2	9.4	2	4	23
Oklahoma City	21			5	0	
Omaha	49	11.7	13.0	2	3	22
Paterson	33	11.9	12.4	2	3	35
Philadelphia	433	11.1	13.5	41	61	55
Pittsburgh	162	13.1	13.5	17	20	59
Portland, Oreg	56			1	1	11
Providence	62	11.5	13.8	8	8	68
Richmond	55	14.9	13.0	2	4	26
White	34		10.9	2	3	40
Colored	21	(6)	18.0	0	1	0
Rochester	76	12.2	17.9	12	13	101
St. Louis	195	12.1	13.2	14	27	
St. Paul	58	12.1	10.9	7	3	64
Salt Lake City [5]	26	10.0	14.1	2	2	30
San Antonio	48	11.9	15.8	10	16	
San Diego	51	23.1	18.5	4	2	85
San Francisco	139	12.6	11.4	8	7	60
Schenectady	18	10.1	13.5	3	1	90
Seattle	48			3	3	31
Somerville	20	10.2	12.0	0	3	0
Spokane	24	11.5	8.1	0	1	0
Springfield, Mass	31	11.0	12.6	2	6	31
Syracuse	57	15.1	13.8	3	8	39
Toledo	63	10.8	13.3	6	10	58
Trenton	27	10.3	15.6	2	5	35
Washington, D. C	122	11.8	15.0	8	10	46
White	79		11.5	2	4	17
Colored	43	(6)	25.3	6	6	110
Waterbury	19			2	5	47
Wilmington, Del	24	9.9	12.6	5	3	124
Worcester	48	12.8	15.9	5	12	60
Yonkers	13	5.7	11.2	1	4	23
Youngstown	21	6.5	9.2	1	3	14

[5] Deaths for week ended Friday, May 20, 1927.
[6] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended May 28, 1927

DIPHTHERIA

	Cases
Alabama	24
Arkansas	4
California	128
Colorado	6
Connecticut	36
Florida	11
Georgia	6
Illinois	104
Indiana	26
Kansas	8
Louisiana	21
Maine	12
Maryland [1]	50
Massachusetts	75
Michigan	76
Minnesota	17
Mississippi	6
Missouri [2]	28
Montana	5
Nebraska	2
New Jersey	103
New Mexico	6
New York [3]	65
North Carolina	11
Oklahoma [4]	5
Oregon	5
Pennsylvania	222
Rhode Island	10
South Carolina	3
South Dakota	6
Tennessee	4
Texas	23
Utah [1]	9
Vermont	1
Washington	3
West Virginia	9
Wisconsin	35

INFLUENZA

	Cases
Alabama	37
Arkansas	31
California	19
Connecticut	1
Florida	2
Georgia	33
Illinois	21
Indiana	1
Kansas	22
Louisiana	13
Maine	1
Maryland [1]	8
Massachusetts	6
Michigan	5
Minnesota	4
Missouri [2]	4
Nebraska	5
New Jersey	8
Oklahoma [4]	30
Oregon	16
South Carolina	397
South Dakota	1
Tennessee	11
Texas	20
Washington	1
West Virginia	3
Wisconsin	59

MEASLES

Alabama	221
Arizona	31
Arkansas	50
California	924
Colorado	202
Connecticut	57
Delaware	8
Florida	113

[1] Week ended Friday.
[2] Exclusive of Kansas City.
[3] Exclusive of New York City.
[4] Exclusive of Oklahoma City and Tulsa.

MEASLES—continued

	Cases
Georgia	73
Illinois	728
Indiana	109
Kansas	753
Louisiana	33
Maine	143
Maryland [1]	34
Massachusetts	470
Michigan	292
Minnesota	110
Missouri [2]	75
Montana	39
Nebraska	185
New Jersey	78
New Mexico	167
New York [3]	845
North Carolina	1,586
Oklahoma [4]	317
Oregon	284
Pennsylvania	809
Rhode Island	3
South Carolina	231
South Dakota	102
Tennessee	49
Texas	102
Utah [1]	11
Vermont	108
Washington	310
Wisconsin	867
Wyoming	117

MENINGOCOCCUS MENINGITIS

	Cases
California	9
Illinois	5
Kansas	1
Louisiana	1
Massachusetts	4
Michigan	1
Minnesota	1
Montana	3
New Jersey	6
New York [3]	2
North Carolina	1
Oklahoma [4]	1
Oregon	2
Pennsylvania	3
Tennessee	2
Washington	7
West Virginia	1
Wisconsin	10

POLIOMYELITIS

	Cases
Arizona	2
California	4
Georgia	1
Louisiana	2
Massachusetts	2
Minnesota	2
Mississippi	2
Nebraska	1
Oklahoma [4]	1
South Carolina	3
Texas	1

SCARLET FEVER

	Cases
Alabama	7
Arizona	1
Arkansas	6
California	117
Colorado	132
Connecticut	4
Delaware	8
Florida	5
Georgia	11
Illinois	230
Indiana	70
Kansas	56
Louisiana	6
Maine	34
Maryland [1]	64
Massachusetts	427
Michigan	237
Minnesota	160
Mississippi	7
Missouri [2]	45
Montana	21
Nebraska	18
New Jersey	396
New Mexico	23
New York [3]	240
North Carolina	9
Oklahoma [4]	13
Oregon	22
Pennsylvania	481
Rhode Island	12
South Carolina	5
South Dakota	18
Tennessee	8
Texas	8
Utah [1]	15
Vermont	3
Washington	44
West Virginia	26
Wisconsin	156
Wyoming	26

SMALLPOX

	Cases
Alabama	26
Arkansas	2
California	17
Colorado	6
Florida	40
Georgia	22
Illinois	33
Indiana	106
Kansas	19
Louisiana	7
Michigan	37
Minnesota	2
Mississippi	2
Missouri [2]	3
Montana	4
Nebraska	5
New York [3]	3
North Carolina	30
Oklahoma [4]	43
Oregon	16
South Carolina	7

[1] Week ended Friday.
[2] Exclusive of Kansas City.
[3] Exclusive of New York City.
[4] Exclusive of Oklahoma City and Tulsa.

SMALLPOX—continued

	Cases
South Dakota	4
Tennessee	9
Texas	34
Utah [1]	2
Virginia	3
Washington	34
West Virginia	37
Wisconsin	70
Wyoming	8

TYPHOID FEVER

	Cases
Alabama	39
Arkansas	20
California	12
Colorado	2
Connecticut	5
Florida	21
Georgia	36
Illinois	13
Indiana	1
Kansas	3
Louisiana	39
Maine	3
Maryland [1]	4
Massachusetts	5
Michigan	5
Minnesota	2
Mississippi	21
Missouri [2]	2
Montana	5
Nebraska	2
New Jersey	3
New Mexico	1
New York [3]	6
North Carolina	23
Oklahoma [4]	15
Oregon	12
Pennsylvania	21
Rhode Island	1
South Carolina	37
Tennessee	16
Texas	11
West Virginia	9
Wisconsin	3

Reports for Week Ended May 21, 1927

DIPHTHERIA

	Cases
Alabama	10
California	113
District of Columbia	12
Georgia	9
Indiana	16
Iowa [1]	31
Minnesota	29
Mississippi	4
Missouri	33
Nebraska	1
North Dakota	7
Oklahoma [4]	3
Rhode Island	8
South Carolina	11
Tennessee	4

INFLUENZA

	Cases
Alabama	35
California	22
District of Columbia	1
Georgia	86
Indiana	8
Minnesota	3
Missouri	8
Oklahoma [4]	23
South Carolina	478
Tennessee	20

MEASLES

	Cases
Alabama	227
California	1,638
District of Columbia	4
Georgia	120
Indiana	209
Iowa [1]	281
Minnesota	149
Missouri	192
Nebraska	186
North Dakota	38
Oklahoma [4]	301
South Carolina	228
Tennessee	88
Wyoming	97

MENINGOCOCCUS MENINGITIS

	Cases
California	4
Iowa [1]	1
Minnesota	1
Missouri	5
North Dakota	1
Tennessee	1
Wyoming	1

POLIOMYELITIS

	Cases
California	4
Minnesota	1
North Dakota	3
Rhode Island	1
South Carolina	1

SCARLET FEVER

	Cases
Alabama	8
California	161
District of Columbia	13
Georgia	9
Indiana	107
Iowa [1]	33
Minnesota	168
Mississippi	6
Missouri	84
Nebraska	28
North Dakota	27

[1] Week ended Friday.
[2] Exclusive of Kansas City.
[3] Exclusive of New York City.
[4] Exclusive of Oklahoma City and Tulsa.

SCARLET FEVER—continued

	Cases
Oklahoma [4]	23
Rhode Island	18
South Carolina	5
Tennessee	29
Wyoming	11

SMALLPOX

	Cases
Alabama	27
California	22
District of Columbia	6
Georgia	37
Indiana	98
Iowa [1]	6
Minnesota	1
Mississippi	43
Missouri	24
Nebraska	9

SMALLPOX—continued

	Cases
North Dakota	1
Oklahoma [4]	36
South Carolina	25
Tennessee	17

TYPHOID FEVER

	Cases
Alabama	21
California	9
Georgia	31
Indiana	2
Iowa [1]	1
Minnesota	4
Mississippi	12
Missouri	5
Oklahoma [4]	28
South Carolina	39
Tennessee	20

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
February, 1927										
New Mexico	--------	11	9	1	196	--------	1	108	18	10
March, 1927										
New Mexico	--------	32	7	1	268	--------	0	60	28	3
April, 1927										
District of Columbia	1	111	10	--------	27	--------	1	91	0	0
Idaho	6	13	--------	--------	462	--------	0	115	60	3
Illinois	31	457	306	9	7,622	--------	4	1,145	113	40
Kansas	11	48	35	--------	4,618	--------	2	470	98	8
Louisiana	1	113	80	49	434	21	2	41	25	73
Maine	1	22	103	--------	673	--------	0	144	1	15
Maryland	4	123	228	1	1,201	--------	0	280	0	36
Minnesota	21	151	23	--------	874	--------	0	813	14	10
Missouri	14	243	37	12	1,448	--------	4	600	121	16
Oklahoma [1]	2	92	432	74	2,000	51	1	258	163	99
Rhode Island	1	32	--------	--------	20	--------	1	106	0	3
South Carolina	--------	129	7,691	538	833	401	6	26	96	33
South Dakota	4	20	27	--------	1,057	--------	2	267	42	1
West Virginia	--------	77	200	--------	818	--------	0	195	193	22
Wisconsin	41	157	267	--------	3,540	--------	2	804	42	4
Wyoming	1	6	--------	--------	331	--------	0	71	9	1

[1] Exclusive of Oklahoma City and Tulsa.

February, 1927

New Mexico:	Cases
Chicken pox	206
Conjunctivitis	5
German measles	176
Mumps	181
Puerperal septicemia	1
Tetanus	1
Trachoma	2
Whooping cough	20

March, 1927

New Mexico:	Cases
Chicken pox	181
Conjunctivitis	8
German measles	389
Lethargic encephalitis	1
Mumps	173
Puerperal septicemia	1
Rabies in animals	3
Trachoma	2
Whooping cough	38

[1] Week ended Friday.

[4] Exclusive of Oklahoma City and Tulsa.

