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EPIDEMIOLOGICAL PRINCIPLES AFFECTING THE DISTRIBUTION OF MALARIA IN SOUTHERN UNITED STATES.[1]

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Knowledge of the distribution of a disease is necessary before effectively directed control measures can be instituted. It is my purpose in this paper to review the factors which affect the distribution of malaria in southern United States, to suggest an epidemiological classification of the localities in which the disease exists or is likely to exist, and, finally, to indicate to the field worker the practical application of these concepts to studies of malaria prevalence and to plans for control.

Factors which determine the distribution of Malaria.

The prevalence of any particular disease in a State or county depends upon the existence in certain localities of the conditions necessary for propagation of that disease. When the disease is transmitted by direct contact, with universal susceptibility, these conditions are simple and readily met; the distribution of a disease such as measles, for example, is practically coextensive with the population. On the other hand, when the disease is insect-borne, the conditions necessary for its propagation may become very complex; the disease is limited not only by population, but by the habitat of the vector species and many other conditions.

The most important of the conditions necessary for transmission of malaria in southern United States are now well known. They may be briefly summarized as follows:

1. ANOPHELINE MOSQUITOES WHICH FEED UPON MAN MUST BE PROPAGATING IN SUFFICIENT NUMBERS WITHIN FLIGHT RANGE (ABOUT ONE MILE) OF HUMAN HABITATION.

Anopheles quadrimaculatus is generally accepted to be the most important vector of malaria in southern United States.[2] Its flight range is about one mile (1, 2). Ordinarily it is a pond or large-

[1] From Field Investigations of Malaria, United States Public Health Service.

[2] The relative importance as vectors of malaria of the three common species of *Anopheles* found in southern United States is still a mooted question, although the evidence at present at hand indicates that *A. quad-*

pool breeder; hence the common name for malaria, "swamp fever" or "pond fever." Its geographic distribution is given roughly as "Mexico to New England, east of the Rocky Mountains," but might be more closely defined as the Atlantic and Gulf Coastal Plain (extending up the Mississippi Valley to southern Illinois), since it is predominantly within this limit that are found the topography and seasonal conditions which favor production.

2. HUMAN BEINGS WITH THE SEXUAL FORMS (GAMETOCYTES) OF THE MALARIA PARASITE IN THEIR PERIPHERAL BLOOD MUST BE ACCESSIBLE TO AND BITTEN BY THESE MOSQUITOES.

One of the chief factors concerned in the widespread and predominantly endemic distribution of malaria is the long duration of the sojourn of the parasite within the body of man, independent of the exhibition of clinical symptoms. A duration of two years between malaria attacks without possibility of reinfection has been reported many times. Ronald Ross (13) reports what he believes to have been a malarial relapse in his father nine years after the last possible exposure to infection. In the words of Dr. H. R. Carter, "Its duration in man, while not *eternal*, is *indefinite*." While repeated attacks may develop a tolerance between host and parasite, no immunity against reinfection is conferred, and persons may be repeatedly reinfected. Contrast the chance thus afforded for infect-

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rimaculatus Say is responsible for more than 90 per cent of the malaria. *A. crucians* Wied. may be a natural vector at times, and possibly *A. punctipennis* Say.

In regard to geographic distribution, *A. crucians* is more frequently found along the coast, partly because of its ability to thrive in water of high salinity (3), but it is also commonly encountered in fresh water in the interior. *A. punctipennis*, because of its predilection for slowly moving streams, penetrates into the hill country. Aside from these rather broad generalizations, either of the two species may be found within the geographic limits indicated for *A. quadrimaculatus*, and according to the experience of Barber and Komp (4) their choice of breeding places is not essentially different.

In regard to seasonal distribution, *A. crucians*, where present, tends to be the dominant winter species, although it is found throughout the whole season. *A. punctipennis* is also common in winter, but tends to diminish, relative to the other species, during the summer. *A. quadrimaculatus* (both larvæ and imagoes) is relatively rare during the winter months, but becomes the dominant species during the summer—the period during which free transmission of malaria occurs.

The infectivity of *A. quadrimaculatus* with the malarial parasite under experimental and natural conditions has been frequently demonstrated. *A. crucians* has been found infected in nature by Mayne (5) and by Metz (6). On the other hand, although *A. punctipennis* is easily infected under experimental conditions (7, 8), only one observation is recorded, that by Mayne at Talladega Springs, Ala., in 1916, (9), of the finding in nature of a single oocyst in the gut wall of a specimen of this species.

Where malaria is endemic in southern United States, *A. quadrimaculatus* is nearly always the species incriminated. Exceptions have been noted by H. R. Carter in many places in Virginia, where *A. crucians* is the common species. Instances are also cited by Dr. Carter (10) and by Fisher (11) in which *A. punctipennis* was the only species observed at the time in a locality where malaria was prevailing.

The difference in the efficiency as vectors of the three species is largely accounted for by differences in biting habits. *A. quadrimaculatus* is commonly found resting in and about houses occupied by man. *A. crucians* and *A. punctipennis* are comparatively rarely found inside the house; they prefer to remain outside, resting under the house or about the porch, and have, accordingly, sometimes been called "porch biter." The recent studies of King and Bull (12) suggest that *punctipennis* feeds less frequently upon man than the others, although the observations are too few in number to be conclusive.

Additional investigations of the rôle of these species as vectors of malaria are necessary before a conclusive statement can be made.

ing anophiline mosquitoes with malaria plasmodia with that afforded by the yellow-fever patient, who is infective for mosquitoes only during the first three or four days of the disease, and usually never again. One may well speak, in relation to malaria, of man as a "reservoir host." Usually wherever the disease has once existed the parasite is available for a considerable time thereafter.

Not all persons infected with malaria are infective for mosquitoes—i. e., have a sufficient number of gametocytes in their peripheral blood. According to Thompson (14), in æstivo-autumnal infections the chronic case is 10 times as potent as the acute case in the production of gametocytes.

The earlier that quinine administration is begun and the more thoroughly it is carried out (until a full course has been given), the less the likelihood of the development of a "carrier." Although only a single carrier is necessary to start an outbreak, the chances of an outbreak are increased in proportion as the number of carriers in a population group increases. This, in turn, is a function of ignorance, inadequate medical attention, and poverty.

Finally, where houses are well built and well screened, the carrier is not accessible; hence he is relatively impotent in infecting mosquitoes. On the other hand, where the housing is poor, where the houses are not screened, and where the people take no precautions against the bites of mosquitoes, the carrier is accessible and may become a prolific source of infection. These facts emphasize the rôle which conditions of living play in the prevalence of malaria.

3. TEMPERATURE MUST FAVOR COMPLETION OF THE LIFE CYCLE OF THE PARASITE IN THE MOSQUITO.

Under optimum conditions of temperature (15)—70° to 80° F.—the period of extrinsic incubation may be successfully completed in as short a period as 11 days, though usually it takes about 2 weeks. As the temperature becomes less favorable, the development of the parasite goes on more slowly, so that it may take 50 days or more. With continuous temperatures below 60° F. development becomes inhibited. Thus, although the anopheline mosquitoes may be active with temperatures as low as 46° F. (16), they can not be effective as vectors at these low temperatures.

Angus MacDonald (17) states that observations of epidemics in England justify the assumption that a mean temperature of about 60° F. over at least 16 days is necessary for propagation. Assuming that in this country a mean monthly temperature above 60° F. from May to October is required for propagation, temperature alone can seldom if ever be a determining factor in limiting malaria distribution in southern United States, since studies made by Ward (18)

of the United States Weather Bureau show that between these months the 60° F. isotherm passes well above the northern limit of what is now known as the "malaria belt." [3]

4. IF THE LEVEL OF PREVALENCE IS TO BE MAINTAINED, INFECTIBLE HUMAN BEINGS MUST BE ACCESSIBLE TO AND BITTEN BY INFECTED MOSQUITOES SO THAT AT LEAST ONE NEW INFECTION OCCURS FOR EACH OLD ONE THAT RECOVERS.

When the anopheline mosquito has fed on a human carrier and the exogenous cycle of the parasite has been successfully completed, this mosquito, having become infective, must, before it perishes, succeed in taking a second meal upon a human being if new infections are to occur.

The greater the ease with which mosquitoes reach human beings, the better the chance to accomplish this. In other words, the statements made under heading 2 regarding accessibility, poor housing, poor screening, lack of precaution, all apply here with equal force, again emphasizing the importance of living conditions.

In any given period of time the disease will increase in prevalence, maintain its level, or decline according to the balance between "new" and "old" infections.[4]

Of the four major conditions which have been noted above as necessary for the propagation of malaria, it will be noted that two have to do with the mosquito host and her environment and the other two with the human host and his conditions of living. They are equally important. Some of the ways in which these several factors affect malaria distribution may be concretely illustrated.

It is obvious that there can not be a malaria problem in the center of a large well-paved and sewered city where there are few or no *Anopheles*, though there may be considerable transmission going on in the environs of the city. On the other hand, it is equally evident that anopheline mosquitoes may breed out by the millions in some remote country district and cause no harm whatever unless

[3] Aside from its effect upon the development of the parasite, temperature may also impose limiting conditions on malaria transmission by affecting the longevity of the anopheline mosquitoes. According to the recent studies of Barber and Hayne (19), the longevity of *A. quadrimaculatus* in midsummer and under natural conditions may be at least 25 days, but the proportion which could be recovered 3 days after they had been stained was very small. It is probable that longevity is affected adversely by the cooler temperatures of early summer and late fall. This being true, it is evident that these cooler temperatures would limit transmission by reducing the number of *Anopheles* which survive the longer period required to complete the cycle—i. e., the number of infective mosquitoes per unit of population.

The work of Hodgson and Gill (20) in India suggests that humidity may also be a limiting factor by affecting the longevity of the mosquito and helping to maintain a more even higher temperature.

[4] Bearing in mind the fact that an infection with malaria confers upon man no immunity to reinfection, it is possible that an infective mosquito may (*a*) reinfect the same individual from whom the infection was originally obtained; (*b*) infect with another parasite an individual already harboring one species of parasite; (*c*) infect an individual who has recovered from a previous infection in the same season; (*d*) infect a person who has been previously free from disease. "New infections" in an epidemiological sense are usually measured by the number of persons in class (*d*). Practically it is impossible to distinguish clinically (*a*) (*b*) and (*c*) from "relapses."

they take their blood meal upon human beings. Nor can the existence of a malaria problem be inferred from the finding of *Anopheles* alone. This mosquito may be present in enormous numbers coincident with a low malaria rate, as in the rice fields of Arkansas and Louisiana (Barber) and in West Roxbury, Mass. (Le Prince).

While it is possible for a single human family, one of whom becomes a gametocyte carrier, to become infected and reinfected every season, the chances for continuous propagation year after year are much increased where several families are gathered together within mosquito flight range of each other.

Conditions are adverse to free transmission of malaria where the farms are large and the type of agriculture is extensive, as in hay farms and stock farms, requiring only a few employees with machinery to cultivate large tracts, where the houses are likely to be far removed from each other and from the breeding places of anophelines. On the other hand, where the type of agriculture is intensive, requiring many hand laborers, as in the raising of cotton, where the houses are close together and located in the rich "bottom lands" near *Anopheles*' breeding places, conditions are favorable for the development of a malaria problem. In the South there is a striking connection between malaria and the raising of cotton.

Where the population has a good economic status it is more difficult for the disease to maintain itself. A large percentage of such a population owns its homes and farms. The houses are usually well built, a majority of which are well screened; good medical attention is available; and the land is likely to be well drained. Where the economic status is poor, the reverse holds true. Most of the people are "renters" or "tenants" or "hands." There is no pride of ownership; the housing is poor and screening ineffective; medication is inadequate; and drainage is primitive.

Where habitations are temporary and the population is shifting or migrating constantly from one location to another, as are "cotton pickers," "sawmill hands," "construction gangs," etc., there is an unusual opportunity for the spread of malaria. There is usually little protection from anopheline mosquitoes, and the chances that they will find a carrier is increased because of the constantly changing population. When transmission has once been established, a constant supply of infected persons is being distributed to the surrounding country, and the new, noninfected individuals coming in to take their places are becoming infected.

More briefly stated, conditions which favor the propagation of malaria in southern United States are such as are usually found (*a*) among pioneers, sawmill hands, and laborers on construction projects, and (*b*) among white and negro "tenants," "renters," or

"farm hands" on cotton plantations, living under poor conditions of housing, screening, and medical attention, and in close proximity to a pond or ponded swamp.

Given the conditions which we at present know to be favorable, a careful survey for enlarged spleens or parasites may (or may not) show a malaria problem to be present. On the other hand there are large areas where conditions exist which are obviously unfavorable to the transmission of malaria, i. e., where the population is composed of enlightened, well-to-do white families living in well-screened houses in prosperous sections on cleared, cultivated, and thoroughly drained farm land and in towns with the best sort of medical attention. To persons living under these conditions malaria is practically an unknown disease.

It follows, then, that malaria is not an ubiquitous disease in southern United States, as is, for instance, such a disease as measles. It exists where certain more or less well-known requirements as to the mosquito host and the human host are realized. *Malaria is characteristically a focally distributed disease.*

Classification of Malaria Foci.

Contrary to popular opinion, malaria is not generally distributed over southern United States—it is not generally distributed over any single State in the South; and, indeed, strictly speaking, there are comparatively few counties in these States in which the disease may be described as generally prevalent. Field studies have shown that there are large areas where malaria does not now exist. One or more of the necessary conditions (usually absence of the vector in sufficient numbers to be of sanitary importance) are lacking. Such areas might be termed "noninfected." No transmission is taking place; and though there may be reported from the area an occasional imported case, there is no indigenous malaria.

On the other hand, in the localities where the disease does exist it is because the conditions requisite for transmission are present, continuously or occasionally. The area is manifestly "infectible," and indeed usually "infected," though in varying degree. Transmission is taking place in some of these localities every year; in some only as a result of some new circumstance which has furnished the missing factor or factors; and in others, while not taking place at the time, there is an ever-present possibility that transmission will occur. On this basis there may be distinguished—

(1) The endemic focus;
(2) The epidemic focus; and
(3) The potential focus.

1. THE ENDEMIC FOCUS.

Where the conditions necessary for transmission are present continuously, year after year, malaria becomes endemic. Some years may be "bad" years for "chills and fever" and some "good," but each year produces its own crop of relapses and new infections. Permanent breeding places—ponds, ponded swamps, sloughs, bayous, lagoons, etc.—insure an annual production of *Anopheles* in sufficient quantities to act efficiently as a vector. The population is so situated with relation to the breeding places and living conditions as to insure easy access of the mosquito to the human host. Other factors insure the "carry over" each winter of the parasites in the human reservoir, so that the new spring crop of *Anopheles* is readily infected. These areas are the "seed beds" of malaria that furnish the human material for generating outbreaks in potentially infectible areas.

In Alabama the endemic focus is typically represented by an area in the southern part of Autauga County. Here the Alabama River has changed its course, leaving a large tract of fertile flat bottom lands with long finger-like sloughs, or wooded swamps, projecting up into it at short intervals, furnishing prolific breeding places and good conditions of harborage for *Anopheles*. Along the higher land between these sloughs are located cotton plantations cultivated by negro tenants, poorly housed, poorly clothed, poorly fed, living in unscreened houses, self-medicated with inadequate "chill tonics," and made miserable by the hordes of mosquitoes which swarm in from the nearby swamps at sundown each evening. During the height of the season, 20 to 30 *A. quadrimaculatus* can be found on the walls of a bedroom at almost any time, and in almost every house is to be found some individual suffering from "chills." Every year brings its tolls of deaths resulting directly or indirectly from the ravages of neglected malaria. The negroes accept "chills" as a necessary evil and pay it scant attention. The plantation owners passively acquiesce in this shameful human and economic waste.

From an epidemiological point of view, endemic areas of this sort vary greatly in importance.[5] As regards the land area and population affected, there may be involved an area of only 1 square mile with one or two families located within it, or population and breeding conditions may be sufficiently continuous over an area of 800 to 1,000 square miles to make it practically impossible to delineate definite and separate endemic foci. In a State like Mississippi the whole delta area functions more or less like one huge endemic focus. Outside this area, in the same State, endemic malaria occurs in more or less scattered spots, as it does in the whole of Alabama,

[5] A division into major and minor endemic foci would seem desirable to roughly indicate relative importance, but it is difficult to fix the criterion.

a focus involving unusually a relatively small population and land area. The matter is largely determined by uniformity of topographical features and continuity of settlement.

It is obvious that the importance of an endemic area increases in proportion to the amount of migration—the important factor in its activity as a distributing point for new infections and human carriers to the surrounding territory. Thus the sawmill focus is particularly important because, if it is in a malarious section, there is likely to be a heavy turnover of labor, and, if it is a small portable mill, it is likely to start trouble wherever it is set up. In the same way, the cotton plantations of a section like that in Dunklin County, Mo., are particularly important. Not only is there an enormous shifting of the tenant farmers, but every year there is a stream of cotton pickers coming into the lowlands from the hill country during the latter part of the summer, many of whom become infected and carry their infection back with them. The same sort of phenomenon is occurring on a small scale in one of the cities. Just west of the city, from 3 to 5 miles, is an endemic focus of malaria centering about some large cotton plantations. These plantations are worked not only by negroes living on them, but this labor is supplemented in times of need by an extra supply of negroes who live in the city, travel out to the plantations to work, and often spend the night on them in the unoccupied tenant houses. Here they become infected and, returning to their homes, help to keep up the supply of new cases on the western edge of the city where there is a sufficient production of *Anopheles* to further the spread.

Malaria is primarily an endemic disease. The endemic focus is, therefore, the most important and by far the most inclusive classification of the three classifications proposed.

2. THE EPIDEMIC FOCUS.

The term "epidemic" conveys the idea of an *unusual* prevalence of a disease in a locality where for the preceding few years it has been absent or of small consequence. *"Epidemic malaria" is nearly always traceable to some new conditions or circumstances.* These may be the creation of a new breeding place or places with the consequent production of unusual numbers of *Anopheles*, or it may be the introduction of an unprotected population in tents and temporary habitations, or some similar circumstance or combination of circumstances.

The creation of new breeding places may result from natural causes—an unusually heavy precipitation perpetuates ponds which normally dry up in May and June; an excessively dry summer causes streams which normally flow throughout the season to "pot-hole"; a stream or drainage ditch becomes dammed by "silting-in" or by floatage rafts; a culvert becomes blocked. Too frequently the new breeding area

is the product of carelessness in the construction of highways and railways—the undrained borrow pit, the misplaced culvert, failure to provide proper roadside drainage, etc. Finally, and perhaps most important of all, is the creation of a new pond to develop water power, to create a fish preserve, or for similar purposes.

Recently there came to notice in Montgomery County, Ala., a typical instance of a small epidemic focus due to the creation of a new pond. In a well-drained hilly region, previously free from malaria, a farmer dammed a small stream to make a fish pond within the immediate vicinity of which were six houses of tenant farmers. No trouble was experienced during the first summer, but during the second a "sawmill hand" and his family (presumably carriers of malaria) moved into a house close by the pond. The father and three children came down with "chills and fever," and all except the mother were very ill. Following this there were cases of malaria in four out of five of the other families living within mosquito flight range of the pond. At the end of the season all of these families, except one that had escaped attack, moved away from the locality because it was "unhealthy."

This illustrates, on a small scale, what may occur when large ponds are created by the damming of rivers for power purposes, of which there are many well-known instances. This has been an exceedingly important problem with the development of the hydro-electric resources of the South—the "impounded-water malaria problem" to which much study is being given. During the first few years after these ponds have come into existence there is always danger of a very widespread epidemic of malaria, due largely to the tremendous production of *Anopheles* in these new ponds (but also to carriers imported with labor gangs), and this danger lasts until the pond "settles down" and a natural balance in the fauna and flora of the pond is reached, which tends to limit the anopheline production.

The instances of epidemic malaria mentioned above depend chiefly for their causation upon a sudden increase in the production of *Anopheles*. There are instances of outbreaks of malaria, on the other hand, which have apparently resulted from the sudden introduction of a large number of infected persons or carriers into a locality where the disease has been quiescent. This is particularly likely to happen on plantations where a large number of new tenant families are brought in from a neighboring endemic focus. It is likely to happen about construction camps where the labor from a malarious area is brought into a potentially infectible locality.[6]

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[6] "There are many such places, towns and country neighborhoods, in which an afflux of men from an endemic focus have had this effect—Brookline, Mass., New London, Conn., Saginaw, Mich., Wilson, Va., and many others. It is far commoner than is generally believed. Note the rather general outbreaks of malaria about the camps of returning troops in south and east England in 1915 and 1919. This was practically all tertian. In the United States it may be tertian or æstivo-autumnal, but mainly tertian."—Dr. H. R. Carter.

The following outbreak, investigated by Dr. F. W. O'Connor and Dr. W. G. Smillie, in southern Alabama, is typical: In a prison camp there were about 200 prisoners working under contract with a sawmill company in rather crowded, poorly screened quarters. Malaria had not occurred for years in the prison, or the closely adjacent mill village. One prisoner came to the camp who was a malaria carrier. He had a relapse and was in the hospital for a few days, and then went to the dormitory. Two weeks later, on November 1, there was an explosive outbreak of malaria in the camp, beginning in the hospital attendants. Thirty-four cases occurred within 10 days. The malaria was æstivo-autumnal in type, and severe. At the time of the investigation in November, a very painstaking search about the camp failed to reveal any *Anopheles*. This may be accounted for by the fact that a cold snap occurred during the period October 22 to 24. In a search made earlier in the summer, before the outbreak, no adult *Anopheles* had been found in the prison camp, although larvæ were present in a small swamp nearby. It is probable that the outbreak was caused by a very small number of mosquitoes, the crowding and imperfect screening offering extremely favorable conditions for the vector to act efficiently at the prison camp. The village within 100 yards of the camp remained free from infection.