April, 1927

	Cases
Anthrax:	
Louisiana	1
South Dakota	1
Chicken pox:	
District of Columbia	224
Idaho	57
Illinois	1,174
Kansas	439
Louisiana	49
Maine	124
Maryland	341
Minnesota	629
Missouri	373
Oklahoma	109
Rhode Island	54
South Carolina	539
South Dakota	80
West Virginia	219
Wisconsin	1,010
Wyoming	35
Dengue:	
Louisiana	2
South Carolina	19
Dysentery:	
Illinois	36
Louisiana	6
Maryland	2
Minnesota	1
Oklahoma	7
German measles:	
Illinois	193
Kansas	73
Maine	263
Maryland	14
Rhode Island	7
West Virginia	169
Wisconsin	254
Wyoming	63
Hookworm disease:	
Louisiana	12
South Carolina	131
Impetigo contagiosa:	
Maryland	2
Lead poisoning:	
Illinois	13
Missouri	1
Leprosy:	
Missouri	1
Rhode Island	1
Lethargic encephalitis:	
Idaho	1
Illinois	16
Louisiana	2
Maryland	2
Minnesota	2
Wisconsin	1
Mumps:	
Idaho	10
Illinois	2,263
Kansas	249
Louisiana	64
Maine	69
Maryland	877
Missouri	517
Oklahoma	134
Rhode Island	24
South Carolina	90
South Dakota	40
Wisconsin	1,396
Wyoming	125
Ophthalmia neonatorum:	
Illinois	51
Maryland	2

April, 1927

	Cases
Ophthalmia neonatorum—Continued.	
Missouri	2
Oklahoma	1
Wisconsin	5
Paratyphoid fever:	
Illinois	1
South Carolina	4
Puerperal septicemia:	
Illinois	2
Pink eye:	
Kansas	1
Rabies in animals:	
District of Columbia	7
Idaho	2
Maryland	11
Missouri	14
South Carolina	24
Rabies in man:	
South Dakota	1
Rocky Mountain spotted or tick fever:	
Idaho	5
Wyoming	14
Scabies:	
Oklahoma	1
Septic sore throat:	
Illinois	6
Maryland	8
Missouri	4
Oklahoma	3
Rhode Island	1
Tetanus:	
Illinois	2
Louisiana	5
Maine	1
Maryland	5
Missouri	1
Oklahoma	1
Trachoma:	
Illinois	7
Maryland	2
Minnesota	2
Missouri	18
Rhode Island	1
Tularemia:	
Kansas	1
Oklahoma	2
Typhus fever:	
Maryland	1
Vincent's angina:	
Kansas	6
Maine	7
Maryland	2
Oklahoma	1
Wyoming	1
Whooping cough:	
District of Columbia	47
Idaho	26
Illinois	850
Kansas	286
Louisiana	91
Maine	124
Maryland	332
Minnesota	89
Missouri	280
Oklahoma	141
Rhode Island	31
South Carolina	944
South Dakota	42
West Virginia	302
Wisconsin	639
Wyoming	9

RECIPROCAL NOTIFICATIONS

Notifications regarding communicable diseases sent during the month of April, 1927, to other State health departments by departments of health of certain States

Referred by—	Chicken pox	Scarlet fever	Small-pox	Tuber-culosis	Typhoid fever
California				1	
Connecticut		1			
Illinois	1		1		3
Massachusetts					2
Minnesota				20	
New York [1]					3
Rhode Island				1	

[1] One notification regarding rabies.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 100 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 30,900,000. The estimated population of the 94 cities reporting deaths is more than 30,200,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended May 14, 1927, and May 15, 1926

	1927	1926	Estimated expectancy
Cases reported			
Diphtheria:			
40 States	1,531	1,123	
100 cities	1,036	704	857
Measles:			
38 States	12,440	23,384	
100 cities	3,590	9,117	
Poliomyelitis:			
41 States	20	9	
Scarlet fever:			
40 States	4,545	3,954	
100 cities	2,020	1,890	1,144
Smallpox:			
40 States	692	530	
100 cities	125	147	123
Typhoid fever:			
40 States	282	220	
100 cities	47	45	49
Deaths reported			
Influenza and pneumonia:			
94 cities	787	942	
Smallpox:			
94 cities	0	3	
Omaha	0	1	
Los Angeles	0	2	

City reports for week ended May 14, 1927

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1918 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	75,333	3	1	0	0	1	4	C	4
New Hampshire:									
Concord	22,546	0	0	0	0	0	2	0	1
Manchester	83,097	0	1	0	0	2	0	0	1
Vermont:									
Barre	10,008	5	0	0	0	0	0	2	0
Burlington	24,089	1	0	0	0	0	16	1	0
Massachusetts:									
Boston	779,620	60	48	25	7	2	127	65	35
Fall River	128,993	1	3	2	1	1	6	1	3
Springfield	142,065	17	2	3	0	0	0	22	1
Worcester	190,757	29	4	2	0	0	0	7	1
Rhode Island:									
Pawtucket	69,760	0	1	2	0	0	1	0	3
Providence	267,918	0	9	4	0	1	3	0	3
Connecticut:									
Bridgeport	(1)	0	5	5	0	0	4	2	3
Hartford	160,197	4	6	1	0	0	2	5	2
New Haven	178,927	25	3	1	0	1	0	5	6
MIDDLE ATLANTIC									
New York:									
Buffalo	538,016	17	8	22		1	8	9	20
New York	5,873,356	224	231	381	18	11	81	207	181
Rochester	316,786	12	10	37		0	14	6	5
Syracuse	182,003	12	5	1		0	243	8	2
New Jersey:									
Camden	128,642	8	4	25	1	2	1	1	1
Newark	452,513	123	14	6	3	0	7	97	7
Trenton	132,020	1	3	1	0	2	0	0	7
Pennsylvania:									
Philadelphia	1,979,364	98	68	65		8	48	141	48
Pittsburgh	631,563	55	16	34		5	126	12	33
Reading	112,707	3	3	0		0	75	64	2
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	409,333	26	6	5	0	1	2	14	11
Cleveland	936,485	137	20	43	5	0	4	77	14
Columbus	279,836	9	3	2	0	0	1	1	0
Toledo	287,380	82	4	0	0	0	42	7	8
Indiana:									
Fort Wayne	97,846	7	2	1	0	1	16	0	4
Indianapolis	358,819	16	4	5	0	2	17	63	12
South Bend	80,091	2	1	1	0	0	8	0	1
Terre Haute	71,071	1	1	0	0	0	18	0	3
Illinois:									
Chicago	2,995,239	96	78	79	11	5	416	161	52
Peoria	81,564	2	1	0	0	0	8	0	3
Springfield	63,923	7	1	0	0	0	2	1	0

[1] No estimate made.

City reports for week ended May 14, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST NORTH CENTRAL—continued									
Michigan:									
Detroit	1,245,824	107	45	49	3	4	7	172	28
Flint	130,316	31	3	1	0	0	16	10	5
Grand Rapids	153,698	10	3	0	0	1	21	1	4
Wisconsin:									
Kenosha	50,891	26	1	0	0	0	8	33	0
Madison	46,385	4	1	0	1	0	11	1	2
Milwaukee	509,192	129	11	10	1	0	137	119	10
Racine	67,707	16	1	2	0	0	2	10	0
Superior	39,671	1	1	0	0	1	0	0	2
WEST NORTH CENTRAL									
Minnesota:									
Duluth	110,502	10	1	0	0	0	34	0	2
Minneapolis	425,435	87	16	11	0	1	17	0	6
St. Paul	246,001	34	15	12	0	1	14	2	7
Iowa:									
Davenport	52,469	0	1	0	0	--------	2	2	--------
Sioux City	76,411	2	1	0	0	--------	33	8	--------
Waterloo	36,771	0	0	0	0	--------	0	1	--------
Missouri:									
Kansas City	367,481	11	6	3	0	0	37	7	6
St. Joseph	78,342	2	1	0	0	0	21	0	2
St. Louis	821,543	22	38	39	0	0	33	84	--------
North Dakota:									
Fargo	26,403	0	0	0	0	0	5	5	0
Grand Forks	14,811	0	0	0	0	--------	0	0	--------
South Dakota:									
Aberdeen	15,036	2	0	0	0	--------	4	1	--------
Sioux Falls	30,127	0	0	0	0	--------	31	0	--------
Nebraska:									
Lincoln	60,941	6	1	0	0	0	122	7	0
Omaha	211,768	5	2	1	0	0	32	13	7
Kansas:									
Topeka	55,411	6	1	1	1	0	213	1	2
Wichita	88,367	15	1	1	0	0	32	1	2
SOUTH ATLANTIC									
Delaware:									
Wilmington	122,049	1	1	0	0	0	2	0	4
Maryland:									
Baltimore	796,296	84	21	34	11	3	10	31	32
Cumberland	33,741	0	0	0	0	0	1	0	1
Frederick	12,035	0	0	0	0	0	0	0	0
District of Columbia:									
Washington	497,906	31	12	18	1	1	5	0	3
Virginia:									
Lynchburg	30,395	19	1	2	0	0	17	1	1
Norfolk	(1)	16	1	0	0	0	197	5	0
Richmond	186,403	5	1	4	0	2	163	2	4
Roanoke	58,208	2	1	0	0	0	0	0	0
West Virginia:									
Charleston	49,019	5	1	1	0	3	5	0	2
Wheeling	56,208	1	1	0	0	0	18	1	1
North Carolina:									
Raleigh	30,371	5	1	0	0	0	71	0	2
Wilmington	37,061	2	0	0	0	1	35	4	2
Winston-Salem	69,031	0	0	1	0	1	242	33	5
South Carolina:									
Charleston	73,125	1	0	1	6	0	15	0	2
Columbia	41,225	9	0	0	0	1	5	2	3
Greenville	27,311	0	0	0	0	0	2	0	1
Georgia:									
Atlanta	(1)	2	1	2	13	2	18	4	6
Brunswick	16,809	0	0	0	0	0	1	9	0
Savannah	93,134	1	0	0	13	0	5	2	2
Florida:									
Miami	69,754	9	4	1	0	0	11	2	1
St. Petersburg	26,847	--------	0	--------	--------	0	--------	--------	0
Tampa	94,743	6	1	1	0	0	45	0	0

[1] No estimate made.

City reports for week ended May 14, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST SOUTH CENTRAL									
Kentucky:									
Covington	58,309	0	0	1	0	0	0	0	2
Louisville	306,935	8	4	4	0	1	0	11	9
Tennessee:									
Memphis	174,533	4	2	1	0	1	6	0	2
Nashville	136,220	7	1	1	0	2	0	0	3
Alabama:									
Birmingham	205,670	6	1	9	1	1	22	1	8
Mobile	65,955	0	0	0	0	1	5	0	0
Montgomery	46,481	2	1	0	0	0	35	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	31,643	1	1	0	0	----	5	1	2
Little Rock	74,216	1	1	0	1	1	2	0	0
Louisiana:									
New Orleans	414,493	1	7	17	1	2	4	0	15
Shreveport	57,857	9	1	2	0	0	19	3	2
Oklahoma:									
Oklahoma City	(1)	6	1	1	5	0	30	0	5
Tulsa	124,478	5	1	2	0	----	98	24	----
Texas:									
Dallas	194,450	3	3	3	0	0	99	1	4
Galveston	48,375	0	0	1	0	0	0	0	2
Houston	164,954	2	3	2	0	0	4	2	3
San Antonio	198,069	2	1	2	0	0	4	1	5
MOUNTAIN									
Montana:									
Billings	17,971	5	1	0	0	0	0	0	0
Great Falls	29,883	3	1	0	0	0	7	1	0
Helena	12,037	0	0	0	0	0	0	0	0
Missoula	12,668	0	0	0	0	0	0	0	1
Idaho:									
Boise	23,042	0	0	0	0	0	0	0	0
Colorado:									
Denver	280,911	11	10	6	----	1	42	4	5
Pueblo	43,787	4	1	0	0	0	85	0	0
New Mexico:									
Albuquerque	21,000	4	1	0	0	0	3	8	1
Utah:									
Salt Lake City	130,948	36	3	5	0	0	10	1	0
Nevada:									
Reno	12,665	0	0	0	0	0	1	0	0
PACIFIC									
Washington:									
Seattle	(1)	47	5	1	0	----	100	38	----
Spokane	108,897	2	2	0	0	----	1	0	----
Tacoma	104,455	14	1	1	0	0	83	0	0
Oregon:									
Portland	282,383	10	5	5	0	0	201	3	0
California:									
Los Angeles	(1)	45	36	23	11	1	217	14	26
Sacramento	72,260	17	2	5	0	0	4	3	4
San Francisco	537,530	22	19	6	5	1	77	85	3

[1] No estimate made.