It should be emphasized that there may be a considerable element of chance in epidemic outbreaks of this type. It is a fortuitous circumstance that at the particular time when *Anopheles* are more abundant than usual, a malaria patient with many gametocytes in the peripheral circulation is housed in a location most exposed to the bites of these mosquitoes; and that subsequently, although perhaps only one of these mosquitoes survives to become infective, this mosquito happens to reach a room or a tent in which many persons are sleeping and takes an infecting blood meal on several of them, thus precipitating an outbreak. There are many places in this chain of events where the sequence may be and probably is interrupted much more frequently than it is successfully completed.

3. THE POTENTIAL FOCUS.

Theoretically speaking, almost any rural community, or small town, in the Atlantic and Gulf Coastal Plain, or the near-by piedmont valleys where *Anopheles* are found, may become a focus of malaria. Many instances have been observed where imported laborers have furnished the parasite, and the creation of a new pond has furnished the vector in enormous numbers, thus producing promptly conditions necessary for an outbreak.

From the practical point of view, however, the term "potential focus" might properly be limited to those localities where the chain

of events necessary for propagation may be realized at any time, though one or another factor is usually absent. For instance, all the factors may be present at a given time except a carrier accessible to the bites of *Anopheles;* and, if one happens along at this particular time, transmission occurs. Or, all the factors may be present except a sufficient number of *Anopheles*, the creation of a small pool of water by the filling up of an old drainage ditch or culvert, or by the building of a roadway, having furnished the missing link. In the prison outbreak described above, the production of a small number of *A. quadrimaculatus* in close proximity to a crowded, unscreened camp, constituted a potential focus. It became an epidemic focus when a human carrier appeared upon the scene.

Under the head of potential foci may be classed many neighborhoods and towns where there is a history that the disease flourished a number of years previously. For reasons which may be more or less apparent such as better housing, better screening, clearing, drainage, thinning of the population, etc., the disease has practically disappeared except for the occasional imported case. There is considerable doubt as to whether any "new infections" are now occurring, although about the environs *Anopheles* can be found breeding here and there in small numbers. In such a locality transmission may take place at almost any time; and in a favorable season a considerable outbreak may occur. The danger is particularly great if the town is located near an endemic focus with which there is an interchange of population. The realization of this danger justifies recommendations for anopheline control, even though the town area may at that particular time have no appreciable "malaria problem."

This is well illustrated by an outbreak recently observed in a rural community called Teasley's Mill, in Alabama. The locality had formerly been a hotbed of malaria, but the disease had apparently become quiescent in later years, except for an occasional case. In 1923, a very wet year increased the production of *Anopheles* greatly and, at the same time, a portable sawmill moved in with a crew of men and their families who occupied every available habitation in the locality. This crew had come from a section relatively free from malaria and had not suffered from this disease previously. By the middle of the summer practically the entire crew and most of their families were down with "chills and fever," and this apparently gave the impulse for a considerable spread of the disease to the surrounding territory. What will happen in the neighborhood where this portable mill, with its crew of imperfectly treated malaria cases, locates the following year?

Application.

There is usually little difficulty in locating the endemic areas with the crudest sort of methods. Deaths attributed to malaria may give a useful indication, even if wrongly diagnosed. Physician's reports of cases add to the knowledge. Blood smears sent to the Public Health Department laboratory, by physicians, for differential diagnosis, show whether or not the malaria parasite is present. If a field trip be made into the area during the malaria season, it is found that "chills and fever" are a well-known phenomenon to the inhabitants. Persons may be found sick in bed with the disease at the time, or just recovered, and, upon examination, exhibit an enlarged spleen, or a positive blood smear. And, finally, *Anopheles* may be found in the bedrooms of the houses, or a breeding place of importance is usually obvious.

It is even more simple to locate epidemic malaria. It is a peculiarity of human nature that, if a disease like malaria is present year after year, it is generally accepted as inevitable and little complaint is heard. On the other hand, if there are only occasional visitations and a large number of persons come down with the disease within a short space of time, the population affected becomes vociferous in its protests to the local health authority, in proportion to the relative rarity of the disease and the case fatality which accompanies it. The epidemic focus is likely to be exaggerated out of all proportion to its real importance. A neighboring endemic focus, doing infinitely more damage every year, may "slumber in peace" year after year, and very little attention be given it either by the persons affected or by the health authority.

It may be difficult to decide whether a locality should be classed as an epidemic focus or as an endemic focus with unusually high incidence. The distinguishing characteristic of the epidemic focus, however, is that some new circumstance or unusual condition is responsible for the sudden increase in the incidence of the disease. In the same way it may be difficult to distinguish between an endemic focus with low prevalence and a "potential focus". Where cases of malaria are being reported, a good deal of study and observation may be required to establish that only "imported" or "relapse" cases of malaria are occurring. In these days of rapid and remote transportation by automobile it is not unusual for persons infected at considerable distance from their homes—"imported infection"—to attribute their infection to the home environment where they have spent most of their time.

The proposed classification would, of course, apply to one year only. A potential focus this year may be an epidemic focus next year and an endemic focus the year following; or the different con-

ditions may develop in the reverse direction. The classification of most foci, however, particularly endemic foci, would tend to remain the same year after year.

The value of the classification is twofold: It should lead to more accurate statements of malaria prevalence; and, in turn, such a conception is necessary for effectively directed efforts at control.

Figures gathered to represent the incidence of malaria in a given area, whether by some form of history index, by spleen examinations, or by the examination of blood smears, should be interpreted according to the type of focus. If it be an endemic focus where the disease maintains a more or less constant balance year after year, the result of the survey will, in all probability, be representative of average experience. If it be an epidemic focus, the incidence at the time of the survey is obviously an unusual one—perhaps in no preceding year had such a high rate prevailed, nor would it likely be realized again in subsequent years. Finally, if it be a potential focus, the survey must indicate that the cases which are occurring are imported and not indigenous.

A study of the malaria distribution and a classification of the foci in a given area should yield that fundamental information necessary to the effective control of any disease—"when, where, and under what circumstances" it is being transmitted. This is generally much more important than to attempt to state *numerically* just how much malaria there is. The percentage of the population affected may vary greatly in different years. Except in the case of demonstration areas where it is desired to measure scientifically the effect of antimalaria measures, it is open to question whether there is necessity for attempting to measure accurately the amount of malaria in an area before instituting control. From the point of view of the practical public health administrator it would appear sufficient to "spot" the areas in which malaria transmission is taking place, to conduct field studies (spleen examinations and blood smears) sufficient to establish the fact that "new" cases are occurring in these localities and that the disease is indigenous, to study the relative importance of these foci to the surrounding country, from an epidemiological point of view, and to institute control measures where they will be most effective, opportunities being equal. The ultimate evaluation of the work instituted should be the demonstration that the amount of malaria transmission taking place is no longer considerable, so far as it is dependent upon community measures. The exact amount of reduction need not be expressed numerically. It must be appreciable to the experience of those affected that "chills and fever" are no longer of common occurrence, have become rare, indeed almost unknown, since the work was done.

The endemic focus must be the ultimate objective of any well-planned antimalaria campaign. Protecting the potential focus from infection may be worth while, and eliminating an epidemic focus is sensational; but so long as the "seed bed" of malaria remains, the disease will take its toll from year to year.

Summary.

The factors favorable for the transmission of malaria in southern United States are now fairly well known. The disease is not ubiquitous, but exists in those localities where certain rather highly specialized conditions are realized.

Where these conditions are present continuously year after year, the focus is endemic; where brought into existence suddenly by some unusual circumstances, the focus is epidemic; where they may be realized at any time, though one or another factor is usually absent, the focus is potential.

Numerical expression of the amount of malaria in a given rural area is not so necessary to the practical health administrator as is a clear understanding of the distribution of the disease. Sufficient field study should be made to establish the localities in which the disease is indigenous and the relative importance of different foci to the surrounding country from an epidemiological point of view.

Efforts to control the disease must be directed ultimately toward the endemic centers. The measure of effective control is the demonstration that the amount of malaria transmission taking place is no longer considerable so far as community measures are concerned.

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EXTENT OF RURAL HEALTH SERVICE IN THE UNITED STATES, 1920–1924.

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According to data obtained by the Rural Sanitation Office of the Public Health Service from the health departments of the States, the following (Table 1) is a list, by States, of counties (or districts) in which the rural sections thereof at the beginning of the calendar years 1920, 1921, 1922, 1923, and 1924, respectively, were provided with local health service under the administration of whole-time county or district health officers:

TABLE 1.—*List of counties, or districts, in which, as of January 1, 1920, 1921, 1922, 1923, and 1924, respectively, rural sections were provided with local health service under whole-time health officers.*

1920	1921	1922	1923	1924
ALABAMA.				
Calhoun Colbert Elmore Etowah Jefferson Madison Montgomery Pike Sumter Talladega Tuscaloosa Walker	Baldwin Calhoun Colbert Etowah Hale Jefferson Lauderdale Madison Mobile Montgomery Morgan Pike Sumter Talladega Tuscaloosa Walker	Baldwin Barbour Calhoun Colbert Dallas Etowah Houston Jefferson Lauderdale Madison Mobile Montgomery Morgan Pike Sumter Talladega Tuscaloosa Walker	Baldwin Barbour Calhoun Colbert Covington Dallas Etowah Houston Jefferson Lauderdale Madison Mobile Montgomery Morgan Pike Sumter Talladega Tuscaloosa Walker	Baldwin Barbour Calhoun Colbert Covington Dallas Escambia Etowah Franklin Houston Jefferson Lauderdale Limestone Madison Mobile Montgomery Morgan Pike Sumter Talladega Tuscaloosa Walker
ARKANSAS.				
Sebastian				
CALIFORNIA.				
Los Angeles		Los Angeles San Francisco [1]	Los Angeles Monterey Orange San Francisco [1] San Luis Obispo	Los Angeles Monterey Orange San Joaquin San Luis Obispo
GEORGIA.				
Baldwin Bartow Cobb Colquitt Dougherty Floyd Glynn Hart Laurens Lowndes Sumter Tift Thomas Troup Walker Worth	Baldwin Bartow Brooks Clarke Cobb Decatur Dougherty Floyd Glynn Hall Laurens Lowndes Sumter Thomas Troup Walker Worth	Baldwin Bartow Brooks Clarke Cobb Decatur Dougherty Floyd Glynn Hall Laurens Lowndes Mitchell Sumter Thomas Troup Walker Worth	Baldwin Bartow Clarke Cobb Decatur Dougherty Floyd Fulton Glynn Hall Laurens Lowndes Mitchell Richmond Sumter Thomas Troup Walker	Baldwin Bartow Bibb Clarke Cobb Decatur Dekalb Dougherty Floyd Glynn Hall Laurens Lowndes Mitchell Richmond Sumter Thomas Troup Walker
IDAHO.				
		Bannock Twin Falls Boise		

[1] As San Francisco County is entirely urban, it should not have been included in either 1922 or 1923, and is omitted from the 1924 list.

TABLE 1.—*List of counties, or districts, in which, as of January 1, 1920, 1921, 1922, 1923, and 1924, respectively, rural sections were provided with local health service under whole-time health officers*—Continued.

1920	1921	1922	1923	1924
ILLINOIS.				
			Morgan	Morgan
INDIANA.				
			Fulton	
IOWA.				
		Dubuque	Dubuque	Dubuque Washington
KANSAS.				
Butler Cherokee Ford Geary Marion	Butler Cherokee Ford Geary Marion	Butler Cherokee Ellis Ford Geary Marion Ottawa Wabaunsee	Butler Cherokee Ellis Ford Geary Marion Ottawa Wabaunsee	Butler Cherokee Ellis Geary Lyon Marion Ottawa Sheridan
KENTUCKY.				
Mason	Boyd Daviess Fulton Harlan Jefferson Mason Muhlenberg Scott	Bell Boyd Daviess Fulton Harlan Mason Muhlenberg Scott	Boyd Daviess Fulton Harlan Jefferson Johnson Mason Scott	Bell Boyd Daviess Fayette Fulton Jefferson Johnson Mason Scott
LOUISIANA. [2]				
Rapides	Rapides	Beauregard Caddo De Soto Natchitoches Ouachita Rapides Washington	Beauregard Caddo De Soto Natchitoches Ouachita Rapides Washington	Beauregard Caddo Claiborne De Soto Natchitoches Ouachita Rapides St. Mary Tangipahoa Washington
MAINE. [3]				
			Oldtown Rumford Sanford Waterville York	Oldtown Rumford Sanford Waterville York
MARYLAND.				
		Washington	Allegany Montgomery	Allegany Frederick Montgomery

[2] Parishes. [3] District.

TABLE 1.—*List of counties, or districts, in which, as of January 1, 1920, 1921, 1922, 1923, and 1924, respectively, rural sections were provided with local health service under whole-time health officers*—Continued.

1920	1921	1922	1923	1924
		MASSACHUSETTS.		
		Cape Cod [3]	Cape Cod [3]	Cape Cod [3]
		MICHIGAN.		
St. Clair				
		MINNESOTA.		
				St. Louis
		MISSISSIPPI.		
Grenada Harrison Lee Monroe Pike	Bolivar Harrison Jones Lee	Bolivar Coahoma Forrest Harrison Jones Lee Marshall Union Washington	Bolivar Coahoma Forrest Harrison Hinds Jones Lauderdale Lee Leflore Marshall Tallahatchie Washington	Bolivar Coahoma Forrest Harrison Hinds Jones Lauderdale Lee Tallahatchie Washington
		MISSOURI.		
	Greene	Greene Jasper	Cape Girardeau Dunklin Gentry Greene Jasper Monroe New Madrid Nodaway Pettis Polk St. Francois	Dunklin Gentry Greene New Madrid Nodaway Pettis Polk St. Francois St. Louis
		MONTANA.		
Missoula Yellowstone	Cascade Missoula Yellowstone	Cascade Lewis and Clark Missoula Yellowstone	Cascade Lewis and Clark Missoula Yellowstone	Cascade Lewis and Clark Missoula
		NEW MEXICO.		
	Bernalillo Chaves San Miguel Santa Fe Union	Bernalillo Chaves San Miguel Santa Fe Torrance Union Valencia	Bernalillo Chaves Dona Ana Eddy San Miguel Santa Fe Union Valencia	Bernalillo Chaves Colfax Dona Ana Eddy McKinley San Miguel Santa Fe Union Valencia
		NEW YORK.		
Lake George [3]				Cattaraugus

[3] District.

TABLE 1.—*List of counties, or districts, in which, as of January 1, 1920, 1921, 1922, 1923, and 1924, respectively, rural sections were provided with local health service under whole-time health officers*—Continued.

1920	1921	1922	1923	1924
		NORTH CAROLINA.		
Cabarrus	Beaufort	Bertie	Bertie	Beaufort
Cumberland	Buncombe	Bladen	Bladen	Bertie
Davidson	Bertie	Buncombe	Buncombe	Bladen
Durham	Cabarrus	Cabarrus	Cabarrus	Brunswick
Edgecombe	Chatham	Columbus	Carteret	Buncombe
Forsyth	Cumberland	Craven	Columbus	Cabarrus
Granville	Davidson	Cumberland	Craven	Columbus
Guilford	Durham	Davidson	Cumberland	Craven
Halifax	Edgecombe	Durham	Davidson	Cumberland
New Hanover	Forsyth	Edgecombe	Durham	Davidson
Northampton	Granville	Forsyth	Edgecombe	Durham
Pitt	Halifax	Granville	Forsyth	Edgecombe
Robeson	Lenoir	Guilford	Granville	Forsyth
Rowan	New Hanover	Halifax	Guilford	Granville
Surry	Northampton	Lenoir	Halifax	Guilford
Wake	Pitt	Mecklenburg	Lenoir	Halifax
Wilson	Robeson	New Hanover	Mecklenburg	Hemderson
	Rowan	Northampton	New Hanover	Hyde
	Sampson	Pamlico	Northampton	Lenoir
	Surry	Pitt	Pitt	Mecklenburg
	Vance	Robeson	Robeson	New Hanover
	Wake	Rowan	Rowan	Northampton
	Wayne	Sampson	Sampson	Pamlico
	Wilkes	Surry	Surry	Pitt
	Wilson	Vance	Vance	Robeson
		Wake	Wake	Rowan
		Wayne	Wayne	Sampson
		Wilkes	Wilkes	Surry
		Wilson	Wilson	Vance
				Wake
				Wayne
				Wilkes
				Wilson
		OHIO.		
Allen	Allen	Allen	Allen	Allen
Ashtabula	Ashtabula	Ashtabula	Ashtabula	Ashtabula
Butler	Belmont	Belmont	Auglaize	Athens
Darke	Butler	Butler	Belmont	Auglaize
Hamilton	Champaign	Champaign	Butler	Belmont
Harrison	Clermont	Clermont	Champaign	Butler
Hocking	Crawford	Clinton	Clermont	Clermont
Mahoning	Cuyahoga	Columbiana	Clinton	Clinton
Medina	Delaware	Coshocton	Columbiana	Columbiana
Montgomery	Fairfield	Crawford	Coshocton	Coshocton
Muskingum	Hamilton	Cuyahoga	Crawford	Crawford
Sandusky	Henry	Erie	Cuyahoga	Cuyahoga
Scioto	Highland	Greene	Erie	Erie
Shelby	Hocking	Hamilton	Hamilton	Geauga
Stark	Lake	Highland	Hocking	Hamilton
Summit	Lorain	Hocking	Huron	Hancock
	Lucas	Lake	Lake	Hocking
	Mahoning	Lorain	Lorain	Huron
	Marion	Lucas	Lucas	Lake
	Medina	Madison	Madison	Lorain
	Meigs	Mahoning	Mahoning	Lucas
	Miami	Marion	Marion	Mahoning
	Monroe	Miami	Miami	Marion
	Montgomery	Monroe	Monroe	Meigs
	Muskingum	Montgomery	Montgomery	Mercer
	Noble	Morrow	Morrow	Miami
	Paulding	Muskingum	Muskinghum	Montgomery
	Sandusky	Paulding	Paulding	Morrow
	Scioto	Ross	Perry	Muskingum
	Seneca	Sandusky	Ross	Paulding
	Shelby	Scioto	Sandusky	Perry
	Stark	Seneca	Scioto	Richland
	Summit	Shelby	Seneca	Ross
	Trumbull	Stark	Shelby	Sandusky
	Union	Summit	Stark	Scioto
	Washington	Trumbull	Summit	Seneca
		Union	Trumbull	Shelby
		Washington	Tuscarawas	Stark
		Wayne	Union	Summit
		Wood	Washington	Trumbull
			Wayne	Tuscarawas
			Wood	Union
				Washington
				Wayne
				Wood

TABLE 1.—*List of counties, or districts, in which, as of January 1, 1920, 1921, 1922, 1923, and 1924, respectively, rural sections were provided with local health service under whole-time health officers*—Continued.

1920	1921	1922	1923	1924
OKLAHOMA.				
Ottawa	Ottawa	Ottawa	Ottawa	Ottawa
OREGON				
			Coos	Coos
SOUTH CAROLINA.				
Calhoun Darlington Fairfield Lee Newberry Orangeburg	Calhoun Charleston Cherokee Darlington Fairfield Lee Newberry Orangeburg	Charleston Cherokee Darlington Fairfield Greenville Newberry Orangeburg	Charleston Cherokee Darlington Fairfield Greenville Newberry Orangeburg	Aiken Anderson Charleston Cherokee Dillon Fairfield Greenville Newberry Orangeburg
SOUTH DAKOTA.				
		Brown	Brown	Brown
TENNESSEE.				
Hamilton		Davidson Montgomery Roane Williamson	Davidson Gibson Montgomery Roane Williamson	Blount Davidson Gibson Montgomery Obion Roane Sevier Williamson
TEXAS.				
Bell Jefferson Tarrant Wichita Williamson	Bell Dallas Jefferson Tarrant Wichita Williamson	Dallam Dallas Hidalgo Jefferson Tarrant	Cherokee Dallam Dallas Hidalgo Jefferson Tarrant	Dallam Hidalgo Jefferson Red River Tarrant Washington
UTAH.				
		Weber	Weber	Weber

TABLE 1—*List of counties, or districts, in which, as of January, 1, 1920, 1921, 1922, 1923, and 1924, respectively rural sections were provided with local health service under whole-time health officers*—Continued

1920	1921	1922	1923	1924
VERMONT.[4]				
First Second Third Fourth Fifth Sixth Seventh Eighth Ninth Tenth	First Second Third Fourth Fifth Sixth Seventh Eighth Ninth Tenth	First Second Third Fourth Fifth Sixth Seventh Eighth Ninth Tenth	First Second Third Fourth Fifth Sixth Seventh Eighth Ninth Tenth	
VIRGINIA.				
Arlington Augusta Fairfax Fauquier Pittsylvania Prince William	Albemarle Arlington Augusta Clarke Fairfax Fauquier Halifax Henry Norfolk Tazewell	Albemarle Arlington Augusta Fairfax Fauquier Halifax Norfolk Tazewell Wise	Albemarle Arlington Augusta Fairfax Halifax Nansemond Norfolk Russell Wise	Accomac Albemarle Arlington Augusta Fairfax Halifax Henrico James City Loudoun Nansemond Norfolk Princess Anne Russell Wise
WASHINGTON.				
Yakima	King Spokane Walla Walla Yakima	King Spokane Walla Walla Yakima	Chelan King Spokane Yakima	Chelan King Spokane Walla Walla Yakima
WEST VIRGINIA.				
	Greenbrier	Greenbrier Logan Mingo	Logan Marion Mingo Preston	Hancock Harrison Logan Marion Preston Taylor
WYOMING.				
				Natrona

[4] Districts.

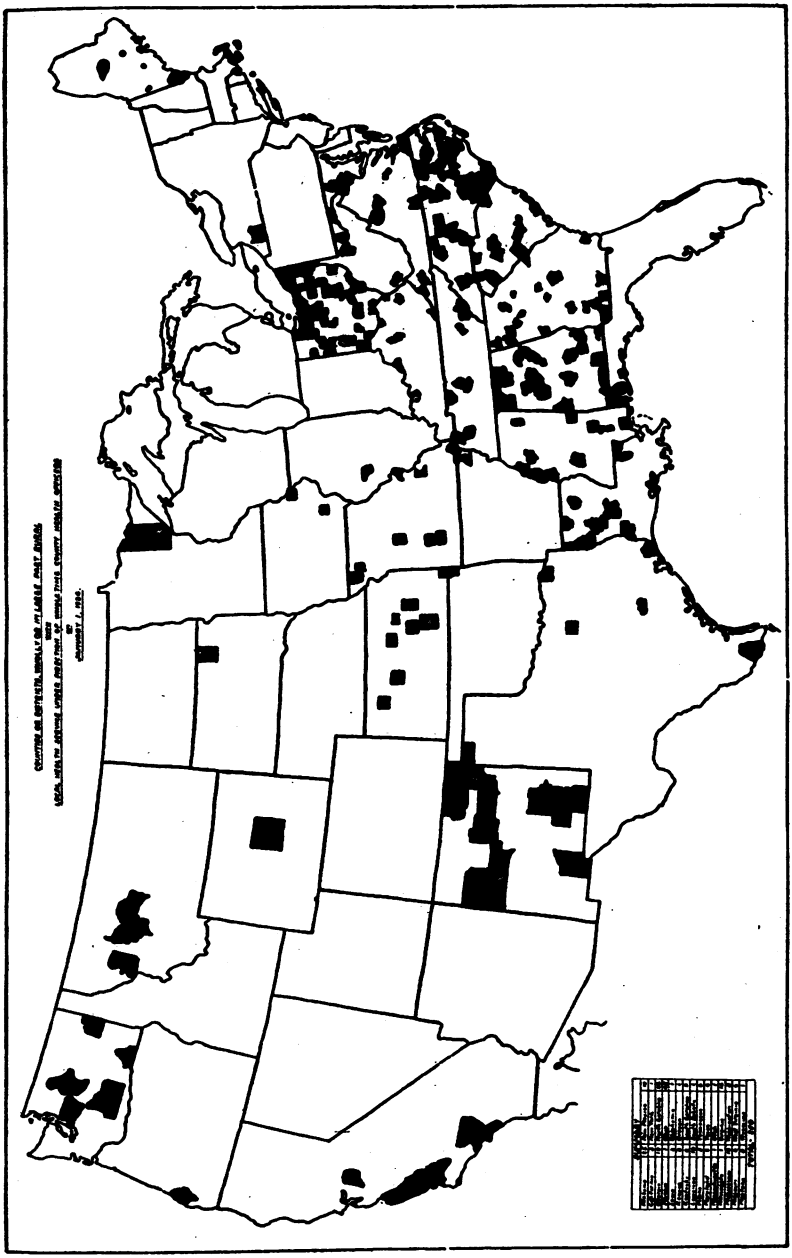
Résumé of Table I.

State.	Number of counties.					Increase or decrease in 1920.	Increase or decrease in 1921.	Increase or decrease in 1922.	Increase or decrease in 1923.
	1920	1921	1922	1923	1924				
Alabama	12	16	18	19	22	+4	+2	+1	+3
Arkansas	1	0	0	0	0	−1			
California	1	0	1	4	5	−1	+1	+3	+1
Georgia	16	17	18	18	19	+1	+1		+1
Idaho	0	0	3	0	0		+3	−3	
Illinois	0	0	0	1	1			+1	
Indiana	0	0	0	1	0			+1	−1
Iowa	0	0	1	1	2		+1		+1
Kansas	5	5	8	8	8		+3		
Kentucky	1	8	8	8	9	+7			+1
Louisiana	1	1	7	7	10		+6		+3
Maine	0	0	0	5	5			+5	
Maryland	0	0	1	2	3		+1	+1	+1
Massachusetts	0	0	1	1	1		+1		
Michigan	1	0	0	0	0	−1			
Minnesota	0	0	0	0	1				+1
Mississippi	5	4	9	12	10	−1	+5	+3	−2
Missouri	0	1	2	11	9	+1	+1	+9	−2
Montana	2	3	4	4	3	+1	+1		−1
New Mexico	0	5	7	8	10	+5	+2	+1	+2
New York	1	0	0	0	1	−1			+1
North Carolina	17	25	29	29	33	+8	+4		+4
Ohio	16	36	40	42	45	+20	+4	+2	+3
Oklahoma	1	1	1	1	1				
Oregon	0	0	0	1	1			+1	
South Carolina	6	8	7	7	9	+2	−1		+2
South Dakota	0	0	1	1	1		+1		
Tennessee	1	0	4	5	8	−1	+4	+1	+3
Texas	5	6	5	6	6	+1	−1	+1	
Utah	0	0	1	1	1		+1		
Vermont	10	10	10	10	0				−10
Virginia	6	10	9	9	14	+4	−1		+5
Washington	1	4	4	4	5	+3			+1
West Virginia	0	1	3	4	6	+1	+2	+1	+2
Wyoming	0	0	0	0	1				+1
Total	109	161	202	230	250	+52	+41	+28	+20

The accompanying map shows the counties or districts in the United States in which, as of January 1, 1924, the rural sections were provided with local health service under whole-time, local (county or district) health officers.

The net gain of 20 counties in 1923 is cause for encouragement to all persons interested in this much-needed economical and effective development in the conservation and promotion of the health of the people of the United States. Most of the increases during the year were made in States in which the respective State health departments, with the cooperation of the United States Public Health Service or the International Health Board, or both, were enabled to give encouragement, technical advice, and financial assistance to county or district health departments.

Some of the losses were attributable to the inability of the State health departments to furnish their proportionate part of financial assistance to their county health departments. The biggest loss was in the State of Vermont. The termination on June 30, 1923, of the 10 district health departments, which for several years previously had furnished whole-time health service to all the rural districts in Vermont, is of especial interest. The district health



Counties or districts, wholly or in large part rural, with local health service under direction of whole-time county health officers on January 1, 1924.

officer was appointed by the State board of health. His salary was paid by the State board from a State appropriation for that purpose. Upon appointment, he became automatically, under the law, the health officer of each of the fifteen or twenty or more "towns" (townships) in his district. The boards of selectmen, constituting the governing bodies of the local (town) political units, technically had nothing to say about his appointment. They appropriated no money obtained from local taxation for support of the town health service. The health service came from the State Capitol. The board of selectmen had no official responsibility for it. Had they been partners in the district health business, sharing official, political, and financial responsibility for its success, the result of the attack made on the district health system of Vermont in the State legislature in 1923 probably would have been different. The case of Vermont furnishes an illuminating example of a State doing more than its proportionate part in local health service. The result is practically the same as that in a State which does nothing or less than its proportionate part for local health service.

Table 2 presents, by States, the percentage of rural population having local health service under the direction of whole-time county (or district) health officers at the beginning of 1924.

TABLE 2.—*Percentage of rural population having, on January 1, 1924, local health service under whole-time county or district health officers.*

State.	Rural population (1920 census).	Rural population with local health service under direction of whole-time health officer.	Percentage of rural population with local health service under direction of whole-time health officer.
Alabama	1,838,857	741,103	40.30
Arizona	216,635	0	0
Arkansas	1,461,707	0	0
California	1,095,132	242,967	22.17
Colorado	486,370	0	0
Connecticut	444,292	0	0
Delaware	102,236	0	0
Florida	612,645	0	0
Georgia	2,167,973	371,037	17.11
Idaho	312,829	0	0
Illinois	2,082,127	17,854	.85
Indiana	1,447,535	0	0
Iowa	1,528,526	34,845	2.28
Kansas	1,151,293	121,656	10.56
Kentucky	1,783,087	165,987	9.30
Louisiana	1,170,346	259,572	22.17
Maine	468,445	25,127	5.36
Maryland	589,239	99,753	17.19
Massachusetts	202,108	16,562	8.19
Michigan	1,426,852	0	0
Minnesota	1,335,532	50,898	3.81
Mississippi	1,550,497	287,071	18.51
Missouri	1,817,152	251,578	13.84
Montana	376,878	32,711	8.67
Nebraska	891,066	0	0
Nevada	62,153	0	0
New Hampshire	163,322	0	0
New Jersey	680,964	0	0

TABLE 2.—*Percentage of rural population having, on January 1, 1924, local health service under whole-time county or district health officers*—Continued.

State.	Rural population (1920 census).	Rural population with local health service under direction of whole-time health officer.	Percentage of rural population with local health service under direction of whole-time health officer.
New Mexico	295,390	120,182	40.68
New York	1,795,383	39,708	2.21
North Carolina	2,068,753	884,627	42.76
North Dakota	558,633	0	0
Ohio	2,082,258	1,189,342	57.11
Oklahoma	1,488,803	19,435	1.30
Oregon	392,370	14,955	3.81
Pennsylvania	3,112,202	0	0
Rhode Island	15,217	0	0
South Carolina	1,389,737	375,331	27.00
South Dakota	534,675	14,972	2.80
Tennessee	1,728,659	214,659	12.43
Texas	3,150,539	130,825	4.15
Utah	233,812	10,659	4.55
Vermont	242,452	0	0
Virginia	1,635,203	366,845	22.43
Washington	607,886	166,531	27.40
West Virginia	1,094,694	169,972	15.52
Wisconsin	1,387,499	0	0
Wyoming	137,054	3,188	2.32
Total	51,406,017	6,439,852	12.52

That over 87 per cent of our rural population are as yet unprovided with health service approaching adequacy, provision for which would mean a financial saving as well as the prevention of much mental and physical suffering and much unnecessary loss of human life, is a matter which should be of serious and immediate concern to all who have a genuine interest in our national welfare.

WHOLE TIME COUNTY HEALTH OFFICERS, 1924.

The following directory has been compiled from data furnished as of January 1, 1924, by State health officers. Similar directories for 1922 and 1923 have been published in Public Health Reports. The latter was issued as Reprint No. 837.

In the questionnaire sent for the purpose of obtaining the necessary information, a "whole-time" county health officer was defined as "one who does not engage in the practice of medicine or any other business, but devotes his whole time to official duties."

Directories of State health departments have been published annually by the Public Health Service for the years 1912 to 1923, inclusive. The directory for 1923 was issued as Reprint No. 871 from the Public Health Reports.

Directories of city health officers have been published annually for the years 1916 to 1923, inclusive, the directory for 1923 being Reprint No. 876.

Directories of State and city health officers for 1924 will be published later.

County.	Name of health officer.	Post-office address.	Official title.
Alabama:			
Baldwin	G. C. Marlette, M. D.	Bay Minette	County health officer.
Barbour	H. G. Ford, M. D.	Clayton	Do.
Calhoun	G. A. Cryer, M. D.	Anniston	Do.
Colbert	W. T. Burkett, M. D.	Tuscumbia	Do.
Covington	W. G. Smillie, M. D., Dr. P. H.	Andalusia	Do.
Dallas	L. T. Lee, M. D.	Selma	Do.
Escambia	W. C. Hatchett, M. D.	Brewton	Do.
Etowah	C. L. Murphree, M. D.	Gadsden	Do.
Franklin	H. C. Douglas, M. D.	Russellville	Do.
Houston	T. E. Tucker, M. D.	Dothan	Do.
Jefferson	J. D. Dowling, M. D.	Birmingham	Do.
Lauderdale	W. D. Hubbard, M. D.	Florence	Do.
Limestone	H. K. Gallagher, M. D.	Athens	Do.
Madison	B. F. Austin, M. D.	Huntsville	Do.
Mobile	C. A. Mohr, M. D.	Mobile	Do.
Montgomery	J. L. Bowman, M. D.	Montgomery	Do.
Morgan	H. C. McRene, M. D.	Albany	Do.
Pike	W. H. Abernathy, M. D.	Troy	Do.
Sumter	J. S. Hough, M. D.	Livingston	Do.
Talladega	J. H. Hill, M. D.	Talladega	Do.
Tuscaloosa	A. A. Kirk, M. D.	Tuscaloosa	Do.
Walker	A. M. Waldrop, M. D.	Jasper	Do.
California:			
Los Angeles	J. L. Pomeroy, M. D.	Los Angeles, Hall of Records.	Health officer.
Monterey	R. C. Main, M. D.	Salinas	Do.
Orange	L. W. Mitchell, M. D.	Santa Ana	Do.
San Francisco	W. C. Hassler, M. D.	San Francisco, 1085 Mission St.	Do.
San Joaquin	J. J. Sippy, M. D.	Stockton	Do.
San Luis Obispo	L. F. Badger, M. D.	San Luis Obispo	Do.
Colorado:			
Denver		Denver	Do.
Georgia:			
Baldwin	H. D. Allen, jr., M. D.	Milledgeville	Commissioner of health
Bartow	H. E. Felton, M. D.	Cartersville	Do.
Bibb	C. L. Ridley, M. D.	Macon	Do.
Clarke	J. D. Applewhite, M. D.	Athens	Do.
Cobb	L. L. Welch, M. D.	Marietta	Do.
Decatur	J. Allen Johnston, M. D.	Bainbridge	Do.
De Kalb	W. A. Harrison, M. D.	Decatur	Do.
Dougherty	Hugo Robinson, M. D.	Albany	Do.
Floyd	B. V. Elmore, M. D.	Rome	Do.
Glynn	H. L. Akridge, M. D.	Brunswick	Do.
Hall	B. D. Blackwelder, M. D.	Gainesville	Do.
Laurens	O. H. Cheek, M. D.	Dublin	Do.
Lowndes	Gordon T. Crozier, M. D.	Valdosta	Do.
Mitchell	C. O. Rainey, M. D.	Camilla	Do.
Richmond	H. B. Neagle, M. D.	Augusta	Do.
Sumter	J. W. Payne, M. D.	Americus	Do.
Thomas	M. E. Winchester, M. D.	Thomasville	Do.
Troup	C. S. Kinzer, M. D.	La Grange	Do.
Walker	J. H. Hammond, M. D.	La Fayette	Do.
Illinois:			
Morgan	R. V. Brokaw, M. D.	Jacksonville	County health officer.
Iowa:			
Dubuque	D. C. Steelsmith, M. D.	Dubuque	Do.
Washington	Charles W. Stewart, M. D.	Washington	Do.
Kansas:			
Butler	W. S. Dinsmore, M. D.	Eldorado	Do.
Cherokee	J. C. Montgomery, M. D.	Columbus	Do.
Ellis	J. H. Middlekauff, M. D.	Hays	Do.
Geary	I. O. Church, M. D.	Junction City	Do.
Lyon	J. S. Fulton, M. D.	Emporia	Do.
Marion	S. N. Mallison, M. D.	Marion	Do.
Ottawa	E. O. Chimene, M. D.	Minneapolis	Do.
Sheridan	L. S. Steadman, M. D.	Hoxie	Do.
Kentucky:			
Bell	George S. Hays, M. D.	Pineville	Do.
Boyd	Robert D. Higgins, M. D.	Ashland	Director of health.
Daviess	George W. Duvall, M. D.	Owensboro	Do.
Fayette	J. S. Chambers, M. D.	Lexington	Do.

County.	Name of health officer.	Post-office address.	Official title.
Kentucky—Continued			
Fulton	J. M. Hubbard, M. D.	Hickman	Director of health.
Jefferson	Irwin Lindenberger, M. D.	Louisville	County health officer.
Johnson	D. H. Swengel, M. D.	Paintsville	Director of health.
Mason	Virgil D. Guittard, M. D., D. P. H.	Maysville	Do.
Scott	Albert Stewart, M. D.	Georgetown	Do.
Louisiana:[1]			
Beauregard	G. M. Brandau, M. D.	De Ridder,	Director parish health unit.
Caddo	W. J. Sandidge, M. D.	Shreveport	Do.
Claiborne	Austin F. Barr, M. D.	Homer	Do.
De Soto	Francis M. Munson, M. D.	Mansfield	Do.
Natchitoches	W. W. Knipmeyer, M. D.	Natchitoches	Do.
Ouachita	John Schreiber, M. D.	Monroe	Do.
Rapides	C. M. Abbott, M. D.	Alexandria	Parish health officer.
St. Mary	Herbert F. Gammons, M. D.	Franklin	Director parish health unit.
Tangipahoa	A. W. Brennan, M. D.	Hammond	Do.
Washington	F. Michael Smith, M. D.	Franklinton	Do.
Maryland:			
Allegany	C. C. McCulloch, M. D.	Cumberland	County health officer.
Frederick	E. C. Kefauver, M. D.	Frederick	Do.
Montgomery	W. T. Pratt, M. D.	Rockville	Do.
Massachusetts:			
Cape Cod Health District.	Almon P. Goff, M. D.	Hyannis	Health officer.
Minnesota:			
St. Louis	H. G. Lampson, M. D.	Duluth	County health officer.
Mssissippi:			
Bolivar	R. D. Dedwylder, M. D.	Cleveland	Do.
Coahoma	R. R. Kirkpatrick, M. D.	Clarksdale	Director health unit.
Forrest	W. D. Beacham, M. D.	Hattiesburg	Do.
Harrison	D. J. Williams, M. D.	Gulfport	County health officer.
Hinds	H. L. Crook, M. D.	Jackson	Do.
Jones	A. D. Tisdale, M. D., C. P. H.	Laurel	Do.
Lauderdale	R. J. Wilson, M. D.	Meridian	Do.
Lee	C. M. Roberts, M. D.	Tupelo	Do.
Tallahatchie	J. M. Kitterell, M. D.	Charleston	Director health unit.
Washington	A. J. Ware, M. D.	Greenville	County health officer.
Missouri:			
Dunklin	E. L. Spence, M. D.	Kennett	Deputy State commissioner of health.
Gentry	E. M. Lucke, M. D.	Albany	Do.
Greene	U. F. Kerr, M. D.	Springfield	Do.
New Madrid	Wm. N. O'Bannon, M. D.	New Madrid	Do.
Nodaway	C. P. Fryer, M. D., D. P. H.	Maryville	Do.
Pettis	J. W. Boger, M. D.	Sedalia	Do.
Polk	E. E. Huber, M. D.	Bolivar	Do.
St. Francois	Bradford Massey, M. D.	Flat River	Do.
St. Louis	W. F. O'Malley, M. D.	Clayton	Do.
Montana:			
Cascade	W. H. Pickett, M. D.	Great Falls	County health officer.
Lewis and Clark	Arthur Jordan, M. D.	Helena	Do.
Missoula	F. D. Pease, M. D.	Missoula	Do.
New Mexico:			
Bernalillo	James R. Scott, M. D.	Albuquerque	Do.
Chaves	J. A. Smith, M. D.	Roswell	Do.
Colfax	C. S. Merriam, M. D.	Raton	Do.
Dona Ana	C. W. Gerber, M. D.	Las Cruces	Do.
Eddy	(Vacant)		
McKinley	W. W. Johnston, M. D.	Gallup	Do.
San Miguel	M. D. Moran, M. D.	Las Vegas	Do.
Sante Fe	H. P. Mera, M. D.	Santa Fe	Do.
Union	W. H. Enneis, M. D.	Clayton	Do.
Valencia	G. W. Luckey, M. D.	Los Lunas	Do.
New York:			
Cattaraugus	L. D. Bristol, M. D. Dr. P. H.	Olean	District health officer.
North Carolina:			
Beaufort	J. W. Williams, M. D.	Washington	County health officer.
Bertie	J. E. Smith, M. D.	Windsor	Do.
Bladen	T. A. Mann, M. D.	Elizabethtown	Do.
Brunswick	R. E. Broadway, M. D.	Southport	Do.
Buncombe	R. G. Wilson, M. D.	Asheville	Do.
Cabarrus	S. E. Buchanan, M. D.	Concord	Do.
Columbus	Floyd Johnson, M. D.	Whiteville	Do.
Craven	D. E. Ford, M. D.	New Bern	Do.
Cumberland	J. W. McNeill, M. D.	Fayetteville	Do.
Davidson	F. J. Lancaster, M. D.	Lexington	Do.
Durham	J. H. Epperson, Ph. D.	Durham	Do.
Edgecombe	R. C. Gyles, M. D.	Tarboro	Do.
Forsyth	J. Roy Hege, M. D.	Winston-Salem	Do.
Granville	J. A. Morris, M. D.	Oxford	Do.
Guilford	B. B. Williams, M. D.	Greensboro	Do.

[1] Parishes.