City reports for week ended May 14, 1927—**Continued**

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	3	5	0	0	0	0	1	0	0	5	17
New Hampshire:											
Concord	1	1	0	0	0	0	0	0	0	0	2
Manchester	2	1	0	0	0	0	1	0	0	0	16
Vermont:											
Barre	0	2	0	0	0	0	0	0	0	0	3
Burlington	0	0	0	0	0	0	0	0	0	1	14
Massachusetts:											
Boston	57	112	0	0	0	15	2	1	1	25	259
Fall River	4	7	0	0	0	3	0	0	0	2	26
Springfield	6	5	0	0	0	2	0	0	0	7	36
Worcester	8	13	0	0	0	2	0	1	0	12	58
Rhode Island:											
Pawtucket	1	1	0	0	0	1	0	0	0	0	14
Providence	10	5	0	0	0	3	0	0	0	2	49
Connecticut:											
Bridgeport	9	11	0	0	0	4	0	0	0	0	35
Hartford	3	21	0	0	0	2	0	0	0	3	30
New Haven	6	6	0	0	0	3	1	0	0	1	39
MIDDLE ATLANTIC											
New York:											
Buffalo	17	25	0	0	0	8	1	0	0	16	135
New York	258	681	0	0	0	[1] 114	9	7	2	115	1,505
Rochester	13	14	0	0	0	2	1	0	0	5	86
Syracuse	10	11	0	0	0	1	0	0	0	10	35
New Jersey:											
Camden	6	2	0	0	0	1	0	0	0	0	36
Newark	23	50	0	0	0	8	1	0	0	38	87
Trenton	3	4	0	0	0	4	0	0	0	1	48
Pennsylvania:											
Philadelphia	79	143	0	0	0	49	4	3	0	31	506
Pittsburgh	28	27	0	0	0	11	0	0	0	20	181
Reading	2	6	0	0	0	0	0	0	0	2	22
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	14	25	2	2	0	10	1	0	0	0	140
Cleveland	32	65	1	0	0	11	1	1	0	29	176
Columbus	10	2	3	0	0	4	0	0	0	21	60
Toledo	12	6	4	0	0	9	1	0	0	40	76
Indiana:											
Fort Wayne	3	4	2	0	0	0	0	1	0	2	27
Indianapolis	9	17	13	24	0	4	0	0	0	20	99
South Bend	3	5	0	0	0	0	0	0	0	3	8
Terre Haute	3	0	0	0	0	0	0	0	0	1	17
Illinois:											
Chicago	111	99	2	1	0	67	3	2	0	97	659
Peoria	3	2	1	0	0	1	0	0	0	0	21
Springfield	2	6	0	0	0	0	1	0	0	0	19
Michigan:											
Detroit	79	102	2	0	0	24	2	1	0	96	307
Flint	5	28	2	0	0	1	0	0	0	3	27
Grand Rapids	7	23	0	2	0	1	0	0	0	7	33
Wisconsin:											
Kenosha	2	3	0	0	0	0	0	0	0	4	1
Madison	2	3	0	0	0	0	0	0	0	5	6
Milwaukee	23	48	1	1	0	9	0	0	0	29	117
Racine	4	7	2	0	0	0	0	0	0	15	9
Superior	2	0	2	0	0	1	0	0	0	0	8
WEST NORTH CENTRAL											
Minnesota:											
Duluth	5	8	1	0	0	3	0	0	0	1	26
Minneapolis	34	42	7	0	0	7	1	0	0	0	79
St. Paul	22	27	4	0	0	4	0	0	0	15	64

[1] Pulmonary tuberculosis only.

City reports for week ended May 14, 1927—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL—continued											
Iowa:											
Davenport	2	0	3	0			0	0		0	
Sioux City	2	4	1	2			0	0		5	
Waterloo	1	1	0	0			0	0		6	
Missouri:											
Kansas City	9	12	1	5	0	4	0	0	0	10	105
St. Joseph	2	9	0	0	0	3	0	0	0	0	28
St. Louis	30	34	4	3	0	8	1	1	0	29	207
North Dakota:											
Fargo	1	5	0	0	0	1	0	0	0	2	7
Grand Forks	1	6	0	0			0	0		0	
South Dakota:											
Aberdeen	3	1	0	0			0	0		0	
Sioux Falls	1	5		0			0	0		0	
Nebraska:											
Lincoln	1	1	0	0	0	1	0	0	0	6	14
Omaha	4	9	8	3	0	1	0	0	0	0	52
Kansas:											
Topeka	3	0	1	0	0	1	0	0	0	7	14
Wichita	2	10	2	0	0	0	0	0	0	5	33
SOUTH ATLANTIC											
Delaware:											
Wilmington	4	3	0	0	0	0	0	0	0	1	30
Maryland:											
Baltimore	32	33	0	0	0	12	2	1	1	41	228
Cumberland	1	0	0	0	0	0	0	0	0	0	10
Frederick	1	2	0	0	0	0	0	0	0	0	3
District of Col.:											
Washington	22	25	2	2	0	16	1	0	0	13	118
Virginia:											
Lynchburg	1	0	0	0	0	0	0	2	0	0	10
Norfolk	1	6	1	0	0	5	0	0	0	14	
Richmond	3	4	0	0	0	2	1	0	0	3	54
Roanoke	1	0	1	7	0	1	0	0	0	0	11
West Virginia:											
Charleston	0	1	1	0	0	2	0	0	0	0	19
Wheeling	2	3	0	0	0	4	0	0	0	0	16
North Carolina:											
Raleigh	1	0	1	0	0	1	0	0	0	0	13
Wilmington	1	0	0	0	0	0	0	0	0	10	10
Winston-Salem	0	1	4	0	0	1	0	0	0	38	22
South Carolina:											
Charleston	0	0	0	1	0	1	1	0	0	5	30
Columbia	0	0	1	1			0	0		8	22
Greenville	0	0	1	1	0	0	1	0	0	0	5
Georgia:											
Atlanta	3	2	4	7	0	5	0	1	1	6	77
Brunswick	0	0	0	0	0	1	1	0	0	0	7
Savannah	1	1	0	1	0	5	1	0	0	2	24
Florida:											
Miami	1	0		1	0	1	1	1	0	14	27
St. Petersburg	0		0		0	1	0		0		14
Tampa	0	1	0	1	0	3	0	1	1	2	27
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	2	1	0	0	1	0	0	0	0	27
Louisville	6	13	1	3	0	5	1	0	0	18	75
Tennessee:											
Memphis	4	15	3	2	0	10	1	2	0	14	69
Nashville	3	0	1	0	0	6	1	2	1	5	47
Alabama:											
Birmingham	2	0	7	6	0	5	2	9	1	26	56
Mobile	0	0	1	0	0	4	0	0	0	1	30
Montgomery	0	0	1	0	0	0	0	0	0	1	8

City reports for week ended May 14, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	0	0	0	--------	--------	0	1	1	0	13
Little Rock	1	0	0	0	0	1	0	2	1	6	--------
Louisiana:											
New Orleans	4	3	2	0	0	13	2	2	1	10	169
Shreveport	0	0	1	1	0	3	0	1	1	0	26
Oklahoma:											
Oklahoma City	1	0	3	0	0	2	0	0	0	0	32
Tulsa	1	4	2	2	--------	--------	0	0	--------	12	--------
Texas:											
Dallas	2	0	4	9	0	1	0	0	0	1	41
Galveston	0	1	0	0	0	2	1	0	0	0	14
Houston	1	0	0	4	0	1	0	0	0	0	41
San Antonio	0	1	0	0	0	8	0	0	0	0	63
MOUNTAIN											
Montana:											
Billings	1	0	1	0	0	0	0	0	0	2	5
Great Falls	1	5	1	0	0	0	0	0	0	0	8
Helena	1	0	0	0	0	0	0	0	0	0	--------
Missoula	1	0	0	0	0	0	0	0	0	0	1
Idaho:											
Boise	1	0	0	0	0	0	0	0	0	0	6
Colorado:											
Denver	12	41	2	0	0	12	0	1	0	1	81
Pueblo	1	21	0	0	0	1	1	0	0	0	13
New Mexico:											
Albuquerque	0	1	0	0	0	4	0	0	0	0	12
Utah:											
Salt Lake City	2	13	0	1	0	2	0	0	0	10	35
Nevada:											
Reno	0	1	0	0	0	0	0	0	0	0	1
PACIFIC											
Washington:											
Seattle	9	8	5	0	--------	--------	0	2	--------	34	--------
Spokane	4	7	4	17	--------	--------	0	0	--------	3	--------
Tacoma	3	7	2	12	0	0	0	0	0	1	23
Oregon:											
Portland	7	2	6	6	0	2	0	1	0	6	67
California:											
Los Angeles	23	32	7	0	0	28	1	1	0	11	245
Sacramento	2	1	0	4	0	3	0	0	0	0	27
San Francisco	14	22	3	2	0	10	1	1	0	40	145

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	1	0	0	0	0	0	0	2	0
Fall River	0	1	1	0	0	0	0	0	0
Connecticut:									
Bridgeport	1	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	7	6	3	1	0	0	1	1	0
Rochester	0	0	1	0	0	0	0	0	0
Pennsylvania:									
Philadelphia	0	0	0	0	2	2	0	0	0

City reports for week ended May 14, 1927—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cleveland	1	0	0	1	0	0	1	0	0
Illinois:									
Chicago	10	2	4	1	0	0	0	0	0
Michigan:									
Detroit	3	0	1	0	0	0	0	0	0
Grand Rapids	1	1	0	0	0	0	0	0	0
Wisconsin:									
Milwaukee	7	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	1	0	0	0	0	0	0	0	0
Missouri:									
Kansas City	1	0	0	0	0	0	0	0	0
Kansas:									
Wichita	1	0	0	0	0	0	0	0	0
SOUTH ATLANTIC									
North Carolina:									
Winston-Salem	0	0	0	0	1	1	0	0	0
South Carolina:									
Charleston	0	0	0	0	1	1	0	0	0
Columbia	0	1	0	0	0	0	0	0	0
Georgia:									
Savannah	0	0	0	0	1	0	0	0	0
Florida:									
Miami	0	0	0	0	1	0	0	0	0
St. Petersburg	------	0	------	0	------	1	0	------	0
Tampa [1]	0	0	0	0	3	1	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Nashville	0	0	0	0	1	0	0	0	0
Alabama:									
Mobile	0	0	0	0	1	1	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock	0	0	0	0	0	1	0	0	0
Louisiana: [2]									
Shreveport	0	0	0	0	0	1	0	0	0
Oklahoma:									
Oklahoma City	0	0	0	1	0	0	0	0	0
Texas:									
Dallas [3]	0	0	0	0	1	1	0	0	0
Houston	0	0	0	0	1	0	0	0	0
MOUNTAIN									
Montana:									
Billings	0	1	0	0	0	0	0	0	0
Missoula	1	0	0	0	0	0	0	0	0
Colorado:									
Denver	3	2	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Spokane	1	------	0	------	0	------	0	0	------
Oregon:									
Portland	1	1	0	0	0	0	0	0	0
California:									
Los Angeles	0	0	0	0	1	1	0	1	1
Sacramento	0	1	0	0	0	0	0	0	0
San Francisco	1	0	0	0	0	0	0	1	0

[1] Typhus fever: 1 case at Tampa, Fla.
[2] Rabies (human): 1 death at New Orleans, La.
[3] Dengue: 1 case at Dallas, Texas.