County.	Name of health officer.	Post-office address.	Official title.
North Carolina—Con.			
Halifax	E. W. Larkin, M. D	Weldon	County health officer.
Henderson	E. J. Cowart, M. D	Hendersonville	Do.
Hyde	Clyde Ruff, M. D	Swanquarter	Do.
Lenoir	R. S. McGeachy, M. D	Kinston	Do.
Mecklenburg	W. A. McPhaul, M. D	Charlotte	Do.
New Hanover	J. H. Hamilton, M. D	Wilmington	Do.
Northampton	P. G. Parker, M. D	Jackson	Do.
Pamlico	W. H. Harper, M. D	Bayboro	Do.
Pitt	C. L. Outland, M. D	Greenville	Do.
Robeson	E. R. Hardin, M. D	Lumberton	Do.
Rowan	C. W. Armstrong, M. D	Salisbury	Do.
Sampson	E. T. Hollingsworth, M. D	Clinton	Do.
Surry	L. L. Williams, M. D	Mount Airy	Do.
Vance	F. R. Harris, M. D	Henderson	Do.
Wake	A. C. Bulla, M. D	Raleigh	Do.
Wayne	L. W. Corbett, M. D	Goldsboro	Do.
Wilkes	J. W. White, M. D	Wilkesboro	Do.
Wilson	L. J. Smith, M. D	Wilson	Do.
Ohio:			
Allen	J. J. Sutter, M. D	Lima	District health commissioner.
Ashtabula	W. S. Weiss, M. D	Jefferson	Do.
Athens	J. M. Higgins, M. D	Athens	Do.
Auglaize	C. L. Mueller, M. D	Wapakoneta	Do.
Belmont	F. R. Dew, M. D	St. Clairsville	Do.
Butler	C. J. Baldridge, M. D	Hamilton	Do.
Clermont	F. A. Ireton, M. D	Batavia	Do.
Clinton	W. K. Ruble, M. D	Wilmington	Do.
Columbiana	T. T. Church, M. D	Lisbon	Do.
Coshocton	D. M. Criswell, M. D	Coshocton	Do.
Crawford	G. T. Wasson, M. D	Bucyrus	Do.
Cuyahoga	R. Lockhart, M. D	Cleveland	Do.
Erie	F. M. Houghtaling, M. D	Sandusky	Do.
Geauga	G. L. Lyne, M. D	Chardon	Do.
Hamilton	C. A. Neal, M. D	Cincinnati	Do.
Hancock	S. F. Whisler, M. D	Findlay	Do.
Hocking	W. G. Rhoten, M. D	Logan	Do.
Huron	B. C. Pilkey, M. D	Norwalk	Do.
Lake	H. Kenning, M. D	Painesville	Do.
Lorain	W. A. McIntosh, M. D	Oberlin	Do.
Lucas	Charles Koenig, M. D	Toledo	Do.
Mahoning	J. F. Elder, M. D	Youngstown	Do.
Marion	N. Sifritt, M. D	Marion	Do.
Meigs	J. N. Gilliford, M. D	Pomeroy	Do.
Mercer	F. E. Ayers, M. D	Celina	Do.
Miami	A. H. Haworth, M. D	Troy	Do.
Montgomery	H. H. Pansing, M. D	Dayton	Do.
Morrow	R. L. Pierce, M. D	Mount Gilead	Do.
Muskingum	J. M. O'Neal, M. D	Zanesville	Do.
Paulding	C. E. Huston, M. D	Paulding	Do.
Perry	F. J. Crosbie, M. D	New Lexington	Do.
Richland	W. H. Brown, M. D	Mansfield	Do.
Ross	G. E. Robbins, M. D	Chillicothe	Do.
Sandusky	O. H. Thomas, M. D	Fremont	Do.
Scioto	R. W. DeCrow, M. D	Sciotoville	Do.
Seneca	H. L. S. Hinkley, M. D	Tiffin	Do.
Shelby	A. Ailes, M. D	Sidney	Do.
Stark	C. M. Peters, M. D	Canton	Do.
Summit	R. H. Markwith, M. D	Akron	Do.
Trumbull	L. A. Connell, M. D	Warren	Do.
Tuscarawas	J. Blickensderfer, M. D	New Philadelphia	Do.
Union	H. G. Southard, M. D	Marysville	Do.
Washington	A. G. Sturgiss, M. D	Marietta	Do.
Wayne	C. D. Barrett, M. D	Wooster	Do.
Wood	H. J. Powell, M. D	Bowling Green	Do.
Oklahoma:			
Ottawa	W. B. Smith, M. D	Miami	County Superintendent of health.
Oregon:			
Coos	J. A. Burket, M. D	Coquille	County health officer.
South Carolina:			
Aiken	C. H. Farmer, M. D	Aiken	Do.
Anderson	E. E. Epting, M. D	Anderson	Do.
Charleston	Leon Banov, M. D	Charleston	Do.
Cherokee	Walter Boone, M. D	Gaffney	Do.
Dillon	R. G. Beachley, M. D	Dillon	Do.
Fairfield	R. G. Hamilton, M. D	Winnsboro	Do.
Greenville	Baylis Earle, M. D	Greenville	Do.
Newberry	E. Paul Knotts, M. D	Newberry	Do.
Orangeburg	G. C. Bolin, M. D	Orangeburg	Do.
South Dakota:			
Brown	Geo. M. Boteler, M. D	Aberdeen	Do.

County.	Name of health officer.	Post-office address.	Official title.
Tennessee:			
Davidson	John J. Lentz, M. D	Nashville	County health officer.
Obion	W. S. Nichols, M. D	Union City	Do.
Gibson	F. L. Roberts, M. D	Trenton	Do.
Williamson	L. M. Graves, M. D	Franklin	Do.
Roane	J. C. Fly, M. D	Kingston	Do.
Montgomery	J. R. Harris, M. D	Clarksville	Field director.
Blount	R. C. Sullivan, M. D	Marysville	Do.
Sevier	H. C. Stewart, M. D	Sevierville	Do.
Texas:			
Dallam	L. L. Bartlett, M. D	Dalhart	County health officer.
Hidalgo	J. H. Mahone, M. D	Pharr	Do.
Jefferson	J. D. Blevins, M. D	Beaumont	Do.
Red River	P. L. Howe, M. D	Clarksville	Do.
Tarrant	Frank P. Smith, M. D	Fort Worth	Do.
Washington	J. M. Blackwell, M. D	Brenham	Do.
Utah:			
Weber	R. H. Wilson, M. D	Ogden	Do.
Virginia:			
Accomac	A. D. Knott, M. D	Accomac	Do.
Albemarle	W. S. Keister, M. D	Charlottesville	Do.
Arlington	J. W. Cox, M. D	Clarendon	Do.
Augusta	H. W. Wallace, M. D	Staunton	Do.
Fairfax	W. P. Caton, M. D	Fairfax	Do.
Halifax	Kolbe Curtice	South Boston	Health director.
Henrico	B. B. Bagby, M. D	Richmond	County health officer.
James City	J. H. Crouch, M. D	Williamsburg	Do.
Loudoun	P. M. Chichester, M. D	Leesburg	Do.
Nansemond	(Vacant)		
Norfolk	S. J. Tabor, M. D	Portsmouth	Do.
Princess Anne	E. D. Woodard, M. D	Oceana	Do.
Russell	David B. Lepper, M. D	Lebanon	Do.
Wise	W. R. Culbertson, M. D	Norton	Do.
Washington:			
Chelan	Louis P. Maxson, M. D	Wenatchee	Do.
King	Geo. H. T. Sparling, M. D	Seattle	Do.
Spokane	T. C. Barnhart, M. D	Spokane	Do.
Walla Walla	J. P. Kane, M. D	Walla Walla	Do.
Yakima	H H. Smith, M. D	Yakima	Do.
West Virginia:			
Hancock	C. W. Many, M. D	New Cumberland	Do.
Harrison	V. A. Selby, M. D	Clarksburg	Do.
Logan	C. W. Kidder, M. D	Logan	Do.
Marion	L. N. Yost, M. D	Fairmont	Do.
Preston	H. S. Mustard, M. D	Kingwood	Do.
Taylor	C. C. Hedges, M. D	Grafton	Do.
Wyoming:			
Natrona	R. J. Mallott, M. D	Casper	Director of health.

HOW THE CONNECTICUT DEPARTMENT OF HEALTH TESTS CLINICAL THERMOMETERS.

The importance to physicians and nurses of reliable temperature records in clinical histories is apparent. If the clinical thermometer is inaccurate, the temperature charts are waste paper and the opinions based on them are valueless. At the present time the States of Connecticut and Massachusetts regulate the sale of clinical thermometers, as provided for in those States by laws enacted in 1921; and the city of New York, by regulations of the Board of Health passed July 29 and October 28, 1920, provides for the testing and sale of clinical thermometers in that city. The following account of how clinical thermometers are tested in Connecticut is taken from the Health Bulletin for March, 1924, published by the State Department of Health.

A State enactment of 1921, governing the testing of clinical thermometers in Connecticut, provided for a State standard thermome-

ter, certified by the United States Bureau of Standards, to which clinical thermometers must conform before they are offered for sale in the State; and only clinical thermometers bearing the Connecticut seal or those having a certificate of accuracy furnished by the State Department of Health can legally be sold in the State.

In February, 1923, the work of testing clinical thermometers was placed under the Bureau of Laboratories, and the equipment necessary for the work was installed. The apparatus consists of a steel cylinder with an inner water bath in which the thermometers are inserted and held until the desired temperature is reached. Heat is applied to the water bath by means of an electric coil, and the water is kept in constant circulation in order to distribute the heat evenly. In the center is the standard thermometer certified by the United States Bureau of Standards, against which the clinical thermometers are tested for accuracy of reading. Ninety-six thermometers can be tested at one time in the present apparatus.

Tests and readings of the thermometers are made successively at 96°, 100°, 104°, and 106° F., and are made in duplicate. It is required that the readings be found correct within ±0.2° F. at each successive test point and to show no greater variation than ±0.3° F. between any two test points. The practice is to bring the water up to 96° (or other test-point temperature) as shown by the standard thermometer which is carefully watched with a hand lens. When the water exactly reaches the test point the heat is shut off and cold water is turned on to lower immediately the temperature of the bath. When the mercury in the standard thermometer begins to drop, all of the clinical thermometers are taken out and a reading of each one is made.

Before these thermometers can be accepted as meeting the legal requirements, they must also be tested for their operation in registering. This test consists in determining whether the mercury, after being heated to the 108° F. mark, remains there or drops back to some extent. Thermometers that do not register this temperature accurately are discarded.

Tests are also made to determine how easily the mercury is shaken down. This is done by means of a centrifugal machine which conforms to the specifications of the United States Bureau of Standards, and which applies the same amount of force to all of the thermometers. The racks holding the thermometers are put into the two cylinders of the machine, which is rotated by hand until the glycerine indicator reaches a given mark, after which it is allowed to rotate until it stops automatically. The height of the mercury in the thermometers is then read and recorded. The mercury in each must go below the 95° F. point in this test before permission is given for

sealing, and below 96° F. before individual thermometers are certified. If they fail to meet this test they are rejected as "hard shakers."

Sealing thermometers.—The law provides that manufacturers whose product has been found satisfactory may use the Connecticut seal on their thermometers. In order to secure this permission, each manufacturer is required to submit at least 48 thermometers, or as many more as may be requested, taken at random from stock. They must have been manufactured and tested at the factory, and a statement is required showing that the material used in them meets the specifications required by the State Department of Health. If the thermometers thus submitted are found to be accurate, the manufacturer is required to submit two thermometers of each variety that he wishes to sell in the State. On these is engraved "Conn.—Seal", with a letter of the alphabet which is assigned to that particular manufacturer. These two thermometers are then tested as indicated in the foregoing, and, if found satisfactory, one of each variety is kept in the State laboratory and the other is returned to the manufacturer, who is given the privilege of using the Connecticut seal on his product of the varieties submitted and approved. All thermometers sealed and sold by this manufacturer must conform in every particular with the approved samples submitted.

Certifying thermometers.—In addition to testing thermometers submitted by manufacturers who wish the privilege of using the State seal, thermometers are also certified at the Bureau of Laboratories; that is, individual thermometers are tested and a certificate is given with each approved thermometer. For this purpose they must pass the tests for accuracy noted above and must conform to the specifications required. These are legal requirements for the certification of clinical thermometers in the State. The laboratory will test and certify acceptable clinical thermometers for hospitals, physicians, and others who wish to submit them for this purpose.

It is the intention of the Connecticut State Department of Health frequently to secure thermometers bearing the seal and which have been sent into the State for sale in order to make sure that the manufacturers are not abusing the privilege which has been granted them and that thermometers of their make continue to be reliable.

DEATHS DURING WEEK ENDED MAY 3, 1924.

Summary of information received by telegraph from industrial insurance companies for week ended May 3, 1924, and corresponding week of 1923. (From the Weekly Health Index, May 6, 1924, issued by the Bureau of the Census, Department of Commerce.)

	Week ended May 3, 1924.	Corresponding week, 1923.
Policies in force	55, 860, 937	53, 387, 993
Number of death claims	11, 636	11, 040
Death claims per 1,000 policies in force, annual rate	10. 9	10. 8

Deaths from all causes in certain large cities of the United States during the week ended May 3, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923. (From the Weekly Health Index, May 6, 1924, issued by the Bureau of the Census, Department of Commerce.)

City.	Week ended May 3, 1924.		Annual death rate per 1,000, corresponding week, 1923.	Deaths under 1 year.		Infant mortality rate, week ended May 3, 1924.[2]
	Total deaths.	Death rate.[1]		Week ended May 3, 1924.	Corresponding week, 1923.	
Total (63 cities)	7, 051	13. 8	[3] 13. 2	860	[3] 784	
Akron	35			6	4	63
Albany [4]	31	13. 6	17. 8	3	1	66
Atlanta	84	19. 2	17. 3	14	6	
Baltimore [4]	253	16. 8	14. 2	24	21	70
Birmingham	80	20. 8	16. 0	5	6	
Boston	245	16. 4	15. 0	27	28	75
Bridgeport	30			3	5	47
Buffalo	162	15. 5		28		119
Cambridge	32	14. 9	14. 5	3	4	52
Camden	40	16. 5	17. 6	8	6	126
Chicago [4]	721	12. 8	13. 0	96	94	89
Cincinnati	109	13. 9	16. 0	5	8	31
Cleveland	207	11. 8	11. 0	40	27	105
Columbus	59	11. 5	15. 0	4	11	38
Dallas	57	15. 8	10. 6	5	3	
Dayton	42	12. 9	16. 4	4	3	67
Denver	90			6	8	
Des Moines	29	10. 4	13. 7	2	4	
Detroit	314			50	70	93
Duluth	23	11. 1	6. 4	2	4	43
Erie	22			2	3	41
Fall River [4]	36	15. 5	11. 6	6	8	84
Flint	22			5	5	86
Fort Worth	23	8. 1	4. 0	1	2	
Grand Rapids	21	7. 4	13. 2	2	2	31
Houston	37			5	5	
Indianapolis	95	14. 1	14. 8	7	10	53
Jacksonville, Fla	28	14. 2	16. 7	3	1	
Jersey City	90	15. 0	11. 1	14	12	101
Kansas City, Kans	20	8. 9	11. 3	2	4	40
Kansas City, Mo	96	13. 9	12. 4	9	13	
Los Angeles	252			31	27	97
Louisville	67	13. 5	13. 8	8	9	77
Lowell	20	13. 1	19. 9	4	8	71
Lynn	23	11. 6	11. 7	4	3	101
Memphis	83	25. 1	21. 2	10	3	
Milwaukee	105	11. 1	12. 2	23	24	105
Minneapolis	100	12. 5	13. 6	12	9	64
Nashville [4]	42	17. 7	19. 6	3	4	
New Bedford	30	11. 8	10. 0	8	4	125
New Haven	37	11. 0	13. 9	3	6	39
New Orleans	145	18. 5	17. 1	18	18	

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1923. Cities left blank are not in the registration area for births.
[3] Data for 64 cities.
[4] Deaths for week ended Friday, May 2, 1924.

Deaths from all causes in certain large cities of the United States during the week ended May 3, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923—Continued.

City.	Week ended May 3, 1924.		Annual death rate per 1,000, corresponding week, 1923.	Deaths under 1 year.		Infant mortality rate, week ended May 3, 1924.
	Total deaths.	Death rate.		Week ended May 3, 1924.	Corresponding week, 1923.	
New York	1,440	12.5	12.5	184	188	74
Bronx Borough	156	9.3	9.4	14	13	49
Brooklyn Borough	502	11.9	10.6	73	53	79
Manhattan Borough	628	14.5	15.6	85	106	83
Queens Borough	117	11.0	11.7	10	14	55
Richmond Borough	37	14.8	15.1	2	2	36
Newark, N. J	121	14.2	11.6	17	13	80
Norfolk	29	9.2		3		55
Oakland	52	11.0	12.6	9	6	113
Oklahoma City	20	10.0		2		
Omaha	49	12.3	13.8	7	5	75
Paterson	34	12.6	12.3	4	5	65
Philadelphia	574	15.3	14.5	48	51	61
Pittsburgh	220	18.3	14.5	30	17	102
Portland, Oreg	57	10.7	10.1	8	1	83
Providence	83	17.8	15.3	16	8	130
Richmond	61	17.3	14.1	3	8	35
St. Louis	222	14.2	14.0	17	21	
St. Paul	68	14.5	10.8	6	7	52
Salt Lake City [4]	32	13.0	10.7	7	3	116
San Antonio	68	18.5	12.7	18	11	
San Francisco	132	12.6	13.6	7	10	42
Schenectady	17	8.8	10.6	0	3	0
Seattle	74			5	4	48
Somerville	26	13.5	12.1	1	3	27
Spokane	25			3	2	63
Springfield, Mass	34	11.9	8.7	3	3	51
Syracuse	61	16.9	13.3	10	10	124
Tacoma	28	14.2	11.3	6	1	138
Toledo	71	13.4	10.6	12	12	114
Trenton	42	16.9	16.8	2	4	33
Utica	30	14.9	12.1	3	2	65
Washington, D. C	149	16.0	13.4	12	17	69
Waterbury	20			1	2	22
Wilmington, Del	23	10.0	8.9	7	1	152
Worcester	42	11.2	12.0	7	5	84
Yonkers	22	10.5	7.3	4	3	87

[4] Deaths for week ended Friday, May 2, 1924.

94539°—24——3

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 10, 1924.

ALABAMA.

	Cases.
Chicken pox	39
Diphtheria	5
Influenza	36
Malaria	44
Measles	278
Mumps	93
Pellagra	6
Pneumonia	51
Scarlet fever	3
Smallpox	50
Tuberculosis	23
Typhoid fever	4
Whooping cough	98

ARIZONA.

Chicken pox	2
Diphtheria	3
Measles	21
Scarlet fever	8
Smallpox	5
Typhoid fever	1

ARKANSAS.

Chicken pox	21
Diphtheria	4
Influenza	40
Malaria	35
Measles	199
Mumps	39
Pellagra	3
Poliomyelitis	1
Scarlet fever	2
Smallpox	13
Trachoma	1
Tuberculosis	7
Typhoid fever	4
Whooping cough	35

CALIFORNIA.

	Cases.
Cerebrospinal meningitis:	
Sonoma County	1
Diphtheria	198
Influenza	26
Lethargic encephalitis:	
Los Angeles	1
San Francisco	1
Measles	979
Poliomyelitis:	
Los Angeles	1
Rocky Mountain spotted fever:	
Lassen County	1
Scarlet fever	147
Smallpox:	
Burbank	10
Huntington Beach	15
Long Beach	14
Los Angeles County	20
San Bernardino	8
San Bernardino County	11
Scattering	61
Typhoid fever	12

COLORADO.

(Exclusive of Denver.)

Chicken pox	7
Diphtheria	14
Influenza	4
Measles	356
Mumps	29
Pneumonia	8
Rocky Mountain spotted fever	2
Scarlet fever	21
Septic sore throat	1
Tuberculosis	31
Whooping cough	7

CONNECTICUT.

	Cases.
Cerebrospinal meningitis	1
Chicken pox	58
Conjunctivitis (infectious)	3
Diphtheria	42
German measles	27
Influenza	3
Measles	141
Mumps	112
Pneumonia (lobar)	22
Scarlet fever	126
Tuberculosis (all forms)	30
Typhoid fever	2
Whooping cough	18

DELAWARE.

Chicken pox	1
Diphtheria	1
Measles	5
Mumps	2
Pneumonia (broncho)	2
Scarlet fever	3
Tuberculosis	8
Typhoid fever	1
Whooping cough	4

FLORIDA.

Diphtheria	8
Malaria	11
Pneumonia	5
Scarlet fever	1
Smallpox	4
Typhoid fever	13

GEORGIA.

Chicken pox	9
Diphtheria	7
Dysentery (bacillary)	9
Hookworm disease	21
Influenza	6
Malaria	6
Measles	22
Mumps	17
Paratyphoid fever	2
Pneumonia	19
Scarlet fever	12
Smallpox	70
Tetanus	2
Tuberculosis (pulmonary)	6
Typhoid fever	1
Whooping cough	1

ILLINOIS.

Cerebrospinal meningitis:	
Cook County	1
Diphtheria:	
Cook County	81
Livingston County	9
Scattering	43
Influenza	11
Measles	794
Pneumonia	249
Scarlet fever:	
Cook County	141
Carroll County	8

ILLINOIS—continued.

	Cases.
Scarlet fever—Continued.	
De Kalb County	8
Jackson County	8
La Salle County	9
Scattering	68
Smallpox:	
Cook County	10
Rock Island County	10
Scattering	13
Tuberculosis	317
Typhoid fever	12
Whooping cough	130

INDIANA.

Chicken pox	76
Diphtheria	35
Influenza	3
Measles	429
Mumps	12
Pneumonia	5
Scarlet fever	90
Smallpox:	
Dekalb County	7
Franklin County	8
Harrison County	21
Lake County	13
Laporte County	11
Marion County	81
Scattering	51
Tuberculosis	39
Typhoid fever	12
Whooping cough	117

IOWA.

Diphtheria	14
Scarlet fever	42
Smallpox	29
Typhoid fever	1

KANSAS.

Cerebrospinal meningitis	8
Chicken pox	62
Diphtheria	28
German measles	14
Influenza	31
Measles	609
Mumps	181
Pneumonia	134
Poliomyelitis	1
Scarlet fever	45
Smallpox	45
Tuberculosis	32
Typhoid fever	5
Whooping cough	78

LOUISIANA.

Diphtheria	17
Hookworm disease	105
Malaria	15
Measles	129
Paratyphoid fever	1
Pneumonia	33
Scarlet fever	14
Smallpox	3
Tuberculosis	28
Typhoid fever	17

MAINE.

	Cases.
Chicken pox	26
Diphtheria	7
German measles	46
Measles	83
Mumps	72
Pneumonia	18
Poliomyelitis	1
Scarlet fever	21
Septic sore throat	2
Tuberculosis	17
Typhoid fever	2
Whooping cough	17

MARYLAND.[1]

Cerebrospinal meningitis	2
Chicken pox	109
Diphtheria	27
Dysentery	1
German measles	57
Influenza	26
Lethargic encephalitis	5
Measles	248
Mumps	26
Ophthalmia neonatorum	3
Pneumonia (all forms)	74
Poliomyelitis	2
Scarlet fever	113
Septic sore throat	11
Smallpox	7
Tuberculosis	55
Typhoid fever	11
Whooping cough	34

MASSACHUSETTS.

Cerebrospinal meningitis	1
Chicken pox	178
Conjunctivitis (suppurative)	18
Diphtheria	130
German measles	87
Influenza	6
Measles	842
Mumps	265
Ophthalmia neonatorum	15
Pneumonia (lobar)	113
Scarlet fever	371
Septic sore throat	3
Smallpox	2
Tetanus	2
Trachoma	2
Trichinosis	1
Tuberculosis (all forms)	171
Typhoid fever	16
Whooping cough	71

MICHIGAN.

Diphtheria	115
Measles	570
Pneumonia	130
Scarlet fever	311
Smallpox	207
Tuberculosis	333
Typhoid fever	18
Whooping cough	82

[1] Week ended Friday.

MINNESOTA.

	Cases.
Cerebrospinal meningitis	4
Chicken pox	85
Diphtheria	69
Measles	136
Pneumonia	5
Scarlet fever	199
Smallpox	36
Tuberculosis	63
Typhoid fever	8
Whooping cough	3

MISSISSIPPI.

Diphtheria	4
Poliomyelitis	1
Scarlet fever	4
Smallpox	7
Typhoid fever	6

MISSOURI.

Chicken pox	59
Diphtheria	56
Influenza	5
Measles	515
Mumps	185
Ophthalmia neonatorum	1
Pneumonia	22
Scarlet fever	131
Smallpox	18
Tuberculosis	54
Typhoid fever	1
Whooping cough	76

MONTANA.

Diphtheria	7
Rocky Mountain spotted fever:	
Columbus R. F. D	1
Joliet R. F. D	1
Missoula R. F. D	1
Scarlet fever	29
Smallpox	17

NEBRASKA.

Chicken pox	24
Diphtheria	6
Measles	70
Mumps	2
Pneumonia	1
Scarlet fever	14
Smallpox	7
Tuberculosis	1
Typhoid fever	2
Whooping cough	12

NEW JERSEY.

Cerebrospinal meningitis	4
Chicken pox	157
Diphtheria	82
Influenza	16
Measles	701
Pneumonia	142
Scarlet fever	181
Smallpox	1
Typhoid fever	4
Whooping cough	107

NEW MEXICO.

	Cases.
Chicken pox	12
Diphtheria	4
Influenza	1
Lethargic encephalitis	1
Measles	164
Mumps	14
Pneumonia	6
Scarlet fever	10
Trachoma	2
Tuberculosis	6
Typhoid fever	3
Whooping cough	15

NEW YORK.

(Exclusive of New York City.)

Cerebrospinal meningitis	1
Diphtheria	110
Influenza	13
Lethargic encephalitis	5
Measles	1,213
Pneumonia	265
Scarlet fever	335
Typhoid fever	36
Whooping cough	334

NORTH CAROLINA.

Cerebrospinal meningitis	1
Chicken pox	138
Diphtheria	9
German measles	1
Measles	766
Scarlet fever	43
Septic sore throat	5
Smallpox	128
Typhoid fever	3
Whooping cough	337

OREGON.

Chicken pox	8
Diphtheria	10
Measles	80
Mumps	7
Pneumonia	[2] 8
Scarlet fever:	
Washington County	8
Scattering	15
Smallpox:	
Multnomah County	12
Scattering	13
Tuberculosis	13
Typhoid fever	2
Whooping cough	4

SOUTH DAKOTA.

Chicken pox	3
Diphtheria	7
Influenza	7
Measles	213
Mumps	13
Pneumonia	8
Scarlet fever	63

[2] Deaths.

TEXAS.

	Cases.
Chicken pox	43
Diphtheria	31
Influenza	39
Measles	248
Mumps	50
Pellagra	5
Pneumonia	17
Scarlet fever	20
Smallpox	121
Tuberculosis	36
Typhoid fever	6
Whooping cough	29

VERMONT.

Chicken pox	30
Diphtheria	2
Measles	78
Mumps	15
Scarlet fever	9
Whooping cough	23

VIRGINIA.

Smallpox:	
Lee County	1

WASHINGTON.

Chicken pox	56
Diphtheria	24
Measles	62
Mumps	15
Scarlet fever	31
Smallpox	11
Tuberculosis	43
Typhoid fever	2
Whooping cough	17

WEST VIRGINIA.

Diphtheria	2
Scarlet fever	7
Smallpox	3
Typhoid fever	4

WISCONSIN.

Milwaukee:	
Cerebrospinal meningitis	1
Chicken pox	60
Diphtheria	9
German measles	1
Measles	34
Pneumonia	4
Scarlet fever	26
Whooping cough	30
Scattering:	
Chicken pox	109
Diphtheria	41
German measles	62
Influenza	21
Measles	279
Ophthalmia neonatorum	1
Pneumonia	28
Scarlet fever	152
Smallpox	39
Tuberculosis	23
Typhoid fever	12
Whooping cough	123

WYOMING.	Cases.
Chicken pox	12
Influenza	1
Measles	65
Mumps	38
Pneumonia	1

WYOMING—continued.	Cases.
Rocky Mountain spotted fever	1
Scarlet fever	29
Typhoid fever	1
Whooping cough	8

Report for Week Ended May 3, 1924.

NORTH DAKOTA.	Cases.
Chicken pox	32
Diphtheria	8
Measles	157
Mumps	1
Pneumonia	8
Scarlet fever	44

NORTH DAKOTA—continued.	Cases.
Smallpox	50
Trachoma	42
Tuberculosis	15
Typhoid fever	4
Whooping cough	3

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.
January, 1924.										
Ohio [1]	6	972	59	1	937	-------	1	1,792	401	67
April, 1924.										
Connecticut	2	154	33	1	632	-------	3	719	10	3

[1] The figures for Ohio published in Public Health Reports, Feb. 29, 1924, page 427, as for January, 1924, were for December, 1923.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES.

Diphtheria.—Thirty-four States reported 1,599 cases of diphtheria for the week ended April 26, 1924. The same States reported 1,570 cases for the week ended April 28, 1923. One hundred and one cities, situated in all parts of the country and having an aggregate population of nearly 28,600,000, reported 968 cases for the week this year and 994 cases for the week last year. The estimated expectancy for these cities was 1,009 cases.

Measles.—Twenty-seven States reported 12,324 cases of measles for the week ended April 26, 1924. They reported 19,073 cases for the corresponding week of last year. The reports for the week from 101 cities were: This year, 5,197 cases of measles; last year, 11,305 cases.

Scarlet fever.—Thirty-four States reported 3,328 cases of scarlet fever for the week ended April 26, 1924. Last year they reported 2,992 cases of this disease for the corresponding week. One hundred and one cities reported the same number of cases for the week this year that they reported for the corresponding week of last year, viz; 1,536 cases. This number is higher than the estimated expectancy, which was 1,005 cases.

Smallpox.—The reports indicate an unusual prevalence of smallpox in several States and cities, which are now paying the penalty for failure to keep their people protected by vaccination. Thirty-four States reported 1,424 cases of smallpox for the week ended April 26, 1924. During the corresponding week of last year they reported 641 cases. The reports from 101 cities for the week were as follows. This year, 565 cases of smallpox; last year, 89 cases; estimated expectancy, 186 cases. In most localities in the United States smallpox this year has been mild, and few deaths have been reported; but six deaths from this disease in Michigan cities for the week ended April 26, 1924, show that it can not be lightly regarded.

Influenza and pneumonia.—One hundred and one cities reported 958 deaths from influenza and pneumonia for the week this year. Last year the same cities reported 949 deaths from these diseases for the corresponding week.

City reports for week ended April 26, 1924.

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration 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 1915 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.	Chicken pox, cases reported.	Diphtheria.		Influenza.		Measles, cases reported.	Mumps, cases reported.	Pneumonia, deaths reported.	Scarlet fever.	
		Cases, estimated expectancy.	Cases reported.	Cases reported.	Deaths reported.				Cases, estimated expectancy.	Cases reported.
NEW ENGLAND.										
Maine:										
Lewiston	0	1	1	0	0	12	2	2	4	0
Portland	--------	2	5	2	0	1	--------	2	4	1
New Hampshire:										
Concord	0	0	0	0	0	28	0	2	1	0
Vermont:										
Barre	0	0	0	0	0	0	0	0	1	1
Burlington	0	1	1	0	0	10	0	1	1	0
Massachusetts:										
Boston	42	58	64	3	0	185	29	31	51	94
Fall River	1	3	1	0	0	29	3	5	3	7
Springfield	1	3	3	1	1	60	2	1	6	16
Worcester	12	4	15	0	0	7	57	7	6	19
Rhode Island:										
Pawtucket	2	1	1	0	0	1	14	1	0	9
Providence	0	11	12	0	0	2	0	6	9	70
Connecticut:										
Bridgeport	1	5	3	1	1	0	3	2	5	7
Hartford	--------	6	6	--------	1	35	--------	3	4	33
New Haven	18	3	1	0	0	6	47	3	5	14
MIDDLE ATLANTIC.										
New York:										
Buffalo	0	11	8	2	0	24	0	17	20	10
New York	187	302	239	54	12	1,666	213	229	100	269
Rochester	3	6	0	--------	2	23	6	11	14	14
Syracuse	8	8	9	0	0	43	14	3	12	34

City reports for week ended April 26, 1924—Continued.

Division, State, and city.	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.	Scarlet fever. Cases, estimated expectancy.	Scarlet fever. Cases reported.
MIDDLE ATLANTIC—continued.										
New Jersey:										
Camden		3	12	0	0	5		7	2	2
Newark	42	18	18	10	0	184	108	17	22	34
Trenton	6	4	2	1	2	32	0	5	3	6
Pennsylvania:										
Philadelphia	167	64	91		5	158		92	70	73
Pittsburgh	41	18	10		9	45	122	48	20	19
Reading	7	3	11	0	0	4	74	1	2	6
Scranton	7	3	1		1	5	1	3	3	2
E. NORTH CENTRAL.										
Ohio:										
Cincinnati	19	10	2	0	0	145	25	9	14	11
Cleveland	64	21	13	1	2	135	229	24	27	15
Columbus	8	4	3	0	0	5	2	10	6	7
Toledo	46	5	5	0	0	96	2	6	14	18
Indiana:										
Fort Wayne		2	0	0	0	8		2	1	4
Indianapolis	11	5	3	0	0	25	133	12	18	1
South Bend		1	1	0	0	4		1	2	5
Terre Haute	5	1	1	0	0	2	0	1	1	1
Illinois:										
Chicago	94	112	69	17	5	233	93	58	103	95
Cicero	3	2	4	0	0	0	9	3	2	3
Springfield	7	1	0	1	0	6	2	2	1	3
Michigan:										
Detroit	93	61	42		5	216	82	38	72	75
Flint	9	2	1	0	0	7	45	3	6	7
Grand Rapids	5	5	9	0	0	13	24	3	5	13
Saginaw	1	1	2	0	0	20	3	3	2	30
Wisconsin:										
Madison	21	0	0	0	0	1	0	0	3	1
Milwaukee	80	12	7	0	0	28	27	0	30	31
Racine	11	2	1	0	0	0	0	4	5	7
Superior	3	1	0	0	0	1	0	0	1	5
W. NORTH CENTRAL.										
Minnesota:										
Duluth	7	2	0	0	0	5	0	2	3	7
Minneapolis	81	15	14		1	68	11	14	25	62
St. Paul		13	12	0	0	33		9	17	39
Iowa:										
Davenport		1	2	0		0			2	4
Des Moines	0	3	4	0		0	0		13	3
Sioux City	0	1	2	0		0	0		3	0
Waterloo	4	0	0	0		2	19		2	0
Missouri:										
Kansas City		8							9	
St. Joseph	3	2	1	0	0	0	3	1	2	4
St. Louis	32	49	23	0	0	50	53		29	56
North Dakota:										
Fargo	0	0	0		2	0	0	1	2	0
Grand Forks	1	1	0	0	0	27	0	0	1	1
South Dakota:										
Aberdeen	0		0	0	0	24	0	0		2
Sioux Falls	0	1	0	0	0	0	0	1	0	5
Nebraska:										
Lincoln	0	2	4	0	0	14	0	0	2	1
Omaha	5	5	2	0	0	23	0	8	12	2
Kansas:										
Topeka	15	1	5	0	0	28	0	1	3	6
Wichita	4	1	4	0	0	13	66	1	3	1
SOUTH ATLANTIC.										
Delaware:										
Wilmington	4	1	4	0	0	0	1	3	3	13
Maryland:										
Baltimore	80	19	24	7	5	248	29	43	26	72
Cumberland		1	0	0	0	1		1	1	0
Frederick		0	0	0	0	5		0	0	18

City reports for week ended April 26, 1924—Continued.

Division, State, and city.	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.	Scarlet fever. Cases, estimated expectancy.	Scarlet fever. Cases reported.
SOUTH ATLANTIC—continued.										
District of Columbia:										
Washington	49	11	5	2	2	21	-------	20	17	31
Virginia:										
Lynchburg	0	1	0	0	0	0	2	4	0	0
Norfolk	-------	1	0	0	0	31	-------	0	2	0
Richmond	12	1	1	0	0	128	3	8	2	0
Roanoke	6	1	1	0	0	2	1	2	1	0
West Virginia:										
Charleston	0	0	0	0	0	2	2	0	2	1
Huntington	7	0	0	0	0	0	0	3	0	0
Wheeling	4	1	2	0	0	6	1	2	1	1
North Carolina:										
Raleigh	21	0	0	-------	1	9	0	1	0	1
Wilmington	11	0	0	0	0	25	7	2	0	0
Winston-Salem	9	0	4	0	0	14	16	3	1	17
South Carolina:										
Charleston	2	1	1	0	0	0	2	3	0	0
Columbia	11	0	0	0	0	2	15	4	0	0
Greenville	0	1	1	0	0	8	0	0	0	1
Georgia:										
Atlanta	5	1	6	2	1	2	6	18	2	10
Brunswick	3	0	0	0	0	3	1	0	0	0
Savannah	0	0	0	-------	1	11	0	0	1	0
Florida:										
St. Petersburg	4	-------	1	0	0	0	0	0	-------	3
Tampa	0	2	0	0	0	0	0	0	0	0
E. SOUTH CENTRAL.										
Kentucky:										
Covington	1	1	1	0	0	26	0	1	2	1
Lexington	0	1	0	0	0	12	0	0	0	1
Louisville	7	5	4	5	1	6	7	8	6	0
Tennessee:										
Memphis	23	4	5	-------	2	45	48	6	2	8
Nashville	0	1	0	-------	3	8	0	7	1	0
Alabama:										
Birmingham	-------	1	2	4	1	71	-------	17	1	3
Mobile	0	1	1	-------	1	9	0	2	0	0
Montgomery	-------	1	0	2	0	8	-------	1	1	0
W. SOUTH CENTRAL.										
Arkansas:										
Fort Smith	1	0	0	0	-------	30	7	-------	1	0
Little Rock	0	0	1	1	0	17	2	-------	1	0
Louisiana:										
New Orleans	6	7	23	1	1	59	0	8	3	12
Shreveport	2	-------	0	0	0	0	0	4	-------	1
Oklahoma:										
Oklahoma	0	1	2	0	0	0	0	2	2	0
Tulsa	1	2	1	0	-------	6	2	-------	1	1
Texas:										
Dallas	23	2	7	-------	1	8	11	6	2	4
Galveston	0	1	0	0	0	1	0	2	0	0
Houston	0	2	2	-------	1	0	0	9	1	1
San Antonio	0	2	0	0	0	12	0	6	2	0
MOUNTAIN.										
Montana:										
Billings	1	0	0	0	0	6	0	2	2	0
Great Falls	8	0	2	0	0	42	0	1	1	0
Helena	0	-------	0	0	0	0	0	0	-------	0
Missoula	0	0	2	0	0	0	0	0	1	3
Idaho:										
Boise	3	0	0	0	0	8	0	0	2	0
Colorado:										
Denver	19	9	19	-------	2	93	6	14	10	19
Pueblo	2	1	5	0	0	2	1	3	1	0
New Mexico:										
Albuquerque	4	2	0	1	0	13	0	1	1	0
Utah:										
Salt Lake City	22	4	3	0	0	40	8	6	3	1
Nevada:										
Reno	0	0	0	0	0	2	0	0	0	0

City reports for week ended April 26, 1924—Continued.

Division, State, and city.	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.	Scarlet fever. Cases, estimated expectancy.	Scarlet fever. Cases reported.
PACIFIC.										
Washington:										
Seattle	31	4	10	0	-------	19	1	-------	8	11
Spokane	34	1	4	0	-------	15	0	-------	4	13
Tacoma	6	1	1	0	-------	4	1	-------	3	0
Oregon:										
Portland	4	3	8	0	0	6	0	4	6	9
California:										
Los Angeles	-------	26	53	12	0	368	-------	20	12	49
Sacramento	1	1	14	0	0	12	1	3	2	1
San Francisco	-------	22	-------	-------	-------	-------	-------	-------	14	-------

Division, State, and city.	Population, July 1, 1923, estimated.	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:										
Lewiston	33,790	0	0	0	0	0	0	0	0	17
Portland	73,129	0	0	0	3	0	0	0	------	31
New Hampshire:										
Concord	22,408	0	0	0	0	0	0	0	0	3
Vermont:										
Barre	[1] 10,008	0	0	0	1	0	0	0	0	3
Burlington	23,613	0	0	0	0	0	0	0	0	9
Massachusetts:										
Boston	770,400	0	0	0	20	2	3	0	2	225
Fall River	120,912	0	0	0	0	1	1	0	4	23
Springfield	144,227	0	0	0	3	0	0	0	0	32
Worcester	191,927	0	0	0	4	1	1	0	3	61
Rhode Island:										
Pawtucket	68,799	0	0	0	0	0	0	0	0	18
Providence	242,378	0	0	0	5	0	0	0	0	73
Connecticut:										
Bridgeport	[1] 143,555	0	0	0	0	0	0	0	4	36
Hartford	[1] 138,036	0	0	0	3	0	0	0	------	37
New Haven	172,967	0	0	0	2	1	2	0	1	37
MIDDLE ATLANTIC.										
New York:										
Buffalo	536,718	0	0	0	7	1	0	0	26	147
New York	5,927,625	1	0	0	[2] 118	12	6	2	136	1,600
Rochester	317,867	0	0	0	3	0	0	0	5	79
Syracuse	184,511	0	0	0	4	1	0	0	0	43
New Jersey:										
Camden	124,157	0	0	0	0	0	4	0	------	38
Newark	438,699	0	0	0	9	1	1	0	46	126
Trenton	127,390	0	0	0	4	0	0	0	7	44
Pennsylvania:										
Philadelphia	1,922,788	0	0	0	43	5	0	0	64	575
Pittsburgh	613,442	0	0	0	14	1	0	0	40	213
Reading	110,917	0	0	0	1	0	0	0	7	22
Scranton	140,636	0	0	0	0	0	1	0	1	------
EAST NORTH CENTRAL.										
Ohio:										
Cincinnati	406,312	2	6	0	14	1	2	0	28	122
Cleveland	888,519	3	2	0	20	2	1	0	72	215
Columbus	261,082	0	1	0	4	0	0	0	1	63
Toledo	268,338	4	15	0	13	1	0	0	33	79
Indiana:										
Fort Wayne	93,573	3	9	0	0	0	0	0	------	14
Indianapolis	342,718	5	48	0	7	0	0	0	24	83
South Bend	76,709	0	3	0	1	1	0	0	------	18
Terre Haute	68,939	1	10	0	0	0	0	0	0	10

[1] Population Jan. 1, 1920. [2] Pulmonary only.

City reports for week ended April 26, 1924—Continued.