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended May 14, 1927, compared with those for a like period ended May 15, 1926. The population figures used in computing the rates are approximate estimates as of July 1, 1926 and 1927, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had estimated aggregate populations of approximately 30,440,000 in 1926 and 30,960,000 in 1927. The 95 cities reporting deaths had nearly 29,780,000 estimated population in 1926 and nearly 30,290,000 in 1927. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, April 10 to May 14, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Apr. 17, 1926	Apr. 16, 1927	Apr. 24, 1926	Apr. 23, 1927	May 1, 1926	Apr. 30, 1927	May 8, 1926	May 7, 1927	May 15, 1926	May 14, 1927
101 cities	110	[2] 175	118	180	110	171	115	183	121	[3] 175
New England	47	104	73	135	83	95	106	130	87	104
Middle Atlantic	119	271	162	270	114	243	126	273	135	282
East North Central	86	[2] 136	87	132	98	138	89	160	96	132
West North Central	246	109	182	141	204	159	198	131	202	135
South Atlantic	89	141	67	136	67	105	75	120	76	116
East South Central	47	87	26	31	72	76	62	76	52	[3] 81
West South Central	30	143	47	126	56	180	60	143	82	113
Mountain	191	108	82	189	118	99	146	153	182	99
Pacific	134	115	145	157	153	188	177	110	174	94

MEASLES CASE RATES

101 cities	1,770	[2] 762	1,792	785	1,708	640	1,713	699	1,565	[3] 606
New England	1,809	223	1,663	295	1,526	323	1,710	269	1,196	346
Middle Atlantic	1,702	173	1,596	146	1,420	231	1,432	213	1,200	298
East North Central	1,471	[2] 861	1,459	778	1,488	638	1,456	568	1,373	453
West North Central	3,354	1,318	4,148	1,556	4,060	1,229	4,511	1,527	4,181	985
South Atlantic	2,919	1,317	2,516	1,596	2,507	1,022	1,926	1,583	1,917	1,553
East South Central	2,772	397	3,434	520	2,875	377	3,237	520	3,449	[3] 368
West South Central	133	1,019	163	1,267	159	935	125	889	155	575
Mountain	529	2,086	1,075	1,798	866	1,546	884	1,636	1,394	1,304
Pacific	372	2,212	501	2,107	664	1,532	656	1,605	675	1,262

SCARLET FEVER CASE RATES

101 cities	307	[2] 391	284	363	292	338	294	360	326	[3] 341
New England	373	423	222	346	281	402	222	392	311	439
Middle Atlantic	187	583	201	520	221	448	217	541	249	475
East North Central	343	[2] 280	288	296	290	282	310	283	356	290
West North Central	910	397	899	343	879	334	940	272	871	320
South Atlantic	181	150	158	161	216	194	175	129	220	149
East South Central	150	219	228	168	171	194	186	183	202	[3] 151
West South Central	133	50	172	42	146	34	176	59	155	21
Mountain	173	953	210	935	219	953	137	1,007	246	728
Pacific	338	243	260	209	204	199	206	212	257	202

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1926 and 1927, respectively.

[2] Madison, Wis., not included.

[3] Covington, Ky., not included.

Summary of weekly reports from cities, April 10 to May 14, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926—Continued

SMALLPOX CASE RATES

	Week ended—									
	Apr. 17, 1926	Apr. 16, 1927	Apr. 24, 1926	Apr. 23, 1927	May 1, 1926	Apr. 30, 1927	May 8, 1926	May 7, 1927	May 15, 1926	May 14, 1927
101 cities	26	[2] 24	31	33	26	21	26	22	26	[3] 21
New England	0	0	0	0	0	0	0	0	0	0
Middle Atlantic	0	0	0	0	0	0	0	0	0	0
East North Central	14	[2] 32	22	29	19	33	22	28	20	20
West North Central	42	56	44	40	30	38	58	34	36	26
South Atlantic	43	27	47	65	28	20	30	36	39	38
East South Central	52	97	98	163	98	66	72	56	119	[3] 59
West South Central	95	88	112	96	146	25	159	34	116	59
Mountain	27	27	46	54	36	9	36	36	55	9
Pacific	137	26	139	97	102	65	56	73	67	92

TYPHOID FEVER CASE RATES

	Apr. 17, 1926	Apr. 16, 1927	Apr. 24, 1926	Apr. 23, 1927	May 1, 1926	Apr. 30, 1927	May 8, 1926	May 7, 1927	May 15, 1926	May 14, 1927
101 cities	7	[2] 8	8	7	9	8	8	9	8	[3] 8
New England	9	9	5	0	5	5	9	2	0	5
Middle Atlantic	7	5	8	7	6	5	7	10	10	5
East North Central	2	[2] 1	1	3	4	6	4	6	5	3
West North Central	4	12	6	4	6	4	6	2	2	2
South Atlantic	4	13	7	11	19	16	13	18	4	9
East South Central	0	36	26	31	21	31	16	15	0	[3] 70
West South Central	34	17	26	13	17	13	17	38	43	25
Mountain	9	9	0	27	18	9	0	18	9	9
Pacific	13	18	21	10	27	18	11	3	8	10

INFLUENZA DEATH RATES

	Apr. 17, 1926	Apr. 16, 1927	Apr. 24, 1926	Apr. 23, 1927	May 1, 1926	Apr. 30, 1927	May 8, 1926	May 7, 1927	May 15, 1926	May 14, 1927
95 cities	53	[2] 22	38	18	33	18	25	13	16	[3] 13
New England	52	16	40	12	35	7	14	5	5	14
Middle Atlantic	59	21	34	20	27	21	22	15	17	14
East North Central	67	[2] 11	42	11	46	10	29	7	18	10
West North Central	23	12	32	21	17	12	13	8	6	4
South Atlantic	43	39	30	22	28	29	19	17	17	24
East South Central	47	87	103	56	98	36	98	41	31	[3] 32
West South Central	53	43	62	31	26	47	44	13	26	13
Mountain	46	18	46	0	9	9	18	9	18	9
Pacific	21	14	4	10	11	21	4	21	4	7

PNEUMONIA DEATH RATES

	Apr. 17, 1926	Apr. 16, 1927	Apr. 24, 1926	Apr. 23, 1927	May 1, 1926	Apr. 30, 1927	May 8, 1926	May 7, 1927	May 15, 1926	May 14, 1927
95 cities	241	[2] 154	201	159	177	144	163	131	150	[3] 122
New England	302	156	233	151	210	183	170	139	165	144
Middle Atlantic	288	176	240	199	219	169	175	167	166	151
East North Central	233	[2] 142	192	135	152	128	178	122	147	99
West North Central	133	129	137	125	108	56	122	69	82	71
South Atlantic	208	188	206	180	178	156	170	114	183	125
East South Central	331	132	259	153	233	127	222	143	181	[3] 119
West South Central	181	78	128	78	150	125	110	112	128	134
Mountain	155	153	109	162	118	189	82	99	91	54
Pacific	117	117	71	97	74	117	78	79	92	114

[2] Madison, Wis., not included.

[3] Covington, Ky., not included.

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Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1926 and 1927, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1926	1927	1926	1927
Total	101	95	30,438,500	30,960,600	29,778,400	30,289,800
New England	12	12	2,211,000	2,245,900	2,211,000	2,245,900
Middle Atlantic	10	10	10,457,000	10,567,000	10,457,000	10,567,000
East North Central	16	16	7,644,900	7,804,500	7,644,900	7,804,500
West North Central	12	10	2,585,500	2,626,600	2,470,600	2,510,000
South Atlantic	21	20	2,799,500	2,878,100	2,757,700	2,835,700
East South Central	7	7	1,008,300	1,023,500	1,008,300	1,023,500
West South Central	8	7	1,213,800	1,243,300	1,181,500	1,210,400
Mountain	9	9	572,100	580,000	572,100	580,000
Pacific	6	4	1,946,400	1,991,700	1,475,300	1,512,800

FOREIGN AND INSULAR

PLAGUE ON VESSEL

Further relative to plague on steamship "Armadale Castle"—Cape Town--April 4, 1927.[1]—On April 4, 1927, the mail steamship *Armadale Castle* arrived at Cape Town, Union of South Africa, with a case of plague on board in the person of an electrician who had been on the vessel during three voyages. The patient was removed to hospital and died two hours later. The previous stops of the vessel were Durban, East London, and Port Elizabeth, ports in the Union of South Africa. No plague, human or rodent, was known to exist in or near these ports and no rat evidence was found on the vessel. The *Armadale Castle* had been fumigated before its last sailing from London and was believed to be practically free from rats, although the crowded condition of the hold prevented thorough examination. The vessel left for Madeira and Southampton April 8, 1927.

THE FAR EAST

Report for week ended April 30, 1927.—The following report for the week ended April 30, 1927, was transmitted by the eastern bureau of the health section of the secretariat of the League of Nations, located at Singapore, to the headquarters at Geneva:

Maritime towns	Plague		Cholera		Small-pox		Maritime towns	Plague		Cholera		Small-pox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths
British India:							China:						
Bombay	----	13	----	2	77	32	Canton	0	0	0	0	6	2
Calcutta	----	1	----	121	86	71	Shanghai	0	0	0	0	0	1
Rangoon	----	3	----	2	36	6	Macao	0	0	0	0	----	1
Bassein	----	1	----	0	0	0	Hong Kong	0	0	0	0	1	0
Madras	----	0	----	0	6	1	Manchuria: Mukden	0	0	0	0	1	0
Siam: Bangkok	0	0	14	9	2	1	Kwantung: Dairen	0	0	0	0	1	0
French Indo-China:							Japan: Yokohama	0	0	0	0	1	0
Saigon and Cholon	0	0	55	47	1	0	Egypt: Port Said	1	0	0	0	0	0
Haiphong	0	0	134	123	0	0							

[1] Public Health Reports, May 13, 1927, p. 1340.