Division, State, and city.	Population, July 1, 1923, estimated.	Smallpox.			Tuberculosis, deaths reported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
EAST NORTH CENTRAL—continued.										
Illinois:										
Chicago	2,886,121	2	8	0	54	3	2	0	54	715
Cicero	55,968	0	0	0	1	0	0	0	8	6
Springfield	61,833	0	0	0	0	0	0	0	2	13
Michigan:										
Detroit	995,668	6	85	5	23	4	1	0	18	291
Flint	117,968	0	15	1	1	1	2	0	7	25
Grand Rapids	145,947	0	1	0	1	0	0	0	6	34
Saginaw	69,754	0	0	0	1	1	0	1	4	27
Wisconsin—										
Madison	42,519	2	0	0	0	0	2	0	16	3
Milwaukee	484,595	3	2	0	6	1	0	0	24	97
Racine	64,393	0	3	0	0	0	0	0	0	13
Superior	[1] 39,671	2	0	0	0	0	0	0	------	8
WEST NORTH CENTRAL.										
Minnesota:										
Duluth	106,289	2	8	0	2	1	5	0	2	21
Minneapolis	409,125	16	14	0	7	1	1	0	1	94
St. Paul	241,891	8	16	0	4	0	0	0	------	70
Iowa:										
Davenport	61,262	7	12	------	------	0	0	------	------	------
Des Moines	140,923	3	1	------	------	0	0	------	0	------
Sioux City	79,662	2	0	------	------	0	0	------	0	------
Waterloo	39,667	0	0	------	------	0	0	------	3	------
Missouri:										
Kansas City	351,819	7	------	------	------	1	------	------	------	------
St. Joseph	78,232	7	0	0	1	0	0	0	0	21
St. Louis	803,853	9	5	0	13	4	0	0	48	265
North Dakota:										
Fargo	24,841	0	0	0	0	0	0	0	0	16
Grand Forks	14,547	1	0	0	0	0	0	0	0	------
South Dakota:										
Aberdeen	15,829	------	0	0	0	------	0	0	0	------
Sioux Falls	29,206	2	0	0	0	0	0	0	0	4
Nebraska:										
Lincoln	58,761	3	0	0	1	0	0	0	0	8
Omaha	204,382	10	5	0	6	0	0	0	0	54
Kansas:										
Topeka	52,555	3	0	0	0	0	0	0	1	20
Witchita	79,261	7	14	0	0	0	0	0	3	22
SOUTH ATLANTIC.										
Delaware:										
Wilmington	117,728	0	0	0	6	1	0	0	5	29
Maryland:										
Baltimore	773,580	0	2	0	24	4	3	1	14	269
Cumberland	32,361	0	0	0	1	0	0	0	------	9
Frederick	11,301	0	0	0	0	0	0	0	------	7
District of Columbia:										
Washington	[1] 437,571	1	7	0	13	2	1	0	4	146
Virginia:										
Lynchburg	30,277	1	0	0	2	0	0	0	4	14
Norfolk	159,089	1	0	0	6	0	0	0	------	------
Richmond	181,044	0	0	0	5	1	0	0	6	58
Roanoke	55,502	2	0	0	2	0	0	0	5	11
West Virginia:										
Charleston	45,597	1	4	0	2	0	0	0	7	12
Huntington	57,918	1	0	0	4	0	0	0	7	15
Wheeling	[1] 56,208	0	0	0	2	0	1	0	0	21
North Carolina:										
Raleigh	29,171	1	5	0	2	0	0	0	1	17
Wilmington	35,719	0	0	0	2	0	0	0	2	15
Winston-Salem	56,230	4	1	0	1	1	0	0	6	24
South Carolina:										
Charleston	71,245	0	3	0	2	0	0	1	0	27
Columbia	39,688	1	2	0	0	0	0	0	0	21
Greenville	25,789	0	3	0	2	0	0	0	4	6

[1] Population Jan. 1, 1920.

City reports for week ended April 26, 1924—Continued.

Division, State, and city.	Population, July 1, 1923, estimated.	Smallpox.			Tuberculosis, deaths reported.	Typhoid fever.			Whooping cough, cases reported.	Deaths, all causes.
		Cases, estimated expectancy.	Cases reported.	Deaths reported.		Cases, estimated expectancy.	Cases reported.	Deaths reported.		
SOUTH ATLANTIC—continued.										
Georgia:										
Atlanta	222,963	4	70	1	5	0	2	0	0	87
Brunswick	15,937	0	0	0	0	0	0	0	0	3
Savannah	89,448	1	1	0	1	0	0	0	------	38
Florida:										
St. Petersburg	24,403	------	0	0	0	------	0	0	3	7
Tampa	56,050	0	0	0	2	2	1	0	0	20
EAST SOUTH CENTRAL.										
Kentucky:										
Covington	57,877	0	0	0	0	1	0	0	0	12
Lexington	43,673	0	0	0	1	0	0	0	1	15
Louisville	257,671	1	1	0	7	1	2	0	1	71
Tennessee:										
Memphis	170,067	2	0	0	5	1	1	0	9	67
Nashville	121,128	1	0	0	8	0	0	0	8	53
Alabama:										
Birmingham	195,901	1	55	0	5	1	4	0	------	71
Mobile	63,858	1	0	0	2	0	1	0	0	17
Montgomery	45,383	1	0	0	0	0	0	0	------	14
WEST SOUTH CENTRAL.										
Arkansas:										
Fort Smith	30,635	0	0	------	------	0	0	------	8	------
Little Rock	70,916	0	0	0	5	0	1	0	0	------
Louisiana:										
New Orleans	404,575	5	0	0	18	3	2	0	0	122
Shreveport	54,590	------	3	0	3	------	1	0	1	32
Oklahoma:										
Oklahoma	101,150	2	0	0	3	0	0	0	0	26
Tulsa	102,018	2	2	------	------	0	0	------	3	------
Texas—										
Dallas	177,274	4	0	0	4	0	0	0	1	58
Galveston	46,877	0	0	0	0	1	0	0	0	9
Houston	154,970	1	2	0	6	1	0	0	0	55
San Antonio	184,727	0	0	0	13	0	2	0	0	60
MOUNTAIN.										
Montana:										
Billings	16,927	0	2	0	0	0	0	0	2	7
Great Falls	27,787	3	0	0	0	0	0	0	1	7
Helena	[1] 12,037	------	0	0	0	------	0	0	0	0
Missoula	[1] 12,668	1	0	0	0	0	0	0	0	10
Idaho:										
Boise	22,806	1	0	0	0	0	0	0	0	3
Colorado:										
Denver	272,031	10	0	0	17	0	0	0	9	88
Pueblo	43,519	0	0	0	2	1	0	0	0	20
New Mexico:										
Albuquerque	16,648	0	0	0	5	0	1	0	0	12
Utah:										
Salt Lake City	126,241	8	0	0	1	0	0	0	4	42
Nevada:										
Reno	12,429	0	0	0	0	0	0	0	5	10
PACIFIC.										
Washington:										
Seattle	[1] 315,685	9	3	------	------	0	1	------	1	------
Spokane	104,573	10	34	------	------	0	1	------	4	------
Tacoma	101,731	1	3	------	------	0	0	------	1	------
Oregon:										
Portland	273,621	6	8	0	5	1	5	0	0	59
California:										
Los Angeles	666,853	2	111	0	21	3	4	0	------	229
Sacramento	69,950	0	0	0	3	0	1	0	0	24
San Francisco	539,038	3	------	------	------	1	------	------	------	------

[1] Population Jan. 1, 1920.

City reports for week ended April 26, 1924—Continued

Division, State, and city.	Cerebro-spinal meningitis.		Lethargic encephalitis.		Pellagra.		Poliomyelitis (infantile paralysis).		
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases, est. expectancy.	Cases.	Deaths.
NEW ENGLAND.									
Maine:									
Lewiston	1	2	0	0	0	0	0	0	0
Massachusetts:									
Boston	1	0	4	3	0	0	0	0	0
Fall River	1	1	0	0	0	0	0	0	0
Worcester	0	4	0	0	0	0	0	0	0
Connecticut:									
New Haven	1	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC.									
New York:									
New York	3	4	14	4	0	0	1	2	1
Pennsylvania:									
Philadelphia	2	1	1	0	0	0	0	0	0
EAST NORTH CENTRAL.									
Ohio:									
Cleveland	2	0	0	0	0	0	0	0	0
Columbus	0	0	0	1	0	0	0	0	0
Illinois:									
Chicago	1	1	0	0	0	0	0	0	0
Michigan:									
Detroit	2	1	0	0	0	0	1	0	0
Wisconsin:									
Milwaukee	1	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL.									
Minnesota:									
Minneapolis	0		0	0	0	0	0	0	0
Missouri:		1							
St. Louis	2		0	0	0	0	0	0	0
North Dakota:		1							
Fargo	0		0	1	0	0	0	0	0
SOUTH ATLANTIC.		0							
Maryland:									
Baltimore	0	0	0	0	0	0	0	1	0
South Carolina:									
Columbia	0	0	0	0	0	3	0	0	0
Florida:									
Tampa	0	0	0	0	0	1	0	0	0
EAST SOUTH CENTRAL.									
Tennessee:									
Nashville	0	0	0	0	1	0	0	0	0
Alabama:									
Birmingham	0	0	0	0	1	1	0	0	0
Mobile	0	0	0	0	1	1	0	0	0
WEST SOUTH CENTRAL.									
Arkansas:									
Little Rock	0	0	0	1	0	0	0	0	0
Louisiana:									
New Orleans	0	0	0	0	1	1	0	0	0
Texas:									
Dallas	0	0	0	0	1	2	0	0	0
San Antonio	0	1	0	0	0	0	0	0	1
MOUNTAIN.									
Montana:									
Great Falls	0	0	0	0	0	0	0	1	0
Missoula	0	0	0	0	0	0	0	2	0
PACIFIC.									
Washington:									
Seattle	0	0	0	0	0	0	0	1	0
Oregon:									
Portland	0	1	0	0	0	0	0	0	0
California:									
Sacramento	1	0	0	0	0	0	0	0	0

The following table gives a summary of the reports from 105 cities for the nine-week period ended April 26, 1924. The cities included in this table are those whose reports have been published for all nine weeks in the Public Health Reports. Eight of these cities did not report deaths. The aggregate population of the cities reporting cases was estimated at nearly 29,000,000 on July 1, 1923, which is the latest date for which estimates are available. The cities reporting deaths had more than 28,000,000 population on that date. The number of cities included in each group and the aggregate population are shown in a separate table below.

Summary of weekly reports from cities, February 24 to April 26, 1924.

DIPHTHERIA CASES.

	1924, week ended—								
	Mar. 1.	Mar. 8.	Mar. 15.	Mar. 22.	Mar. 29.	Apr. 5.	Apr. 12.	Apr. 19.	Apr. 26.
Total	1,103	1,028	1,052	1,113	1,038	1,039	1,005	1,003	984
New England	125	86	110	135	103	105	102	99	111
Middle Atlantic	388	351	401	415	391	383	384	374	400
East North Central	230	218	234	229	200	219	210	211	156
West North Central	[1] 86	114	[1] 76	86	66	74	60	60	[1] 67
South Atlantic	54	43	37	61	42	61	52	52	50
East South Central	11	9	12	17	10	17	8	14	13
West South Central	34	34	18	21	32	23	24	[2] 30	33
Mountain	19	24	24	25	31	30	40	52	31
Pacific	156	149	140	124	163	127	[3] 125	[4] 111	[3] 123

MEASLES CASES.

Total	7,258	7,110	6,946	7,026	6,590	6,070	6,247	5,178	5,202
New England	469	356	400	430	443	374	401	353	354
Middle Atlantic	1,838	1,971	2,258	2,467	2,354	2,394	2,647	2,347	2,184
East North Central	476	541	604	659	674	806	838	675	829
West North Central	[1] 1,056	1,051	[1] 1,112	925	766	569	415	359	[1] 321
South Atlantic	683	801	579	675	621	572	626	487	518
East South Central	263	155	196	231	173	126	156	159	173
West South Central	781	693	410	514	590	354	323	[2] 201	127
Mountain	879	819	739	634	444	405	241	179	193
Pacific	813	723	588	491	525	470	[3] 600	[4] 418	[3] 503

SCARLET FEVER CASES.

Total	1,873	1,934	1,916	1,928	1,966	1,737	1,822	1,646	1,552
New England	330	387	413	337	363	312	326	253	271
Middle Atlantic	519	532	520	532	532	517	498	474	467
East North Central	380	347	349	376	370	346	345	334	284
West North Central	[1] 250	253	[1] 249	270	254	184	230	222	[1] 195
South Atlantic	188	209	175	221	202	200	218	189	168
East South Central	12	28	22	17	30	11	18	16	12
West South Central	9	11	19	13	17	15	26	[2] 25	18
Mountain	30	25	27	22	28	16	20	19	23
Pacific	155	142	142	140	170	136	[3] 141	[4] 114	[3] 114

[1] Figures for Kansas City, Mo., estimated. Report not received at time of going to press.
[2] Figures for Fort Smith, Ark., estimated.
[3] Figures for San Francisco, Calif., estimated.
[4] Figures for Seattle, Spokane, and Tacoma, Wash., estimated.

Summary of weekly reports from cities, February 24 to April 26, 1924—Contd.

SMALLPOX CASES.

	1924, week ended—								
	Mar. 1.	Mar. 8.	Mar. 15.	Mar. 22.	Mar. 29.	Apr. 5.	Apr. 12.	Apr. 19.	Apr. 26.
Total	521	488	522	565	602	544	537	473	568
New England	0	0	0	0	0	0	1	1	0
Middle Atlantic	0	1	2	0	6	1	1	0	0
East North Central	145	160	125	186	132	153	141	164	193
West North Central	[1] 51	56	[1] 76	77	72	52	61	41	[1] 62
South Atlantic	121	117	144	123	171	116	98	93	98
East South Central	35	35	25	25	38	49	45	26	56
West South Central	4	2	5	6	7	10	4	[2] 5	5
Mountain	11	11	3	4	7	8	4	10	2
Pacific	154	106	142	144	139	155	[3] 182	[4] 133	[3] 152

TYPHOID FEVER CASES.

Total	49	46	56	60	76	51	53	55	64
New England	8	7	3	2	4	1	4	4	7
Middle Atlantic	11	16	20	19	26	9	21	17	11
East North Central	9	8	11	8	7	7	7	7	10
West North Central	[1] 1	3	[1] 1	5	5	7	2	6	[1] 6
South Atlantic	7	3	8	1	11	9	10	4	8
East South Central	4	1	7	13	10	1	1	4	8
West South Central	3	2	3	2	8	9	2	[2] 4	6
Mountain	1	2	0	1	1	2	1	4	0
Pacific	5	4	3	9	4	6	[3] 5	[4] 5	[3] 8

INFLUENZA DEATHS.

Total	96	118	107	85	96	97	94	80	75
New England	3	5	10	5	3	6	3	3	3
Middle Atlantic	33	45	37	28	45	44	35	31	30
East North Central	14	19	23	13	11	20	25	14	12
West North Central	[1] 2	1	[1] 3	3	4	2	8	4	[1] 6
South Atlantic	13	15	7	15	10	3	7	6	10
East South Central	10	15	16	9	8	13	6	11	8
West South Central	15	12	8	8	10	6	3	4	3
Mountain	2	4	1	2	2	1	2	4	2
Pacific	4	2	2	2	3	2	[3] 5	3	[3] 1

PNEUMONIA DEATHS.

Total	1,165	1,218	1,194	1,173	1,204	1,251	1,221	1,101	958
New England	84	71	85	67	58	75	71	61	63
Middle Atlantic	469	516	466	495	525	500	494	474	430
East North Central	235	221	240	226	255	286	258	232	170
West North Central	[1] 49	62	[1] 66	54	72	71	74	64	[1] 44
South Atlantic	166	177	161	152	111	125	158	118	114
East South Central	55	61	55	69	47	61	53	57	42
West South Central	55	62	61	56	61	67	43	43	35
Mountain	19	14	31	20	37	39	32	25	26
Pacific	33	34	29	34	38	27	38	27	[3] 34

[1] Figures for Kansas City, Mo., estimated. Report not received at time of going to press.
[2] Figures for Fort Smith, Ark., estimated.
[3] Figures for San Francisco, Calif., estimated.
[4] Figures for Seattle, Spokane, and Tacoma, Wash., estimated.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923.

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.
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR.

BOLIVIA.

Communicable Diseases—La Paz—March, 1924.

Communicable diseases were notified at La Paz, Bolivia, during the month of March, 1924, as follows:

Disease.	Cases.	Deaths.	Disease.	Cases.	Deaths.
Cerebrospinal meningitis		6	Scarlet fever		2
Measles		1	Smallpox	24	11
Plague		4	Tuberculosis	18	6
Poliomyelitis		1	Typhus fever	15	2

Population, estimated, 100,000.

Dysentery—Influenza.

During the period under report, 13 deaths from dysentery and 24 cases of influenza with one death, were reported at La Paz.

CANADA.

Communicable Diseases—Ontario—April, 1924 (Comparative).

Communicable diseases were reported during the month of April, 1924, in the Province of Ontario, Canada, as follows:

Disease.	April, 1924.		April, 1923.	
	Cases.	Deaths.	Cases.	Deaths.
Cerebrospinal meningitis	6	2	6	5
Chancroid	5		3	
Chicken pox	389		(a)	
Diphtheria	188	20	170	21
German measles	190		(a)	
Gonorrhea	98		125	
Influenza		14		84
Lethargic encephalitis	9	6	(a)	
Measles	3,629	4	1,148	7
Mumps	1,009		(a)	
Pneumonia		232		332
Scarlet fever	691	12	329	11
Septic sore throat	8	1	(a)	
Smallpox	49	3	29	
Syphilis	118		122	
Tuberculosis	180	93	173	118
Typhoid fever	34	7	338	54
Whooping cough	140	4	286	18

Population, 2,821,000.

Goiter.

During the month of April, 1924, 16 cases of goiter with three deaths were reported in the Province of Ontario. The disease was not notifiable in the year 1923.

Occurrence of Smallpox.

The occurrence of smallpox in the Province during the period under report was notified in 22 localities, the greatest number of cases, viz, 8, being reported at Brockville; at Chatham and Ottawa 7 cases each were reported; at 12 localities 1 case each was reported.

CUBA.

Communicable Diseases—Habana.

Communicable diseases have been notified at Habana as follows:

Disease.	Apr. 11-20, 1924.		Remaining under treatment Apr. 20, 1924.
	New cases.	Deaths.	
Cerebrospinal meningitis			[1] 1
Chicken pox	40		35
Diphtheria	6		3
Leprosy			14
Malaria	9		[2] 11
Measles	9		9
Paratyphoid fever			1
Scarlet fever			1
Typhoid fever	5		[3] 31

[1] From the interior, 1. [2] From the interior, 9. [3] From the interior, 8.

ESTHONIA.

Communicable Diseases—February, 1924.

During the month of February, 1924, communicable diseases were reported in the Republic of Esthonia as follows:

Disease.	Cases.	Disease.	Cases.
Diphtheria	44	Smallpox	5
Measles	60	Tuberculosis	218
Scarlet fever	72	Typhoid fever	47

Leprosy.

During the period under report, two cases of leprosy were notified in the Republic of Esthonia.

LITHUANIA.

Communicable Diseases—January, 1924.

Communicable diseases were reported in the Republic of Lithuania during the month of January, 1924, as follows:

Disease.	Cases.	Deaths.	Disease.	Cases.	Deaths.
Diphtheria	21		Trachoma	144	
Influenza	361		Tuberculosis	236	7
Malaria	13		Typhoid fever	59	4
Scarlet fever	12		Typhus fever	51	9

Population, 4,800,000.

POLAND.

Communicable Diseases—January 20–February 2, 1924.

Communicable diseases have been reported in Poland as follows:

Jan. 20–26, 1924.

Disease.	Cases.	Deaths.	Districts showing greatest number of deaths.
Cerebrospinal meningitis	10	7	Lodz.
Diphtheria	73	7	Silesia.
Measles	259	11	Lwow.
Scarlet fever	347	44	Krakow
Smallpox	43	9	Do.
Tuberculosis	92	241	Warsaw.
Typhoid fever	225	14	Tarnopol.
Typhus fever	249	22	Lublin.
Typhus fever, recurrent	7		
Whooping cough	39	4	Lodz.

Jan. 27–Feb. 2, 1924.

Cerebrospinal meningitis	12	6	Lodz.
Diphtheria	77	6	Krakow.
Measles	148	3	Lwow.
Scarlet fever	342	37	Do.
Smallpox	148	3	Do.
Tuberculosis	159	238	Do.
Typhoid fever	199	20	Do.
Typhus fever	259	19	Do.
Typhus fever, recurrent	30		
Whooping cough	45	7	Warsaw.

Dysentery—Malaria.

During the period under report, 16 cases of dysentery with two deaths, and 32 cases of malaria were reported in Poland.

RUSSIA.

Abatement of Plague Prevalence.

Information received from the sanitary administration under date of March 10, 1924, indicates abatement of plague in the southeast regions of Russia. Three cases only were reported present in the

plague barracks of the Kalmuk district. The Ural and Astrakhan provinces were stated to be free from the disease. In the Bukeeve province, at the beginning of March, 1924, two centers of infection were reported existing, with 4 fatal cases reported at one and 16 cases with 8 deaths at the other. On March 10, both centers were reported free from plague. The total number of cases reported in the Bukeeve province from the beginning of the outbreak in October, 1923, was 339, with 315 deaths; the total for the southeast region during the same period was stated at 473 cases with 435 deaths.

Siberian Plague (Anthrax)—Moscow.

Under date of March 22, 1924, Siberian plague (anthrax) was stated to be present at Moscow, Russia, in the form of a permanent epidemic. During the year 1923, 42 cases with 15 deaths were notified. Cases were stated to have occurred among workers in factories using hair and other animal products.

Typhus Fever—Recurrent Fever—Saratov.

Under date of March 12, 1924, outbreaks of typhus fever and recurrent fever were reported in various sections of Soviet Russia, especially at Saratov among homeless vagrants, and at Novo-Cherkassk, Rostov-on-Don, and in the Karelian Republic.

SIBERIA.

Malaria.

Information dated March 28, 1924, shows spread of malaria in Siberia. According to data of the Province Sections of Health Preservation, 260,000 persons were affected with malaria in Siberia during the year 1923, or an average of 10 per cent of the population. An antimalaria campaign has been begun, and malaria stations are stated to be operating at Novonikolaevsk, Omsk, Tomsk, and Yakutsch, and others are to be opened at Barnaul and Krasnoyarsk. A regional malaria commission is stated to be working at Tomsk and to be conducting an exhibition of campaign methods against malaria.

Typhus Fever—Vladivostok.

Under date of February 19, 1924, typhus fever was declared present and verging on epidemic proportions at Vladivostok, Siberia.

UNION OF SOUTH AFRICA.

Plague—Cape Province—Orange Free State.

Plague has been reported in the Union of South Africa as follows: Week ended March 15, 1924—24 new cases (white, two cases), with 12 deaths occurring among natives. The cases occurred in the Albert district of Cape Province and in the Boshof, Kroonstad,

Vredefort, and Winburg districts, Orange Free State. Week ended March 22, 1924—15 new cases (white, one case) occurring in the Albert and Colesberg districts of the Cape Province and in the Kroonstad and Vredefort districts of the Orange Free State. From December 16, 1923, to March 22, 1924, a total of 194 cases with 113 deaths had been reported. Of these 28 cases with 10 deaths occurred in the white population and 166 cases with 103 deaths in the native population. The occurrence was on farms.

Experiment in Gassing Plague-Carrying Rats.

Under date of March 28, 1924, a successful experiment in rat destruction by means of gas was reported made at Theunisson, Orange Free State. The attack was launched against two stacks of grain numbering 500 bags each. The stacks were covered with tarpaulins drawn taut and the container of anhydrous hydrocyanic acid was placed underneath and broken. The acid diffused into gas, which gradually percolated to all parts of the stacks. When the tarpaulins were removed after approximately four hours about 100 large rats and a number of smaller rodents were found dead. A number of rats examined showed no fleas. Some rodents, however, were found to have ticks on them, and these were dead.

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 May 16, 1924.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India				Mar. 2-8, 1924: Cases, 1,882; deaths, 1,018.
Calcutta	Mar. 23-29	52	45	
Rangoon	do	2	2	
Siam:				
Bangkok	do	2	2	

PLAGUE.

Place.	Date.	Cases.	Deaths.	Remarks.
Bolivia:				
La Paz	Mar. 1-31		4	
Brazil:				
Porto Alegre	Mar. 16-Apr. 5	3		
Celebes:				
Macassar	Mar. 2-8	6	6	Including Menado.
Ceylon:				
Colombo	Mar. 2-29	6	9	Plague rats, 13.
Chile:				
Antofagasta	Apr. 6-12	5	1	
China:				
Nanking	Mar. 23-Apr. 5			Present.
India				Mar. 23-29, 1924: Cases, 4,934; deaths, 830.
Calcutta	Mar. 23-29	2	2	
Karachi	Mar. 30-Apr. 5	3	5	
Madras Presidency	do	14	10	
Rangoon	Mar. 23-29	9	8	

[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 During Week Ended May 16, 1924—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Java:				
East Java				Feb. 1-29, 1924; deaths, 765.
Djokjakarta	Feb. 1-29		48	
Kedoe	do		224	
Pekalongan	do		50	
Pasoeroean	do		3	
Samarang	do		102	
Soerabaya	do		6	
Soerakarta	do		332	
Russia:				
Bukeeve Province	Mar. 10			Total from date of outbreak, October, 1923; Cases, 339; deaths, 315; entire southeast section, cases, 473; deaths, 435.
Kalmuk district	Mar. 10	3		
Novy Kazanha	Mar. 1		4	At a locality on the coast, 16 cases, 8 deaths.
Siam:				
Bangkok	May 16-22	1	1	
Union of South Africa				Mar. 9-15, 1924: Cases, 24 (white, 2 cases); deaths, 12. Mar. 16-22, 1924: cases, 15 (white, 1 case). Total, Dec. 16, 1923-Mar. 22, 1924: Cases, 194; deaths, 113; white, 28 cases, 10 deaths; colored, 166 cases, 103 deaths. The occurrence was on farms, Cape Province and Orange Free State.

SMALLPOX.

Algeria:				
Algiers	Mar. 1-31	1		
Bolivia:				
La Paz	do	24	11	
Arabia:				
Aden	Mar. 30-Apr. 5	1		
Canada:				
Alberta—				
Calgary	Apr. 20-26	1		
Manitoba—				
Winnipeg	do	3		
New Brunswick—				
Restigouche County				Mar. 1-31, 1924: Cases, 2.
Ontario				Apr. 1-30, 1924: Cases, 49; deaths, 3.
Ottawa	Apr. 13-26	8	1	
Chile:				
Antofagasta	Apr. 6-12	2		
China:				
Amoy	Mar. 23-29		2	
Nanking	Mar. 23-Apr. 5			Present.
Shanghai	Mar. 29-Apr. 5	1	1	Cases, foreign; deaths, foreign and native.
Tientsin	Mar. 23-29	2		Reported by mission and British municipality.
Chosen (Korea):				
Seoul	Mar. 1-31	3		
Colombia:				
Barranquilla	Apr. 6-12		2	
Egypt:				
Alexandria	Mar. 26-Apr. 1	1		
Esthonia				Feb. 1-29, 1924: Cases, 5.
Greece:				
Saloniki	Feb. 25-Mar. 23	19	7	
India				Mar. 2-8, 1924: Cases, 4,934; deaths, 830.
Calcutta	Mar. 23-29	2	2	
Karachi	Mar. 30-Apr. 5	22	8	
Madras	do	18	3	
Rangoon	Mar. 23-29	8	5	
Japan:				
Nagoya	Apr. 6-12	3	1	
Tokyo	do	1		Total to Apr. 3, 1924: Cases, 149.
Yokohama	Mar. 30-Apr. 6	1		
Java:				
West Java—				
Batavia	Mar. 15-21	1		

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

Reports Received During Week Ended May 16, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Mexico:				
Mexico City	Mar. 30-Apr. 5	10		Including municipalities in Federal district.
Poland				Jan. 20-Feb. 2, 1924: Cases, 191; deaths, 12.
Siam:				
Bangkok	Mar. 16-22	1		
Spain:				
Valencia	Apr. 13-19	22		
Straits Settlements:				
Singapore	Mar. 16-22	1		
Switzerland:				
Berne	Mar. 30-Apr. 5	3		
Lucerne	Mar. 1-31	22		
Turkey:				
Constantinople	Mar. 30-Apr. 5	3		
Union of South Africa:				
Cape Province	Mar. 16-22			Outbreaks.
Natal	do			Do.
Orange Free State	do			Do.

TYPHUS FEVER.

Algeria:				
Algiers	Mar. 1-31	10	2	
Bolivia:				
La Paz	Mar. 1-31	15	2	
Chile:				
Antofagasta	Apr. 6-12	2		
Talcahuano	Mar. 31-Apr. 6	1	1	
Chosen (Korea):				
Chemulpo	Mar. 1-31	4	2	
Seoul	do	56	6	
Egypt:				
Alexandria	Mar. 26-Apr. 1	1		
Cairo	Jan. 8-22	2	1	
Finland				Mar. 15-31, 1924: Paratyphus fever, 5 cases.
Latvia				Feb. 1-29, 1924: Cases, 51; deaths, 9.
Libau	Apr. 8-15	1		
Mexico:				
Mexico City	Mar. 30-Apr. 5	6		Including municipalities in Federal district.
Poland				Jan. 20-Feb. 2, 1924: Cases, 508; deaths, 41. Typhus fever, recurrent, cases, 37.
Russia				Reported present in various sections, Mar. 12, 1924.
Karelian Republic	Mar. 12			Prevalent.
Novo Cherkassk	Mar. 12			Do.
Rostov-on-Don	Mar. 12			Do.
Saratov	Mar. 12			Do.
Siberia:				
Vladivostok	Feb. 19			Present and verging on epidemic prevalence.
Spain:				
Barcelona	Mar. 20-Apr. 2		1	
Madrid	Jan. 1-31		2	
Turkey:				
Constantinople	Mar. 23-Apr. 5	2		
Union of South Africa:				
Cape Province	Mar. 9-15			Outbreaks.
Transvaal—				
Johannesburg	Mar. 23-29	1		

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

Reports Received from December 29, 1923, to May 9, 1924.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Hongkong	Nov. 18-24	1		
India				Oct. 14-Dec. 22, 1923: Cases, 14,117; deaths, 9,148.
Do				Dec. 30, 1923-Mar. 1 1924: Cases, 29,183; deaths, 16,458.
Bombay	Dec. 23-29	1	1	
Do	Feb. 3-16	17	17	
Calcutta	Nov. 11-Dec. 29	85	69	
Do	Dec. 30-Mar. 22	384	314	
Madras	Nov. 25-Dec. 29	15	5	
Do	Dec. 30-Mar. 22	24	10	
Rangoon	Nov. 11-Dec. 29	8	5	
Do	Feb. 24-Mar. 22	7	6	
Indo-China:				
Saigon	Dec. 31-Mar. 15	2	2	Including 160 square kilometers in surrounding country.
Philippine Islands:				
City—				
Manila	Feb. 3-9	1	1	
Province—				
Cebu	Mar. 2-8	1	1	
Siam:				
Bangkok	Nov. 18-Dec. 8	4	2	
Do	Dec. 31-Mar. 15	9	5	
Turkey:				
Constantinople	Dec. 2-8		1	

PLAGUE.

Azores:				
St. Michael Island	Oct. 20-Nov. 10	9	5	At localities 3 to 9 miles from port of Ponta Delgada.
Bolivia:				
La Paz	Oct. 1-31		3	
Do	Feb. 1-29		6	
Brazil:				
Bahia	Nov. 11-Dec. 22	5	3	
Do	Dec. 30-Feb. 16	6	6	
Porto Alegre	Feb. 10-16		1	
Rio de Janeiro	Jan. 20-26	1		
British East Africa:				
Kenya—				
Kisumu	Feb. 24-Mar. 8	1	1	
Mombasa	Oct. 14-20	1	1	Infected rats, 2. Dec. 9-15, 1923: Cases, 4; deaths, 2; removed from vessel arrived Dec. 11, 1923.
Do	Dec. 30-Jan. 5	1	1	
Nairobi	Nov. 1-21	40		In rural districts, several hundred.
Tanganyika				To Nov. 24, 1923: Cases, 39; deaths, 25.
Do	Jan. 27-Feb. 9	8	5	
Uganda	Aug. 1-Oct. 31	734	719	
Entebbe	Oct. 1-Dec. 31	251	239	
Do	Jan. 1-31	36	35	
Canary Islands:				
Las Palmas	Oct. 15-Nov. 15	14	14	
Santa Cruz de Teneriffe	Feb. 19-Apr. 8	5		
San Juan de la Rambla	Dec. 11	1		Locality 52 km. from Teneriffe.
Celebes Island	Nov. 30			Epidemic.
Macassar	Feb. 20-Mar. 1	5	1	Including Menado.
Ceylon:				
Colombo	Nov. 11-Dec. 29	31	21	Plague rodents, 24.
Do	Dec. 30-Mar. 1	75	71	Plague rodents, 31.
Chile:				
Antofagasta	Mar. 16-22	5		
China:				
Nanking	Dec. 16-29			Present.
Do	Dec. 30-Mar. 22			Do.

[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 December 29, 1923, to May 9, 1924—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Ecuador:				
Eloy Alfaro	Mar. 16-31	1	1	
Guayaquil	Nov. 16-Dec. 31	45	13	Rats taken, 53,240; found infected, 133.
Do	Jan. 1-Mar. 31	105	32	Rats taken, 109,843; found infected, 492.
Jipijapa	Nov. 16-Dec. 15			Present.
Quevedo	Jan. 1-31	3	2	
Quito	Nov. 1-30	11	1	
Santa Rosa	Feb. 16-29			Do.
Vino del Milagro	Dec. 1-15	1		
Egypt				Jan 1-Dec. 31, 1923: Cases, 1,519; deaths, 725. Jan. 1-Mar. 27, 1924: Cases, 86; deaths, 55.
City—				
Alexandria	Year 1923	65	33	
Cairo	do	2	2	
Port Said	do	51	29	
Suez	do	46	24	
Do	Jan. 2-Mar 27	6	3	
Province—				
Assiout	Year 1923	370	211	
Beni Souef	do	63	23	
Charkieh	Jan. 31-Mar. 27	2	2	
Dakhalieh	Year 1923	2	2	
Fayoum	do	34	9	
Do	Feb. 18-Mar. 27	2	2	
Gharbieh	Year 1923	23	9	
Girgeh	do	337	193	
Do	Jan. 17-Mar. 27	7	4	
Gizeh	Year 1923	3	4	
Kalioubiah	do	76	10	
Do	Jan. 6-Mar. 27	1		
Kena	Year 1923	50	34	
Menoufieh	do	250	98	
Do	Jan. 2-Mar. 27	56	34	
Minia	Year 1923	106	44	
Do	Feb. 5-Mar. 27	5	4	
Greece:				
Kalamata	Apr. 18-24			Several deaths.
Patras	do			Do.
Hawaii:				
Honokaa				Jan. 8-Mar. 14, 1924: Four plague-infected rodents.
Paauhau				Dec. 14, 1923: One plague rat, Feb. 14, 1924: One plague rat.
India				Oct. 14-Dec. 29, 1923: Cases. 34,542; deaths, 23,778.
Do				Dec. 30, 1923-Mar. 1,1924: Cases, 54,840; deaths, 41,578.
Bombay	Oct. 28-Dec. 22	5	5	
Do	Dec 30-Mar. 22	174	133	
Calcutta	Dec. 23-29	1	1	
Do	Jan. 6-Mar. 22	5	5	
Karachi	Nov. 11-Dec. 29	42	33	
Do	Dec. 30-Mar. 29	38	26	
Madras Presidency	Nov. 4-Dec. 29	1,657	1,021	
Do	Jan. 27-Mar. 22	624	402	
Rangoon	Jan. 27-Feb. 16	20	15	
Do	Dec. 30-Mar. 22	111	102	
Indo-China:				
Saigon	Oct. 28-Dec. 8	19	6	Including 100 square kilometers in surrounding country.
Do	Jan. 27-Mar. 1	2	1	Do.
Iraq:				
Bagdad	Nov. 11-Dec. 29	8	6	
Do	Jan. 6-Mar. 22	35	16	
Java				Oct. 1-Dec. 31, 1923: Deaths, 2,908. Jan. 1-31, 1924: Deaths, 967.
Province—				
Djokjakarta	Oct. 1-Dec. 31		146	
Do	Jan. 1-31		44	
Kedoe	Oct. 1-Dec. 31		1,287	
Do	Jan. 1-31		402	
Pekalongan	Oct. 1-Dec. 31		150	
Do	Jan. 1-31		57	
Samarang	Oct. 1-Dec. 31		430	
Do	Jan. 1-31		81	
Soerabaya	Oct. 1-Dec. 31		9	
Do	Jan. 1-31		11	Plague rats, 5. (Corrected report.)
Soerakarta	Oct. 1-Dec. 31		886	
Do	Jan. 1-31		372	

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

Reports Received from December 29, 1923, to May 9, 1924—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Madagascar:				
Tananarive Province	Oct. 1-Dec. 31	324	272	Bubonic, pneumonic, septicemic. July 1-Dec. 31, 1923—city and Province: Cases, 429; deaths, 367. Jan. 1-Feb. 29, 1924—city and Province: Cases, 525; deaths, 465.
Ambatondrazaka	Feb. 1-15	8		District. Type, pneumonic.
Ambositra	Feb. 1-29	8	1	Do.
Other localities	do	229	214	
Tananarive town	Oct. 1-Dec. 31	74	74	
Do	Jan. 29-Feb. 29	27	26	
Paraguay:				
Asuncion	Dec. 18	6	4	
Peru				Nov. 1-Dec. 31, 1923: Cases, 38; deaths, 24. Jan. 1-Mar. 31, 1924: Cases, 162; deaths, 49.
Locality—				
Ayabaca	Mar. 1-31	4		
Barranco	do	1		
Callao	Jan. 1-Mar. 31	7	2	
Cañete	Nov. 1-30	1	1	
Do	Feb. 1-Mar. 31	14	5	
Casma	Mar. 1-31	2	1	
Chancay	Dec. 1-31	2		
Chepen	Nov. 1-30	1		
Chiclayo	Nov. 1-Dec. 31	2	1	
Chilca	Jan. 1-31	1		
Guadalupe	Feb. 1-Mar. 31	3	1	
Huacho	do	5	3	
Huaral	do	11	4	
Huarmey	Jan. 1-Mar. 31	22	4	
Lambayeque	Mar. 1-31	2		
Lima (city)	Nov. 1-Dec. 31	22	15	
Do	Jan. 1-Mar. 31	41	21	
Lima (country)	Nov. 1-Dec. 31	8	7	
Do	Jan. 1-Mar. 31	11	2	
Lurin	do	2		
Mollendo	do	3	2	
Moro	Mar. 1-31	7		
Paita (city)	Jan. 1-Mar. 31	1	1	
Paita (country)	do	8	1	
Reque	do	4		
Salaverry	Mar. 1-31	1		
Sullana	Jan. 1-Mar. 31	2		
Trujillo	do	12	2	Country.
Portugal:				
Lisbon	Dec. 13-21	7		
Do	Dec. 31-Jan. 6		1	
Portuguese West Africa:				
Angola—				
Loanda	Oct. 1-Dec. 29	59	35	
Do	Dec. 30-Feb. 2		4	
Russia:				
Bukeeve Province				Oct. 1, 1923-Feb. 4, 1924: Cases, 319; deaths, 294. 66 plague centers.
Ural Provinces				Oct. 1, 1923-Feb. 4, 1924: Cases, 441. 4 plague centers.
Siam:				
Bangkok	Nov. 4-Dec. 8	3	2	
Do	Jan. 13-Mar. 15	4	4	
Siberia:				
Transbaikalia—				
Chita	Jan. 27	2	2	Pneumonic. Occurring in veterinary laboratory workers.
Spain:				
Malaga	Dec. 1-31	4		
Straits Settlements:				
Penang	Jan. 27-Feb. 2	1	1	
Singapore	Nov. 11-Mar. 15	4	4	
Do	Dec. 30-Mar. 1	14	11	
Syria:				
Beirut	Nov. 1-Dec. 10	3		
Do	Jan. 1-10	1		
Turkey:				
Constantinople	Dec. 2-22	6	3	

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

Reports Received from December 29, 1923, to May 9, 1924—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Union of South Africa				Dec. 16, 1923–Mar. 17, 1924: Cases, 221; deaths, 128 (European cases, 18; deaths, 5).
Cape Province				Reported Mar. 17, 1924: Cases, 11; deaths, 7.
Uitenhage district	Dec. 9–15			Plague rodent found in vicinity Haarhoff's Kraal farm.
Orange Free State				Jan. 27–Mar. 8, 1924: Cases, 74; deaths, 45. (White cases, 9; colored cases, 41; deaths, 14.) Feb. 10: Death of case (white) previously reported.
Hoopstad district	Feb. 3–9	1		Total from Dec. 16, 1923–Mar. 1, 1924: Cases, 122 (white, 22); deaths, 70 (white, 10).
Kroonstad district	Dec. 16–27	7	3	Cases, 24; deaths, 15, reported since outbreak.
Do	Jan. 6–Feb. 9	43	20	
Winburg district	Feb. 3–9	1		
Wonderfontein farm	Dec. 2–8	4		Vicinity of Hoopstad. At Hoopstad, Dec. 9–15, 1923, one death of case previously reported.
Transvaal—				
Wolmaransstad district	Mar. 2–8	3	1	White, one case.
West Africa				Apr. 2, 1924: Reported present in one locality.
On vessels:				
———	Dec. 11	4	2	At Mombasa, British East Africa.
———	Jan. 24	2		At Varna, Bulgaria, from Syrian port.

SMALLPOX.