Telegraphic reports from the following maritime towns indicated that no case of plague, cholera, or smallpox was reported during the week:

ASIA

Arabia.—Jeddah, Perim, Kamaran, Aden.
Iraq.—Basrah.
Persia.—Mohammerah, Bender-Abbas, Bushire, Lingah.
British India.—Karachi, Chittagong, Cochin, Negapatam, Tuticorin, Moulmein, Vizagapatam.
Portuguese India.—Nova Goa.
Federated Malay States.—Port Swettenham.
Straits Settlements.—Penang, Singapore.
Dutch East Indies.—Batavia, Sabang, Belawan-Deli, Pontianak, Semarang, Menado, Banjermasin, Cheribon, Palembang, Makassar, Balikpapan, Samarinda, Surabaya, Padang.
Sarawak.—Kuching.
British North Borneo.—Sandakan, Jesselton, Kudat, Tawao.
Portuguese Timor.—Dilly.
French Indo-China.—Tourane.
Philippine Islands.—Manila, Iloilo, Jolo, Cebu, Zamboanga.
China.—Amoy, Tientsin.
Formosa.—Keelung, Takao.
Chosen.—Chemulpo, Fusan.
Manchuria.—Yingkow, Antung, Changchun, Harbin.
Kwantung.—Port Arthur.
Japan.—Nagasaki, Niigata, Shimonoseki, Moji, Tsuruga, Kobe, Osaka, Hakodate.

AUSTRALASIA AND OCEANIA

Australia.—Adelaide, Melbourne, Sydney, Brisbane, Rockhampton, Townsville, Port Darwin, Broome, Fremantle, Carnarvon, Thursday Island, Cairns.
New Guinea.—Port Moresby.
New Britain Mandated Territory.—Rabaul and Kokopo.
New Zealand.—Auckland, Wellington, Christchurch, Invercargill, Dunedin.
Samoa.—Apia.
New Caledonia.—Noumea.
Fiji.—Suva.
Hawaii.—Honolulu.
Society Islands.—Papeete.

AFRICA

Egypt.—Suez, Alexandria.
Anglo-Egyptian Sudan.—Port Sudan, Suakin.
Eritrea.—Massaua.
French Somaliland.—Djibouti.
British Somaliland.—Berbera.
Italian Somaliland.—Mogadiscio.
Zanzibar.—Zanzibar.
Kenya.—Mombasa.
Tanganyika.—Dar-es-Salaam.
Seychelles.—Victoria.
Portuguese East Africa.—Mozambique, Beira, Lourenco-Marques.
Union of South Africa.—East London, Port Elizabeth, Cape Town, Durban.
Reunion.—Saint Denis.
Mauritius.—Port Louis.
Madagascar.—Majunga, Tamatave, Diego-Suarez.

AMERICA

Panama.—Colon, Panama.

Reports had not been received in time for publication from:

Ceylon.—Colombo.
Dutch East Indies.—Tarakan.
Union of Socialist Soviet Republics.—Vladivostok.

Belated information:

Week ended April 16th: *Pondicherry,* 1 fatal smallpox case. *Karikal,* nil.

ANGOLA (PORTUGUESE WEST AFRICA)

Plague—March 1–15, 1927.—During the period March 1 to 15, 1927, five cases of plague were reported in Angola, Portuguese West Africa. Of these, four cases occurred in Benguela district and one case and two deaths at Port Alexander, Mossamedes district.

Other communicable diseases.—During the same period other communicable diseases were reported as follows: *Influenza*—generally epidemic in light form, with 72 cases reported, of which 34 were at Loanda. (Population of Loanda 20,000.)

Malaria—present with about 75 reported cases. *Sleeping sickness*—four cases reported in Cuanza Norte. *Smallpox*—at Cuanza Norte, two cases.

AUSTRIA

Rat-extermination measures—Vienna.—Control of rats in Austria is based on a Federal law of February 4, 1925, which provides that in case of rat infestation the municipal authorities are empowered to use adequate rat-extermination measures. In the summer of 1926 the municipality of Vienna entered upon an inspection of the city to determine the rat-infested districts, and maps were made showing these sections, which formed the basis of the rat-killing campaign that followed. The area of the city was divided into 72 plots, to each of which was assigned an official charged with the rat-extermination work. A marked difference was found in the degree of rat infestation, the greatest numbers of rats being found in houses of antiquated sewerage, in open markets, slaughterhouses, and storehouses. Of the 43,000 houses in Vienna from 5 to 10 per cent were found to be badly infested. The rat-killing days were set for January 27 and 28 and March 3 and 4. The bait used for the first two days contained two per cent phosphorus; in the second rat-killing period, squill or sea-onion was used instead of the barium, the use of which was proposed but was rejected as possibly dangerous. The number of rats killed was estimated at 250,000 on the first two days and 500,000 for the second period of two days.

CANADA

Communicable diseases—Week ended May 14, 1927.—The Canadian Ministry of Health reports cases of certain communicable diseases from seven Provinces of Canada for the week ended May 14, 1927, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Total
Cerebrospinal meningitis				1				1
Influenza	10			3				13
Lethargic encephalitis				2				2
Smallpox				25	4		4	33
Typhoid fever		4	369	25	1		2	401

Communicable diseases—Quebec—Week ended May 14, 1927.—The Bureau of Health of the Province of Quebec reports cases of certain communicable diseases for the week ended May 14, 1927, as follows:

Disease	Cases	Disease	Cases
Chicken pox	6	Scarlet fever	45
Diphtheria	32	Tuberculosis	53
German measles	10	Typhoid fever	330
Influenza	2	Whooping cough	12
Measles	89		

Typhoid fever—Montreal—April 24–May 21, 1927.—Typhoid fever was reported in Montreal and municipalities in the immediate vicinity as follows:

Week ended—	Cases	Deaths	Week ended—	Cases	Deaths
April 30, 1927	105	23	May 14, 1927	367	16
May 7, 1927	106	19	May 21, 1927	770	26

CHINA

Influenza—Manchuria—February–March, 1927.—Under date of April 19, 1927, influenza was reported to have been prevalent in Manchuria during the months of February and March, 1927. The type was stated to have been mild, with long convalescence.

Proposed sanitary measures—Harbin.—A report received under the same date relative to proceedings of the Harbin Sanitary Commission shows that the measures of public health proposed included cleanliness of the city, licensing of doctors, pharmacists, and nurses, and general measures for prevention of disease.

Vital statistics—Disease notification—Free vaccination against smallpox.—The quarterly report of the North Manchuria Plague Prevention Service, issued March, 1927, states that municipal authorities have been urged to institute the recording of vital statistics and notification of infectious diseases. Free vaccination against smallpox has been begun at hospitals operated by the service.

EGYPT

Communicable diseases—Week ended April 8, 1927.—During the week ended April 8, 1927, communicable diseases were reported in Egypt as follows:

Diseases	Cases	Deaths	Diseases	Cases	Deaths
Influenza	39		Typhoid fever	17	
Smallpox	6	1	Typhus fever	45	7

Plague—April 16–22, 1927.—During the week ended April 22, 1927, seven cases of plague were reported in Egypt, of which one case each occurred in the districts of Akhmim, Suhag, and Tanta, and four cases in the district of Guerga, at two localities.

Summary—January 1–April 22, 1927.—Total, 30 cases, as compared with 16 cases reported for the corresponding period of the preceding year.

Later cases.—In the Province of Guerga, from April 23 to 28, 1927, three cases with one death were reported.

Typhus fever—Alexandria—April 23-29, 1927.—During the week ended April 29, 1927, two cases of typhus fever with two deaths were reported at Alexandria, Egypt.

GREAT BRITAIN

Smallpox—London—April 28–May 9, 1927.—Virulent type indicated.—During the period April 28 to May 9, 1927, nine cases of smallpox with four deaths were reported in London, England. The occurrence was at Hendon, a suburb of the city. The high mortality was noted as indicative of a more virulent type of the disease than that prevalent in North England.

GREAT BRITAIN AND IRELAND

Vital statistics—Year 1926.—A summary giving the number of births, deaths, and marriages, and the rates per 1,000 population during the year 1926 is given below. The figures are taken from the Journal of the Royal Statistical Society, Vol. XC, Part II, 1927. They were compiled from the quarterly returns of the respective registrars general.

Countries	Births		Deaths		Marriages	
	Number	Per 1,000 population	Number	Per 1,000 population	Number	Per 1,000 population
England and Wales	694, 897	17.8	453, 795	11.6	46, 168	4.8
Scotland	102, 450	20.9	63, 775	13.0	31, 241	6.4
Northern Ireland	28, 208	22.3	18, 837	14.9	7, 269	5.8
Irish Free State	61, 171	20.6	41, 715	14.0	----------	----------

IRELAND (IRISH FREE STATE)

Typhus fever—May 1–7, 1927. During the week ended May 7, 1927, two cases of typhus fever were reported in the Irish Free State, of which one case occurred in the Dublin district and one in the rural district of Letterkenny, Donegal County.

MADAGASCAR

Plague—March 1–15, 1927.—During the 15 days ended March 15, 1927, 144 cases of plague with 123 deaths were reported in the Island of Madagascar. The occurrence according to Provinces was as follows: Ambositra, cases, 7; Antisirabe, 13; Miarinarivo, (Itasy) 38; Moramanga, 9; Tananarive, 77. The distribution according to type was: Bubonic, 88; pneumonic, 25; septicemic, 31.

MAURITIUS

Plague—Port Louis—February, 1927.—A fatal case of plague was reported at Port Louis, Mauritius during the month of February, 1927.

MEXICO

Smallpox—State of Tamaulipas—May 21, 1927.—Information received under date of May 21, 1927, shows smallpox present at two localities in the State of Tamaulipas, Mexico, viz., Ciudad Camargo, with 4 cases, and San Miguel, situated about 18 miles east of Ciudad Camargo, with about 36 cases.

MONGOLIA

Further relative to plague outbreak—Mongolia—October, 1926.[1]—Information received under date of April 19, 1927, relative to the plague outbreak reported in Mongolia in October, 1926, shows that the focus of infection was a locality situated 35 to 50 miles from Chechan Han. The first case occurred October 10, in a girl who was employed as sheep tender in the locality of Chulotoi. It was stated that the girl had tried to catch a tarabagan and had chased it into a hole. She was taken ill shortly after with fever, and swellings in the armpits and groin, and died after six days of illness. The nature of the epidemic was verified by bacteriological examination of material taken at the locality.

SENEGAL

Plague—Smallpox—April 21-30, 1927.—During the 10 days ended April 30, 1927, 21 cases of plague with five deaths were reported in Senegal, occurring in the interior districts of Tivaouane and Thies. During the same period smallpox was reported with one case in Senegal, one in French Guinea, and a few cases in the Niger Territory.

UNION OF SOUTH AFRICA

Plague—Orange Free State—April 3-9, 1927.—During the week ended April 9, 1927, a fatal case of plague was reported in Rouville district, Orange Free State. The case occurred in a native and on a farm.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given:

Reports Received During Week Ended June 3, 1927[2]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Feb. 27-Mar. 26, 1927: Cases, 10,610; deaths, 5,451.
Bombay	Apr. 10-16	4	1	
Siam				Apr. 2-9, 1927: Cases, 125; deaths, 80.
Bangkok	Apr. 2-9	34	24	

[1] Public Health Reports, Dec. 31, 1926, p. 3098; Feb. 4, 1927, p. 359; Feb. 11, 1927, pp. 423, 447.
[2] From medical officers of the Public Health Service, American consuls, and other sources.