Algeria:				
Algiers	Nov. 1–30	1		
Arabia:				
Aden	Dec. 16–22	1		Imported.
Do	Jan. 13–Mar. 29	6		Four imported.
Belgium:				
Brussels	do	10		
Bolivia:				
La Paz	Oct. 1–Dec. 31	45	15	
Do	Jan. 1–Feb. 29	11	8	
Brazil:				
Bahia	Jan. 6–12	2		
Pernambuco	Nov. 4–Dec. 1	15	3	
Do	Jan. 6–Feb. 23		8	
Porto Alegre	Dec. 23–29		1	
Do	Dec. 30–Mar. 8		2	
Rio de Janeiro	Nov. 18–24	3	4	
Do	Jan. 6–Mar. 29	4	2	
Sao Paulo	Sept. 3–9	1		
British East Africa:				
Tanganyika Territory	Sept. 30–Dec. 29	30	7	
Do	Jan. 6–12	2		
Uganda	Sept. 1–30	6	1	
Entebbe	Oct. 1–Dec. 31	5	1	
Zanzibar	Sept 1–Oct. 31	116	18	Sept. 1–30, 1923: In areas 27 miles from town of Zanibar. Oct. 1–31, 1923: In vicinity, 1 case, 1 death. In Mikotoni district, 30 cases, 14 deaths reported.
British South Africa:				
Northern Rhodesia				Dec. 4–31, 1923: Cases, 40; deaths, 5.
Do	Feb. 26–Mar. 3	1		Jan. 1–31, 1924: Cases, 50; deaths, 11; reported from Balorale, Kalabo, and Mankoya districts.

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

Reports Received from December 29, 1923, to May 9, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Canada:				
Alberta—				
Calgary	Jan. 27-Apr. 12	38		
British Columbia—				
Vancouver	Dec. 22-29	10		
Do	Dec. 30-Feb. 23	54		
Victoria	Feb. 10-Mar. 29	3		
Manitoba—				
Winnipeg	Nov. 25-Dec. 29	21		
Do	Dec. 30-Apr. 12	77		
New Brunswick—				
Fredericton				Feb. 1-29, 1924: Cases, 8.
Gloucester County	Mar. 2-Apr. 5	4		
Madawaska County	Dec. 8-15	1		
Restigouche County				Jan. 1-Feb. 29, 1924: Cases, 3.
Victoria County	Feb. 10-16	2		
Westmoreland County	Feb. 10-Apr. 5	4		
Ontario				Jan. 1-Mar. 15, 1924: Cases, 348; deaths, 28.
Amherstburg	Mar. 1-31	16	8	
Chapleau	do	13	1	
Cochrane	do	15	5	
Essex Border	do	12	6	
Fort William and Port Arthur.	Dec. 16-29	3		Occurring at Fort William.
London	Feb. 3-Apr. 5	9		
North Bay	do	1		
Perth	Mar. 1-31	14		
Toronto	Jan. 17-Mar. 31	15	1	
Ottawa	Feb. 17-23	1		
Windsor	Feb. 1-Mar. 15	52	11	
Quebec—				
Montreal	Nov. 30-Feb. 23	7		
Saskatchewan—				
Regina	Dec. 9-15	1		
Do	Dec. 30-Feb. 23	6	1	
Ceylon:				
Colombo	Nov. 11-17	3	1	
Do	Jan. 20-Feb. 23	5	1	
Chile:				
Antofagasta	Jan. 6-19	4	1	
Concepcion	Oct. 1-Dec. 31		14	
Talcahuano	Nov. 26-Dec. 2	3		Dec. 22, 1923: Five cases present.
Valparaiso	Dec. 9-15		1	
Do	Jan. 13-Mar. 15		8	
China:				
Amoy	Nov. 18-Dec. 8		11	
Do	Jan. 6-Mar. 22		9	Including Kulangsu, 14 deaths; and in hospital, Feb. 9, 1924, more than 30 cases stated to be present.
Antung	Dec. 31-Feb. 3	2	2	
Canton	Dec. 23-Feb. 23			Present.
Chungking	Nov. 4-Dec. 29			Present and endemic.
Do	Dec. 30-Mar. 8			Stated to be widespread.
Foochow	Nov. 4-Dec. 15			Present.
Do	Dec. 31-Mar. 8			Do.
Hongkong	Oct. 28-Dec. 29	718	630	
Do	Dec. 30-Mar. 1	530	549	
Manchuria—				
Dairen	Dec. 31-Jan. 20	2		
Do	Mar. 3-9	1		
Harbin	Nov. 12-Dec. 22	36		
Do	Jan. 1-Mar. 17	19	5	
Nanking	Dec. 2-15			Do.
Do	Dec. 30-Mar. 22			Do.
Shanghai	Dec. 29			Prevalent.
Do	Jan. 6-Mar. 15	29	72	Cases, foreign; deaths, Chinese and foreign.
Chosen (Korea):				
Chemulpo	Jan. 1-31	1		
Seoul	Nov. 1-30	1		
Do	Feb. 1-29	2		
Colombia:				
Buenaventura	Nov. 18-Dec. 15	8		
Do	Apr. 3	1		
Costa Rica:				
Port Limon	Feb. 18-Apr. 5	2		
Czechoslovakia				Oct. 1-Dec. 31, 1923: Cases, 1; deaths, 1; occurriin Sng ovakia.

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

Reports Received from December 29, 1923, to May 9, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Dominican Republic:				
La Romana	Jan. 27-Mar. 22	14		
Ecuador:				
Esmeraldas	Nov. 16-30	4		
Guayaquil	Dec. 1-31	1		
Do	Jan. 1-Feb. 29	3		
Quito	Nov. 1-30	167	26	
Egypt:				
Alexandria	Feb. 27-Mar. 18	2	7	
Cairo	Jan. 1-7	1	1	
Port Said	Nov. 24-Dec. 2	1		
Esthonia				Nov. 1-Dec. 31, 1923: Cases, 38. Jan. 1-31, 1924: Cases, 9.
France:				
Cherbourg	Feb. 9-15	1		British seaman.
Gibraltar	Mar. 3-Apr. 13	2		
Great Britain:				
Liverpool	Mar. 2-8	1		In family of seaman recently returned from Oporto, Portugal.
Greece:				
Saloniki	Oct. 22-Dec. 30		11	
Do	Dec. 31-Feb. 24	4	3	
Guadeloupe (West Indies)				Jan. 2-16, 1924: Present.
Abymes	Feb. 16			Present. Vicinity of Point a Pitre.
Basse Terre	Dec. 18			Present.
Do	Jan. 12-Feb. 16			Do.
Marie Galante Island	Dec. 18			Off shore island: present.
Do	Feb. 16			Present. Estimated 60 cases.
Moule	Jan. 12-Feb. 16			Present.
Point a Pitre	Dec. 18			Present in vicinity.
Haiti:				
Cape Haitien	Feb. 3-9	3		Mar. 9-15, 1924: 2 cases in hospital.
Hinche	Feb. 10-16	1		
Port au Prince	Feb. 17-Mar. 1	2	1	Developed at Limbe, Haiti.
India				Oct. 14-Dec. 29, 1923: Cases, 9,720: deaths, 2,241.
Do				Dec. 30, 1923-Feb. 23, 1924: Cases, 19,073; deaths, 4,279.
Bombay	Oct. 28-Dec. 29	55	25	
Do	Dec. 30-Mar. 22	655	318	
Calcutta	Dec. 16-29	4	4	
Do	Dec. 30-Mar. 22	10	9	
Karachi	Dec. 30-Mar. 29	60	16	
Madras	Nov. 4-Dec. 29	23	3	
Do	Dec. 30-Mar. 29	249	18	
Rangoon	Nov. 4-Dec. 29	12	4	
Do	Dec. 30-Mar. 22	58	15	
Indo-China:				
City—				
Saigon	Nov. 4-Dec. 29	133	74	Including 100 square kilometers of surrounding country.
Do	Dec. 31-Mar. 15	575	311	
Iraq:				
Bagdad	Oct. 24-Dec. 29	46	28	
Do	Dec. 30-Feb. 16	44	33	
Italy:				
Trieste	Feb. 17-23	4		
Turin	Feb. 18-24	1		
Jamaica				Nov. 25-Dec. 29, 1923; Cases, 115.
Do				Dec. 30, 1923-Mar. 29, 1924: Cases, 233. Reported as alastrim.
Kingston	Nov. 25-Dec. 29	3		
Do	Dec. 30-Mar. 8	8		
Japan:				
Kobe	Feb. 14-Apr. 7	15	6	
Taiwan	Jan. 1-Mar. 31	8		
Tokyo	Jan. 1-Mar. 22	135		To Mar. 14, 1924: Cases, 138.
Java:				
East Java—				
Soerabaya	Oct. 23-Dec. 29	348	60	
Do	Dec. 30-Feb. 23	150	27	
West Java—				
Batavia	Oct. 27-Dec. 28	65	13	
Do	Dec. 29-Feb. 15	31	6	
Latvia				Oct. 1-Dec. 31, 1923: Cases, 6. Jan. 1-Feb. 29, 1924: Cases, 5.
Malta	Feb. 1-29	1		

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

Reports Received from December 29, 1923, to May 9, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Mexico:				
Guadalajara	Jan. 27-Mar. 31	5	7	
Manzanillo	Dec. 4-10	5	1	
Mazatlan	Mar. 31-Apr. 13		4	Apr. 21, 1924: Cases from 25-35. In city and vicinity. No mortality reported.
Mexico City	Nov. 25-Dec. 29	32		Including municipalities in Federal Districts.
Do	Jan. 30-Mar. 22	111	23	
Monterey				Mar. 24, 1924, 11 cases officially announced.
Salina Cruz	Jan. 1-Apr. 12	2	1	9 cases chickenpox present.
San Luis Potosi	Mar. 16-22		1	
Tampico	Jan. 21-Apr. 20	32	1	From Irapuato, 9; La Barra, 1.
Vera Cruz	Nov. 3-Dec. 30		4	Jan. 21-Apr. 10, 1924: Cases, 36 (12 in soldiers or soldiers' families); deaths, 5.
Do	Jan. 6-Apr. 20	2	7	
Netherlands:				
Rotterdam	Jan. 20-26	3		
Palestine:				
Jaffa	Jan. 15-28	3		
Jerusalem	Feb. 18-25	1		
Persia:				
Teheran	Sept. 24-Dec. 23		4	
Do	Dec. 22-Jan. 31		2	
Poland				Sept. 23-Dec. 31, 1923: Cases, 83; deaths, 20. Jan. 1-19, 1924: Cases, 51; deaths, 10.
Portugal:				
Lisbon	Nov. 11-Dec. 29	19	10	Corrected report.
Do	Dec. 31-Apr. 5	98	17	
Oporto	Nov. 25-Dec. 29	39	23	
Do	Dec. 30-Apr. 12	89	48	
Portuguese East Africa:				
Lourenco Marques	Dec. 30-Jan. 5	2		
Portuguese West Africa:				
Angola—				
Loanda	Dec. 2-29		5	
Russia:				
Ukraine				Aug. 1-Sept. 30, 1923: Cases, 143.
Siam:				
Bangkok	Oct. 28-Dec. 8	33	18	Nov. 25-Dec. 1, 1923: Epidemic.
Do	Dec. 30-Mar. 8	8	2	
Siberia:				
Dauria Station	Oct. 21			Present. Locality on Chita Railway, Manchurian frontier.
Sierra Leone:				
Sherbro District—				
Tagbail	Nov. 1-15	3		
Spain:				
Barcelona	Nov. 15-Dec. 26		2	
Do	Jan. 3-Mar. 26		5	
Valencia	Nov. 25-Dec. 29	152	12	
Do	Dec. 30-Apr. 12	393	37	
Straits Settlements:				
Singapore	Dec. 16-29	2	1	
Do	Dec. 30-Jan. 26	3		
Switzerland:				
Basel	Jan. 27-Feb. 9	4		Corrected.
Berne	Nov. 17-Dec. 22	15		
Do	Jan. 6-Mar. 29	34	1	
Lucerne	Nov. 1-Dec. 31	60		
Do	Jan.-Feb	7		
Zurich	Jan. 27-Mar. 8	2		
Syria:				
Aleppo	Nov. 25-Dec. 1	1		In vicinity, at Djisr Choughour.
Beirut	Jan. 21-Feb. 20	2		
Damascus	Nov. 16-Dec. 15	7		
Do	Jan. 29-Mar. 25	31		
Tunis:				
Tunis	Oct. 27-Nov. 2	5	1	
Do	Jan. 8-Apr. 7	10	4	
Turkey				Dec. 1-31, 1923: Cases, 120; deaths, 15.
Constantinople	Nov. 11-Dec. 8	3		
Do	Jan. 6-Feb. 16	1	1	

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

Reports Received from December 29, 1923, to May 9, 1924—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Union of South Africa				Oct. 1-31, 1923: Colored, cases, 41; deaths, 2; white, cases, 3.
Cape Province	Oct. 28-Dec. 8			Outbreaks.
Do	Jan. 20-Mar 1			Do.
Natal	Oct. 28-Nov. 3			Do.
Orange Free State	Oct. 28-Nov. 24			Do.
Do	Jan. 20-Feb. 23			Do.
Transvaal	Nov. 18-Dec. 1			Do.
Do	Mar. 11-17			Do.
Johannesburg	Nov. 25-Dec. 15	3		
Do	Feb. 3-23	2		
Uruguay:				
Montevideo	Oct. 1-31	1		
Venezuela:				
Caracas	Jan. 22			Epidemic.
Margarita Island—				
Punta Piedra	Mar. 21	60		20 miles from mainland.
On vessels:				
Steamship Coppename	Mar. 19	1		At New Orleans from Puerto Barrios, Guatemala.
U. S. Naval Hospital ship Mercy.	Apr. 1	1		At St. Thomas, Virgin Islands, from Culebra, P. I. Patient had been in Jamaica, W. I., two weeks previous. Case reported as alastrim.
S. S. Torres	Jan. 14	1		At New Orleans quarantine station from Tampico, Mexico, via ports. Case in seaman signed on at Galveston, Tex., on outward voyage.
S. S. Tupper	Jan. 20-26	1		At Gonaives, Haiti.
S. S. Vasari	Dec. 31	1		At Trinidad, West Indies, from Buenos Aires, Argentina. Vessel left Buenos Aires, Dec. 15, 1923, for New York, via Santos, Rio de Janiero, Trinidad, Barbados.
Sch. Annie M. Parker	Jan. 23	3		At sea. Vessel abandoned and crew removed to vessel bound for Rotterdam. Patients removed at Liverpool, Feb. 28, bound for Newfoundland.

TYPHUS FEVER.

Algeria:				
Algiers	Nov. 1-Dec. 31	7	3	
Do	Jan. 1-Mar. 10	11	5	
Bolivia:				
La Paz	Oct. 1-Dec. 31	43	5	
Do	Jan. 1-Feb. 29	16	1	
Brazil:				
Porto Alegre	Feb. 24-Mar. 1		1	
Bulgaria:				
Sofia				Nov. 18-Dec. 15, 1923: Paratyphus fever, cases, 17. Jan. 6-Mar. 29, 1924: Paratyphus fever, cases, 9.
Canary Islands:				
Teneriffe	Jan. 14-Feb. 17		2	
Ceylon:				
Colombo	Feb. 24-Mar. 1	1	1	Case from port.
Chile:				
Antofagasta	Dec. 2-8	4		
Concepcion	Oct. 1-Nov. 30		4	Dec. 11-24, 1923: Deaths, 3.
Do	Jan. 8-Feb. 25	2	3	In district, at 12 localities, 92 cases.
Iquique	Jan. 20-26		1	
Talcahuano				Dec. 5, 1923: 3 cases under treatment. Jan. 12, 1924: 1 case under treatment.
Do	Jan. 31-Feb. 23	4		
Valparaiso	Nov. 25-Dec. 15		29	Dec. 24, 1923: In hospital, 34 cases.
Do	Dec. 30-Mar. 15		44	Reports from two districts of the Province of Valparaiso.

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

Reports Received from December 29, 1923, to May 9, 1924—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Antung	Nov. 12-Dec. 30	5		
Chungking	Nov. 18-24			Present.
Do	Dec. 16-29			Endemic.
Do	Dec. 30-Feb. 16			Do.
Manchuria:				
Harbin	Mar. 18-24		1	
Chosen (Korea):				
Chemulpo	Feb. 1-29	1	1	
Seoul	do	30	1	
Czechoslovakia				Oct.-Dec., 1923: Cases, 21.
Danzig-Polish frontier:				
Mühlbanz	Mar. 6			Present. Origin stated to be focus at Mallinia.
Ecuador:				
Quito	Nov. 1-30	14	1	
Egypt:				
Alexandria	Nov. 19-Dec. 23	3		
Do	Jan. 8-Mar. 18	6		
Cairo	Sept. 10-Dec. 31	39	11	
Esthonia				Nov. 1-30, 1923: Paratyphus fever, cases, 8. Dec. 1-31, 1923: Typhus fever, cases, 15: paratyphus, cases, 4. January, 1924: Paratyphus fever, cases, 6.
Finland				Dec. 1-15, 1923: Paratyphus fever, cases, 15. Feb. 15-29, 1924. Paratyphus, cases, 7.
Germany:				
Coblenz	Jan. 27-Feb. 2	1		
Greece:				
Athens	Jan. 11-Feb. 20		7	
Saloniki	Nov. 26-Dec. 30	7	3	
Hungary				July 1-Aug. 31, 1923: Cases, 24.
Budapest	Jan. 27-Apr. 5	30	10	
Java:				
East Java—				
Soerabaya	Dec. 9-29	12		
Do	Dec. 30-Jan. 5	2		
Latvia				Oct. 1-Dec. 31, 1923: Cases, 22; paratyphus fever, 12; recurrent typhus, 3. Jan. 1-Feb. 29, 1924: Cases, 48. Paratyphus A, 1; B, 1. Recurrent, 1 case.
Libau	Apr. 18	3		
Lithuania				Year, 1923: Cases, 819; deaths, 86; recurrent typhus, 13 cases.
Mexico:				
Durango	Dec. 1-31		2	
Do	Jan. 1-Feb. 29		3	
Guadalajara	Jan. 27-Mar. 31	5	5	Feb. 1-29, 1924: Cases, 2; deaths, 1.
Mexico City	Nov. 25-Dec. 29	86		Including municipalities in Federal District.
Do	Dec. 30-Mar. 22	72	8	Do.
San Luis Potosi	Jan. 17-23		1	
Torreon	Feb. 1-Mar. 31		6	
Netherlands:				
Amsterdam	Mar. 2-8	2		
Norway:				
Stavanger	Dec. 25-31	1		
Palestine:				
Jaffa	Jan. 1-Mar. 31	5		
Jerusalem	Feb. 19-28	2		
Persia:				
Teheran	Sept. 24-Oct. 23		1	
Poland				Sept. 23-Dec. 31, 1923: Cases, 947; deaths, 92; recurrent typhus, cases, 67; deaths, 1. Jan. 1-19, 1924: Cases, 470; deaths, 37. Recurrent cases, 24. Jan. 6-19, 1924: Cases, 341; deaths, 26. Recurrent fever, cases, 18.
Pomerellen	Jan. 8-Mar. 25	17	4	Locality on Danzig-Polish frontier
Portugal:				
Oporto	Jan. 27-Feb. 2	2		
Rumania:				
Kishineff District	Nov. 1-Dec. 31	15		

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

Reports Received from December 29, 1923, to May 9, 1924—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Russia:				
Ukraine				Aug. 1-Sept. 30, 1923: Cases, 768. Recurrent typhus: Aug. 1-Sept. 30, 1923: Cases, 2,307.
Spain:				
Barcelona	Nov. 29-Dec. 12		2	
Do	Jan. 3-Feb. 13		5	
Madrid	Dec. 1-31		7	
Syria:				
Damascus	Jan. 27-Feb. 2	1		
Tunis:				
Tunis	Feb. 5-11	1		
Turkey				Dec. 1-31, 1923: Cases, 41; deaths, 5.
Constantinople	Nov. 11-Dec. 29	15	1	
Do	Dec. 30-Feb. 23	8		
Union of South Africa				Oct. 1-31, 1923: Colored, 287 cases, 58 deaths; white, 2 cases; total, 289 cases, 58 deaths. Jan. 1-31, 1924: Cases, 196; deaths, 25 (colored). Among white population, 3 cases. Total cases, 199; deaths, 25.
Cape Province				Oct. 1-31, 1923; Colored, cases, 245; deaths, 47.
Do				Jan. 1-31, 1924: Cases, 93; deaths, 11. Feb. 24-Mar. 17, 1924: Outbreaks.
Natal				Oct. 1-31, 1923: Colored, cases, 4; deaths, 3.
Do				Jan. 1-31, 1924: Cases, 81; deaths, 11. Feb. 24-Mar. 1, 1924: Outbreaks.
Durban	Nov. 24-Dec. 1	73		Cases occurring among native stevedores in the harbor area of the port and confined to one barracks.
Orange Free State				Oct. 1-31, 1923: Colored, cases, 25; deaths, 8. Feb. 24-Mar. 1, 1924: Outbreaks.
Do				Jan. 1-31, 1924: Cases, 17; deaths, 3.
Kroonstad District	Jan. 20-26			Outbreaks on two farms.
Transvaal				Oct. 1-31, 1923: Colored, cases, 13.
Do				Jan. 1-31, 1924: Cases, 5; deaths, 1.
Johannesburg	Oct. 1-Dec. 31	3	4	
Do	Jan. 6-Feb. 16	7		
Potschefstrom District	Jan. 20-26			Outbreaks on seven farms.
Venezuela:				
Maracaibo	Dec. 16-22		1	
Do	Feb. 17-Mar. 1		2	
Yugoslavia:				
Croatia—				
Zagreb	Dec. 2-15	3		
Do	Feb. 17-23	1		
Serbia—				
Belgrade	Nov. 25-Dec. 1	1		
On vessel:				
S. S. Malta Maru	Mar. 17	1		At Rotterdam, Netherlands, from South America.

YELLOW FEVER.

Brazil:				
Pernambuco City	Nov. 16	3	2	

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