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

Reports Received During Week Ended June 3, 1927—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Angola:				
Benguela (District)	Mar. 1-15	5		Portuguese West Africa.
Port Alexander	do	1	2	In Mossamedes District.
Egypt				Apr. 16-22, 1927: Cases, 7. Jan. 1-Apr. 22, 1927: Cases, 30; corresponding period, year 1926: Cases, 16.
Guerga Province	Apr. 16-22	4		At two localities.
Do	Apr. 23-28	3	1	
India				Feb. 27-Mar. 26, 1927: Cases, 9,044; deaths, 6,309.
Bombay	Apr. 3-16	17	17	
Madras Presidency	Mar. 27-Apr. 2	16	5	
Madagascar				Mar. 1-15, 1927: Cases, 144; deaths, 123. Bubonic, cases, 88; pneumonic, 25; septicemic, 31.
Province—				
Ambositra	Mar. 1-15	7	7	Bubonic, 4; septicemic, 3.
Antisirabe	do	13	13	Pneumonic, 4; septicemic, 9.
Miarinarivo	do	138	31	Bubonic, cases, 32; deaths, 25; pneumonic, cases and deaths, 2; septicemic, cases and deaths, 4.
Moramanga	do	9	8	Bubonic, 4 and 3; pneumonic, 1; septicemic, 4.
Tananarive	do	77	64	Bubonic, cases, 48; deaths, 36; pneumonic cases, 18; deaths, 17; septicemic, 11. (Including cases, 5; deaths, 4, in Tananarive Town.)
Mauritius:				
Port Louis	Feb. 1-28	1	1	
Senegal	Apr. 24-30	21	5	In interior districts.
Siam				Apr. 3-9, 1927: Cases, 1; deaths, 1.
Bangkok	Apr. 3-9	1	1	
Union of South Africa:				
Orange Free State—				
Rouville District	do	1	1	In native. On farm.
On vessel:				
S. S. Armadale Castle	Apr. 4	1	1	At Cape Town, Union of South Africa, from London, via South African ports. Case in member of crew. Death occurred in hospital on shore. No plague rats and no rat evidence on vessel. Armadale Castle left Apr. 8 for Madeira and Southampton.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria:				
Oran	Apr. 21-30	20		
Angola:				
Cuanza Norte	Mar. 1-15	2		
Canada	May 8-14	33		
Alberta	do	4		
British Columbia—				
Vancouver	May 2-8	1		
Manitoba	May 8-14	4		
Winnipeg	May 15-21	1		
Ontario	May 8-14	25		
Toronto	do	3		
China:				
Swatow	Apr. 10-16			Present.
Egypt	Apr. 2-8			Cases, 6.
Great Britain	Apr. 24-30	277		
England and Wales—				
Bradford	do	1		
Hull	May 1-7	1		
London	Apr. 28-May 9	9	4	Occurring at Hendon, a suburb.
Newcastle on Tyne	May 1-7	6		
Stoke on Trent	do	1		
Scotland—				
Dundee	do	8		

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

Reports Received During Week Ended June 3, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
India				Feb. 27-Mar. 26, 1927: Cases, 27,168; deaths, 6,652.
Bombay	Apr. 3-16	142	91	
Madras	Apr. 17-23	6	1	
Mexico:				
Ciudad Camargo	May 21	4		In State of Tamaulipas.
San Miguel	do	36		In State of Tamaulipas. Number estimated.
Persia:				
Teheran	Dec. 23-Jan. 22		3	
Do	Jan. 23-Feb. 23		2	
Portugal:				
Lisbon	Apr. 24-30	6		
Senegal				Apr. 21-30, 1927: 1 case.
Dependencies—				
French Guinea	Apr. 21-30	1		
Niger Territory	do			Present.
Siam				Apr. 3-9, 1927: Cases, 9; deaths, 2.
Bangkok	Apr. 3-9	5	2	
Spain:				
Valencia	May 1-7	4		

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Apr. 11-20	7		
Oran	Apr. 21-30	4		
Bulgaria:				
Sofia	Apr. 23-29	1	1	
China:				
Manchuria—				
Harbin	Mar. 28-Apr. 3	1		
Egypt	Apr. 2-8	45	7	
Alexandria	Apr. 23-29	2	2	
Ireland (Irish Free State)—				
Donegal district—				
Letterkenny	May 1-7	1		
Dublin district	do	1		
Mexico:				
Mexico City	do	1		Including municipalities in Federal District.
Portugal:				
Lisbon	do	1		
Tunisia:				
Tunis	Apr. 21-30	4		

Reports Received from January 1 to May 27, 1927 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
China:				
Canton	Nov. 1-30	10	3	
Chungking	Nov. 14-20			Present.
Do	Jan. 2-Mar. 19			Do.
Tsingtao	Nov. 14-Dec. 11			Do.
Chosen	Sept. 1-Oct. 31	252	159	
French Settlements in India	Aug. 29-Dec. 18	131	97	
Do	Jan. 2-Mar. 5	20	15	
India	Oct. 10-Jan. 1			Cases, 20,298; deaths, 13,507.
Do	Jan. 2-Feb. 26			Cases, 17,443; deaths, 9,810.
Bombay	Jan. 9-29	2	1	
Calcutta	Oct. 31-Jan. 1	385	313	
Do	Jan. 2-Apr. 9	745	601	
Madras	Dec. 26-Jan. 1	2	2	
Do	Jan. 2-Apr. 16	13	10	
Rangoon	Nov. 21-Jan. 1	11	7	
Do	Jan. 2-Apr. 2	62	52	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

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

Reports Received from January 1 to May 27, 1927—Continued

CHOLERA—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China	July 1-Dec. 31			Cases, 8,508.
Do	Jan. 1-Mar. 20	772		
Saigon	Oct. 31-Nov. 13	2	2	
Province—				
Annam	July 1-Aug. 31	511	401	
Cambodia	do	727	472	
Cochin-China	do	432	349	
Kwang-Chow-Wan	do	703	361	
Laos	do	56	47	
Tonkin	do	1,017	646	
Japan:				
Hiogo	Nov. 14-20	3		
Philippine Islands:				
Manila	Oct. 31-Nov. 6	1		
Russia	Aug. 1-Sept. 30	8		
Siam	Apr. 1-Jan. 1			Cases, 7,847; deaths, 5,164.
Do	Jan. 2-Apr. 2			Cases, 608; Deaths, 426.
Bangkok	Oct. 31-Jan. 1	16	5	
Do	Jan. 9-Apr. 2	112	65	
Straits Settlements	July 25-Oct. 16		60	
Singapore	Nov. 21-Jan. 1	14	8	
Do	Feb. 6-12	1		

PLAGUE

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Reported Nov. 16	1		
Bona	Jan. 11-19	3	2	
Oran	Nov. 21-Dec. 10	32	22	
Tarafaraoui	Nov. 1-Dec. 9	10	9	Near Oran.
Angola:				
Benguela district	Oct. 1-Dec. 31	17	10	
Do	Jan. 19-31	1		At Cavaco.
Cuanza Norte district	Dec. 1-31	18	10	
Mossamedes district	Dec. 16-31	10		
Do	Jan. 19-Feb. 28	8		
Port Alexander	Feb. 9-15	1		
Argentina	Jan. 9-15	5		
Azores:				
St. Michaels Island—Furnas	Nov. 3-17	4	1	27 miles distant from port.
Brazil:				
Porto Alegre	Jan. 1-31	4	2	
Rio de Janeiro	Nov. 28-Dec. 4	2	2	
Do	Dec. 26-Jan. 1	1	1	On vessel in harbor.
Do	Jan. 2-8	1		
Sao Paulo	Nov. 1-14	1	1	
British East Africa:				
Kenya—				
Kisumu	Jan. 16-22	1	1	
Mombasa	Feb. 27-Mar. 19	7	7	
Tanganyika Territory	Nov. 21-Dec. 18		12	
Uganda	Sept. 1-Oct. 31	162	152	
Canary Islands:				
Atarfe	Dec. 20	1	1	Vicinity of Las Palmas.
Las Palmas	Jan. 8-Feb. 12	2		
San Miguel	do	1		Vicinity of Santa Cruz de Teneriffe.
Celebes:				
Makassar	Dec. 22			Outbreak.
Ceylon:				
Colombo	Nov. 14-Dec. 11	3	1	2 plague rodents.
Do	Jan. 2-Apr. 2	47	26	13 plague rodents.
China:				
Mongolia	Reported Dec. 21	500		
Nanking	Oct. 31-Dec. 18			Present.
Do	Feb. 6-Mar. 5			Do.
Ecuador:				
Guayaquil	Nov. 1-Dec. 31	26	8	Rats taken, 50,615; found infected, 184.
Do	Jan. 1-Mar. 31	79	22	Rats taken, 71,517; found infected, 237.

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

Reports Received from January 1 to May 27, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Egypt	Jan. 1-Dec. 9			Cases, 149.
Do	Jan. 1-Mar. 18			Cases, 14.
Alexandria	Nov. 19-Dec. 2	2		
Do	Apr. 2-15	3	1	
Charkia Province	Jan. 5	1	1	At Zagazig (Tel el Kebir).
Gharbia Province	Jan. 4	1	1	
Do	Apr. 29	1		
Guerga district	Apr. 5-21	13	6	
Kafr el Sheikh	Dec. 3-9	2		
Marsa Matrah	Dec. 23-29	10		
Do	Jan. 27	1		
Port Said	Mar. 12-18	2	1	
Tanta district	Nov. 19-Dec. 20	3		
Greece:				
Athens and Piræus	Nov. 1-Dec. 31	19	5	
Do	Jan. 1-Mar. 31	24	3	
Patras	Nov. 28-Dec. 4		1	
Pravi	Nov. 27	1	1	Province of Drama-Kavalla.
India	Oct. 10-Jan. 1			Cases, 16,162; deaths, 9.905.
Do	Jan. 2-Feb. 19			Cases, 12,100; deaths, 8,934.
Bombay	Nov. 21-27	1	1	
Do	Jan. 16-Apr. 2	28	25	
Madras	Oct. 1-Jan. 1	581	324	
Do	Jan. 2-Mar. 26	1,001	592	
Rangoon	Nov. 14-Dec. 25	11	9	
Do	Jan. 2-Apr. 2	55	50	Rats found plague infected, 12.
Indo-China	July 1-Dec. 31			Cases, 52; deaths, 34.
Do	Jan. 1-Feb. 28	15		
Province—				
Cambodia	do	10	10	
Cochin-China	do	14	9	
Kwang-Chow-Wan	do	10		July, 1925: Cases, 22; deaths, 18.
Iraq:				
Baghdad	Jan. 23-Mar. 12	4	1	
Java:				
Batavia	Nov. 7-Jan. 1	91	90	Province.
Do	Jan. 2-Apr. 9	251	244	Do.
East Java and Madura	Oct. 24-Jan. 1	17	17	
Do	Jan. 2-Mar. 5	18	18	
Pribolingo District	Jan. 7			Outbreak at Ngadas.
Semarang	do			Seaport. Present.
Madagascar:				
Province—				
Ambositra	Dec. 16-31	10	10	
Do	Jan. 1-Feb. 28	58	56	
Analalava	Oct. 16-31	1	1	
Antisirabe	Dec. 16-21	2	2	
Do	Jan. 1-Feb. 28	69	69	
Diego-Suarez	do	7	7	
Itasy	Oct. 16-Dec. 31	39	39	
Do	Jan. 1-Feb. 28	32	125	
Maevatanana	Oct. 16-31	10	10	
Majunga	do	3	1	
Moramanga	Oct. 16-Dec. 31	92	67	
Do	Jan. 1-Feb. 28	60	53	
Tamatave	Oct. 16-Dec. 31	107	69	
Tananarive	do			Cases, 533; deaths, 497.
Do	Jan. 1-Feb. 28	423	415	
Town—				
Tamatave	Nov. 16-30	2		
Tananarive	Oct. 16-Dec. 31	48	47	
Do	Jan. 1-Feb. 15	19	18	
Mauritius:				
Plaines Wilhems	Oct. 1-Nov. 30	3	3	
Pamplemousses	Dec. 1-31	3	3	
Port Louis	Oct. 1-Dec. 31	39	35	
Do	Jan. 1-31	5	3	
Nigeria	Aug. 1-Dec. 31	1,066	967	
Do	Jan. 1-31	42	42	
Peru	Nov. 1-Dec. 31			Cases, 90; deaths, 26.
Do	Jan. 1-Mar. 31	92	23	
Department—				
Ancash	Dec. 1-31	6	6	
Do	Jan. 1-Mar. 31	3		
Cajamarca	do	36	6	
Callao	Mar. 1-31	1	1	

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

Reports Received from January 1 to May 27, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Peru—Continued.				
Department—Continued.				
Ica—				
Chincha	Nov. 1-30	1		
Lambayeque	Feb. 1-28	6	2	
Chiclayo	Nov. 1-30	3		
Do	Jan. 1-31	2		
Libertad	Dec. 1-31	2		
Do	Jan. 1-Feb. 28	6		
Lima	Nov. 1-Dec. 31	42	14	
Do	Jan. 1-Mar. 31	75	20	
Piura	Feb. 1-28	1		
Portugal:				
Lisbon	Nov. 23-26	3	2	
Russia	May 1-June 30	44		
Do	July 1-Dec. 31	98		
Senegal	July 1-31	178	162	
Dakar	Apr. 1-10	10	7	
Diourbel	Nov. 20-30	12	1	
Thies	Mar. 28-Apr. 20	17	15	
Tivaouane	Dec. 19-25	6	2	In interior.
Do	Mar. 21-Apr. 20	27	10	Do.
Siam	Apr. 1-Jan. 1			Cases, 30; deaths, 22.
Do	Jan. 16-Mar. 26			Cases, 12; deaths, 10.
Bangkok	Feb. 27-Mar. 26	2	2	
Syria:				
Beirut	Nov. 11-Dec. 20	4		
Do	Feb. 1-10	1		
Tunisia	Dec. 1-31			Cases, 43.
Do	Jan. 12-26			Cases, 34.
Acheche district	Feb. 11-14	14	14	Pneumonia.
Bousse	Jan. 12-26	8		
Djeneniana	Feb. 11-14	8		
Kairouan	do	3		
Mahares	do	15		
Sfax	Oct. 1-Dec. 31	304	128	
Turkey:				
Constantinople	Dec. 15-25	1		
Union of South Africa:				
Cape Province—				
Cradock district	Jan. 2-Mar. 26	4	2	
De Aar district	Nov. 21-27	1		Native.
Glen Gray district	Jan. 31-Feb. 12	8	8	
Hanover district	Nov. 14-Jan. 1	3	2	
Do	Jan. 2-Apr. 2	3	2	
Middleburg district	Dec. 5-11	1	1	Do.
Richmond district	Mar. 6-12	3	2	
Tarkastad district	Mar. 27-Apr. 2	3	1	
Orange Free State:				
Bloomfontein district	Feb. 27-Mar. 19	3	3	
Bothaville district	Dec. 5-18	2	1	
Hoopstad district	Nov. 7-13	1	1	Native.
Do	Dec. 5-25	2	1	Do.
Do	Jan. 2-Feb. 12	4		
Vredefort district	Dec. 19-25	10	5	
Do	Feb. 6-12	2	1	
On vessel:				
S. S. Leconte de Lisle	Feb. 21-23	2		At Tamatave, Madagascar.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria	Sept. 21-Dec. 31			Cases, 797.
Do	Jan. 1-Mar. 20			Cases, 518.
Algiers	Dec. 11-31	4		
Do	Jan. 1-Apr. 10	14		
Oran	Mar. 21-Apr. 20	31		
Angola	Oct. 1-15			Present in Congo district.
Congo	Feb. 2-15	1		
Cuanza Norte	Nov. 1-15			Present.
Malange	Feb. 2-15	2		
Arabia:				
Aden	Dec. 12-18	1		Imported.
Do	Apr. 3-9	1		
Belgium	Oct. 1-10	1		

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

Reports Received from January 1 to May 27, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Brazil:				
Bahia	Oct. 30-Dec. 18	12	8	
Para	Oct. 31-Nov. 6		1	
Do	Feb. 5-12		1	
Pernambuco	Oct. 17-Dec. 25	58	4	
Rio de Janeiro	Year 1926			Cases, 4,033; deaths, 2,180.
Do	Jan. 2-Apr. 16	77	34	
Sao Paulo	Aug. 23-Dec. 5	34	18	
British East Africa:				
Kenya—				
Nairobi	Dec. 1-31	15	5	
Tanganyika Territory	Oct. 31-Nov. 20	2		
Do	Jan. 1-Mar. 5	34	21	
Zanzibar	Oct. 1-31	23	12	
British South Africa:				
Northern Rhodesia	Nov. 27-Dec. 3			Cases, 200. In natives.
Do	Feb. 26-Mar. 25	131	4	
Bulgaria	Nov. 1-30	1		
Canada	Dec. 5-Jan. 1			Cases, 155.
Do	Jan. 2-May 7			Cases, 624.
Alberta	Dec. 5-Jan. 1	132		
Do	Jan. 2-May 7	248		
Calgary	Nov. 28-Dec. 25	12		
Do	Jan. 2-May 7	38	1	
Edmonton	Dec. 1-31	4		
Do	Jan. 1-Mar. 31	18		
British Columbia—				
Vancouver	Jan. 31-Apr. 24	10		
Manitoba	Dec. 5-Jan. 1	9		
Do	Jan. 2-May 7	24		
Winnipeg	Dec. 19-25	1		
Do	Jan. 2-May 14	13		
New Brunswick	Feb. 13-26	2		
Ontario	Dec. 5-Jan. 1	96		
Do	Jan. 2-Apr. 30	289		
Kingston	Jan. 1-Feb. 19	3		
Ottawa	Dec. 12-31	5		
Do	Jan. 9-May 7	11		
Toronto	Dec. 14-25	14		
Do	Jan. 1-May 7	92	1	
Saskatchewan	Dec. 5-Jan. 1	18		
Do	Jan. 2-May 7	64		
Regina	Jan. 16-22	1		
Chile:				
Concepcion	Dec. 26-Jan. 1		5	
Iquique	Mar. 1-15	2		
China:				
Amoy	Jan. 1-Mar. 26	8		
Antung	Mar. 21-27	1		
Canton	Nov. 1-Dec. 31	6		
Chefoo	Jan. 23-Apr. 9			Present.
Chungking	Nov. 7-Dec. 25			Do.
Do	Jan. 2-Mar. 19			Do.
Foochow	Nov. 7-Dec. 25			Do.
Do	Feb. 27-Apr. 2			Do.
Hankow	Nov. 6-30			Do.
Hong Kong	Jan. 23-Apr. 2	121	81	
Manchuria—				
An-shan	Mar. 21-Apr. 16	4		
Dairen	Feb. 20-Apr. 3	23	6	
Harbin	Dec. 16-31	3		
Do	Feb. 7-13	1		
Kai-Yuan	Mar. 20-27	2		
Mukden	Dec. 5-11	1		
Do	Apr. 3-9	1		
Tiehling	do	1		
Nanking	Dec. 12-25			Do.
Do	Jan. 2-Mar. 5			Do.
Shanghai	Dec. 12-18		1	
Do	Jan. 20-Apr. 9	2	2	
Swatow	Nov. 21-27			Do.
Do	Mar. 27-Apr. 9			Do.
Tientsin	Jan. 16-Apr. 2	27		
Do	Apr. 3-9	6	1	
Chosen	Aug. 1-Nov. 30	53	19	
Do	Jan. 1-31	98	21	
Seoul	Nov. 1-30	2		

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

Reports Received from January 1 to May 27, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Egypt:				
Alexandria	Jan. 8-Apr. 8	2		
Cairo	June 11-Aug. 26	27	4	
Estonia	Oct. 1-30	2		
France	Sept. 1-Dec. 31	293		
Paris	Dec. 1-31	10	3	
Do	Jan. 1-Apr. 20	29	4	
French Settlements in India	Aug. 29-Jan. 1	127	127	
Do	Jan. 2-Feb. 20	58	58	
French Sudan:				
Kita	Mar. 28-Apr. 3			Present.
Germany:				
Stuttgart	Nov. 28-Dec. 4	7		
Gold Coast	Aug. 1-Nov. 30	59	14	
Do	Jan. 1-31	5	1	
Great Britain:				
England and Wales	Nov. 14-Jan. 1			Cases, 2,262.
Do	Jan. 2-Apr. 23			Cases, 7,263.
Birmingham	Mar. 13-19	5		
Bradford	Jan. 9-Apr. 23	6		
Cardiff	Feb. 13-19	1		
Leeds	Mar. 27-Apr. 16	2		
London	Reported Apr. 28	6		
Monmouthshire	Feb. 25	22		
Newcastle-on-Tyne	Dec. 5-13	2		
Do	Jan. 2-Apr. 30	22		
Normanton	Dec. 30	1		9 miles from Leeds.
Sheffield	Nov. 28-Jan. 1	60		
Do	Jan. 2-Apr. 30	554	1	
Wakefield	Jan. 30-Feb. 2	2		
Scotland—				
Dundee	Mar. 31-Apr. 30	113		
Greece	Nov. 1-Dec. 31	25		
Athens	Dec. 1-31	14	2	
Do	Mar. 1-31	9	2	Including Piræus.
Saloniki	Mar. 8-14		1	
Guatemala:				
Guatemala City	Nov. 1-Dec. 31		15	
Do	Jan. 1-Mar. 31		74	
India	Oct. 10-Jan. 1			Cases, 22,946; deaths, 6,006.
Do	Jan. 2-Feb. 26			Cases, 37,824; deaths, 9,029.
Bombay	Nov. 7-Jan. 1	37	20	
Do	Jan. 2-Apr. 2	578	312	
Calcutta	Oct. 31-Jan. 1	449	311	
Do	Jan. 2-Apr. 9	2,414	1,776	
Karachi	Dec. 19-25	1	1	
Do	Jan. 2-Apr. 16	43	26	
Madras	Nov. 21-Jan. 1	32	2	
Do	Jan. 2-Apr. 9	294	11	
Rangoon	Nov. 28-Jan. 1	2	2	
Do	Jan. 2-Apr. 2	309	71	
Indo-China:				
Saigon	Dec. 26-Jan. 1	3		
Do	Feb. 6-Mar. 12	2		
Iraq:				
Baghdad	Oct. 31-Dec. 4	7	4	
Do	Jan. 23-Apr. 2	7	1	
Basra	Nov. 7-13	2	1	
Do	Mar. 20-26			
Italy	Aug. 29-Jan. 1	28		
Do	Jan. 2-Feb. 26	4		
Genoa	Dec. 30-31	1		
Do	Jan. 1-10	2		
Jamaica	Nov. 26-Jan. 1	37		Reported as alastrim
Do	Jan. 2-Apr. 30	128		Do.
Japan	Oct. 24-Jan. 1	27		
Do	Jan. 2-Feb. 26	61		
Kobe	Nov. 14-20	1		
Do	Jan. 23-Apr. 2	3		
Sasebo	May 8-14	3		
Yokohama	Nov. 27-Dec. 3	2		
Do	Mar. 26-Apr. 1	3		
Java:				
Batavia	Nov. 29-Dec. 3	2		Province.
Do	Mar. 13-19	1		
East Java and Madura	Oct. 24-Dec. 25	11	1	
Do	Jan. 2-27	4	3	
Lithuania	Nov. 1-30	2		

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

Reports Received from January 1 to May 27, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Luxemburg	Nov. 1-Dec. 31	2		
Mexico	July 1-Dec. 31		799	
Chihuahua	Dec. 31			Several cases; mild.
Do	Jan. 31-Feb. 6			Present.
Ciudad Juarez	Dec. 14-27		2	
Manzanillo	Mar. 5-Apr. 25	7	5	
Mazatlan	Feb. 14-Apr. 17		3	
Mexico City	Nov. 23-Dec. 25	6		Including municipalities in Federal District.
Do	Dec. 26-Apr. 30	9		Do.
Nuevo Leon State—				
Cerralvo	Mar. 11			Epidemic.
Montemorelos	Feb. 24			Reported present.
Monterey	Feb. 24-Mar. 20	64	2	Other cases stated to exist.
Parral	Jan. 31-Feb. 6			Cases, 25. Unofficially reported
Piedras Negras district	Feb. 25	68		At Nueva Rosita.
Saltillo	Feb. 6-Apr. 9		2	
San Luis Potosi	Nov. 12-Dec. 18		3	
Do	Jan. 9-May 7		28	
Tampico	Jan. 21-31	1		
Torreon	Nov. 28-Jan. 1		12	
Do	Jan. 2-Mar. 19		13	
Victoria	Feb. 24			Present.
Netherlands East Indies	Dec. 14			Island of Borneo; epidemic in two villages.
Do	Feb. 7-28			Epidemic in 6 localities.
Nigeria	Aug.-Dec. 31	165	40	
Do	Jan. 1-31	96	12	
Persia:				
Teheran	Nov. 22-Dec. 23		5	
Peru:				
Arequipa	Dec. 1-31		1	
Do	Jan. 1-31		1	
Laredo	Dec. 1			Severe outbreak; vicinity of Trujillo.
Poland	Oct. 11-Dec. 31			Cases, 32; deaths, 3.
Do	Jan. 1-8			Deaths, 1.
Portugal:				
Lisbon	Nov. 22-Jan. 1	43	4	
Do	Jan. 2-Apr. 23	37		
Rumania	Jan. 1-Sept. 30	7	1	
Russia	May 1-June 30	705		
Do	July 1-Sept. 30	884		
Do	Nov. 1-Dec. 31	1,815		
Senegal:				
Dakar	Jan. 9-Apr. 3	4		
Gueudel	Apr. 11-17	1		
Kebener	do	1		
Niger Colony	Apr. 1-20	3		
Ouakam	Mar. 20-27	4		Vicinity of Dakar.
Tivaouane	Apr. 11-17	2		
Siam	Apr.-Jan. 1			Cases, 711; deaths, 265.
Do	Jan. 2-Apr. 2			Cases, 102; deaths, 43.
Bangkok	Oct. 31-Jan. 1	28	10	
Do	Jan. 2-Apr. 2	45	28	
Sierra Leone:				
Makeni	Feb. 22-28	3		
Nanowa	Dec. 1-15	1		Pendembu district.
Spain	July 1-Oct. 31		15	
Valencia	Feb. 8-Apr. 30	11		
Sumatra:				
Medan	Feb. 20-26	1		
Straits Settlements:				
Singapore	Oct. 31-Jan. 1	12	2	
Do	Jan. 2-Feb. 26	4	3	
Tunisia	Oct. 1-Dec. 31	9		
Do	Jan. 1-Mar. 20	23		
Tunis	Jan. 1-Mar. 10	3		
Turkey:				
Constantinople	Feb. 1-7		1	
Union of South Africa:				
Cape Province—				
Albany district	Jan. 23-29			Outbreaks.
Caledon district	Dec. 5-11			Do.
Steynsburg district	do			Do.
Stutterheim district	Nov. 21-27			Do.
Wodehouse district	Jan. 30-Feb. 12			Do.

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

Reports Received from January 1 to May 27, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa—Con.				
Natal—				
Durban district	Nov. 7-27	9		Including Durban municipality. Total from date of outbreak: Cases, 62; deaths, 16.
Orange Free State	Nov. 14-27			Outbreaks.
Bothaville district	Nov. 21-27			Do.
Transvaal	Nov. 7-20	2		Europeans.
Bethel district	Jan. 23-29			Outbreaks.
Johannesburg	Nov. 14-20	1		
West Africa:				
French Guiana—				
Kissidougou	Feb. 19			Present.
French Sudan—				
Kayes	do			Do.
Yugoslavia	Nov. 1-Dec. 31	4	1	
Do	Jan. 1-31	3		

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria	Sept. 21-Dec. 20	59	2	
Do	Jan. 1-Mar. 20			Cases, 210; deaths, 11.
Algiers	Feb. 1-Apr. 10	46		
Oran	Mar. 21-Apr. 20	8		
Angola:				
Benguela district	Feb. 16-28	1		
Argentina:				
Rosario	Dec. 1-31		1	
Do	Jan. 25-31		3	
Bulgaria	July 1-Dec. 31	39	5	
Do	Jan. 1-Feb. 28	12	5	
Sofia	Apr. 16-22	1		
Chile	Sept. 15-Nov. 15	39	4	
Chillan	Jan. 1-31	4	3	
Concepcion	Sept. 15-Nov. 15	1		
Do	Jan. 23-29		1	
Iquique	Apr. 3-9		1	
Lebu	Sept. 15-Nov. 15	6	2	
Linares	do	2		
Los Andes	do	8		
Santiago	Sept. 15-Dec. 31	25	2	
Do	Feb. 1-28	3		
Valparaiso	Sept. 15-Dec. 25	10		
Do	Jan. 2-Apr. 16	6	2	
China:				
Antung	Nov. 22-Dec. 5	4		
Chefoo	Oct. 24-Nov. 6			Present.
Chungking	Dec. 25-31			Do.
Do	Feb. 27-Mar. 12			Do.
Chosen	Aug. 4-Dec. 31	54	5	
Do	Jan. 1-31	65	10	
Chemulpo	Mar. 1-31	5		
Seoul	Nov. 1-30	1		
Do	Jan. 1-Mar. 31	10	2	
Czechoslovakia	Oct. 1-Dec. 31	10		
Do	Jan. 1-Mar. 31	83	3	
Egypt:				
Alexandria	Dec. 3-9		1	
Do	Jan. 22-Apr. 7	5	2	
Cairo	Oct. 29-Nov. 4	1	1	
Estonia	Dec. 1-31	1		
Do	Jan. 1-Mar. 31	14		
France	Nov. 1-30	1		
Gold Coast	Sept. 1-30	1	1	
Greece	Nov. 1-30			Cases, 12.
Athens	Nov. 1-Dec. 31	19	2	
Do	Feb. 1-Mar. 31	17	3	
Drama	Dec. 1-31	2		
Kavalla	do	2		
Patras	Jan. 23-29		1	
Ravokan	Dec. 1-31	1		
Saloniki	Jan. 25-31	1		

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

Reports Received from January 1 to May 27, 1927—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China:				
Tonkin	Aug. 1-31	2		
Iraq:				
Baghdad	Mar. 6-19	2	2	
Ireland:				
Clare County—				
Tulla district	Jan. 9-15	1		Suspect.
Donegal County—				
Letterkenny	Mar. 27-Apr. 30	6		Rural district.
Milford	Mar. 27-Apr. 3	3		
Italy	Aug. 29-Sept. 23	3		
Do	Jan. 16-Feb. 26	15		
Japan	Jan. 2-29			Cases, 2.
Tokyo prefecture	Dec. 5-25	9		
Tokyo City	do	5	1	
Latvia	Jan. 1-31	2		
Lithuania	Sept. 1-Dec. 31	41	4	
Do	Jan. 1-31	24		
Mexico	July 1-Dec. 31			Deaths, 604.
Aguascalientes	Jan. 9-Feb. 5	2		
Durango	Jan. 1-31		1	
Guadalajara	Jan. 25-31		1	
Mexico City	Dec. 5-11	3		Including municipalities in Federal District.
Do	Jan. 2-Apr. 23	96		Do.
Parral	Jan. 30-Feb. 5	1		
Morocco	Apr. 9			Present.
Marrakech	do			Do.
Mogador	do			Do.
Nigeria	Sept. 1-30	1		
Palestine	Apr. 12-15	3		
Acre	Dec. 29-Jan. 3	1		
Beisan	Dec. 21-27	1		
Haifa	Nov. 23-Dec. 13	5		
Do	Dec. 28-Feb. 7	7		
Jaffa	Nov. 23-Dec. 27	7		
Do	Jan. 11-Feb. 21	3		
Majdal	Dec. 28-Jan. 3	1		
Do	Apr. 5-11	1		
Nazareth	Nov. 16-Jan. 3	12		
Do	Mar. 1-7	1		
Ramleh	Jan. 31-Feb. 7	1		
Safad	Dec. 21-Jan. 3	2		
Peru:				
Arequipa	Year, 1926		9	District.
Lima	Jan. 1-31		1	
Poland	Oct. 11-Dec. 25			Cases, 341; deaths, 27.
Do	Jan. 1-Mar. 12			Cases, 825; deaths, 68.
Rumania	Aug. 1-Nov. 30	255	11	
Do	Jan. 1-31	391	31	
Russia	May 1-June 30	6,043		
Do	July 1-Aug. 31	3,060		
Do	Nov. 1-Dec. 31	4,609		
Spain	July 1-Sept. 30		4	
Seville	Mar. 16-22		1	
Syria:				
Aleppo	Mar. 13-19	1		
Tunisia	Oct. 1-Dec. 27	30		
Do	Jan. 1-Mar. 20	141		
Tunis	Jan. 21-Mar. 31	4		
Do	Reported Apr. 13	3		
Turkey:				
Constantinople	Dec. 12-25	3		
Do	Jan. 16-22			1 death reported by press.
Union of South Africa	Oct. 1-Dec. 31			Cases, 233; deaths, 30.
Cape Province	do	47	7	
Do	Jan. 1-Feb. 28	51	4	
Do	Mar. 13-19			Outbreaks.
Clydesdale	Mar. 6-12			Do.
East London	Nov. 21-27	1		Native. Imported.
Port St. Johns district	Dec. 5-11			Outbreaks. On farm.
Xalanga district	Mar. 20-Apr. 2			Outbreaks.
Natal	Oct. 1-31	1		
Do	Jan. 1-31	6		
Do	Mar. 27-Apr. 2			Do.
Orange Free State	Oct. 1-Dec. 31	31	2	
Do	Jan. 1-Feb. 28	17	3	
Do	Mar. 13-19			Outbreaks.

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

Reports Received from January 1 to May 27, 1927—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa—Con.				
Transvaal	Oct. 1-31	1		
Do	Jan. 1-31	1		Native.
Yugoslavia	Nov. 1-Dec. 31	30	2	
Do	Jan. 1-Mar. 31	74	4	

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
French Sudan	Dec. 19-25	1	1	
Gold Coast	Aug. 1-Nov. 30	10	5	
Do	Jan. 1-31	17	7	
Nigeria	Sept. 1-Nov. 30	4	3	
Do	Jan. 1-31	1	1	
Senegal	Dec. 19-25	3	3	
Diourbel	Dec. 6	1	1	
Do	Jan. 1-20	1	1	At N'Bake.
Guinguineo	Dec. 7	1	1	
Rufisque	Nov. 27-Dec. 29	2	1	In European.
Do	Jan. 2-8	3	3	
Upper Volta:				
Gaoua district	Oct. 25	2		

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