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FISHES IN RELATION TO MOSQUITO CONTROL IN PONDS.

By SAMUEL F. HILDEBRAND, Ichthyologist, United States Bureau of Fisheries.

I. Introduction.

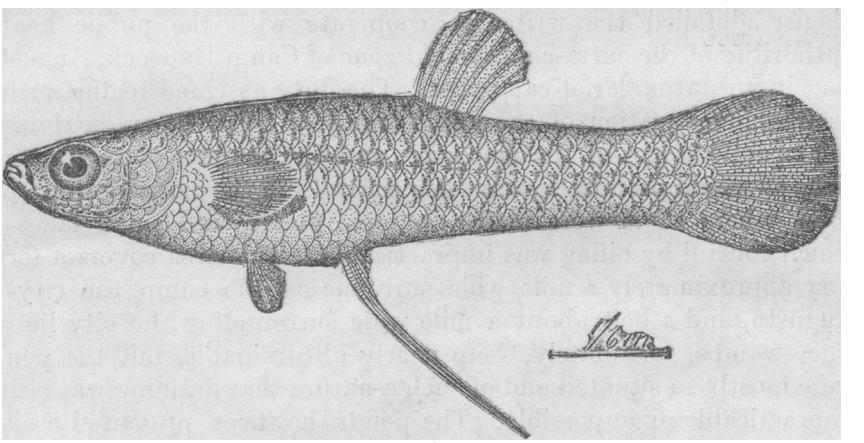
The United States Commissioner of Fisheries, in response to a request from the United States Public Health Service for an ichthyologist, detailed the writer to cooperate with the public health authorities of the extra-cantonment zone of Camp Hancock, Augusta, Ga., in an antimalarial campaign. The duty assigned to the author was an investigation of the effectiveness of fishes as eradicators of the aquatic stages of the mosquito, and the conduct of such operations as would promise secure "fish control" in the extra-cantonment zone, where there were many swamps, ponds, and small lakes in which control by oiling was impracticable. This area covers a territory approximately a mile wide surrounding the camp, the city of Augusta, and a belt about a mile wide surrounding the city limits. The swamps, fortunately, were nearly all drainable, but the ponds were mostly so situated and of such a nature that draining was either impracticable or impossible. The ponds, however, presented a situation which offered excellent opportunites for testing the practical value of fishes as eradicators of mosquito larvæ and pupæ. Experiments were at once started and observations were continued from March, 1918, to November 8, 1918. Much credit for the success of the work is due the local authorities of the United States Public Health Service for their excellent cooperation in furnishing labor, transportation, and other facilities for conducting the investigation.

Quite a number of species of fishes have been mentioned by writers in connection with the mosquito problem. The usefulness of some of these in aquaria and small pools, at least, is well known, but accurate information as to their effectiveness in larger bodies of water, and especially in places where the immature mosquito finds protection among plants or débris, is largely wanting. The summer's investigation was almost wholly devoted to the determination of the practical value in antimalarial work of the top minnow, *Gambusia affinis* (Baird and Girard).

The experiments were conducted in a large series of ponds which afforded many different conditions. It is the writer's intention to relate how the investigation was conducted and to mention results and conclusions. It is hoped that the value of the top minnow may become better understood thereby and that the observations reported will be of help to those who in the future may wish to employ this useful little fish in antimalarial work.

II. General Topography of Augusta and Surrounding Territory.

The city of Augusta is situated on the Savannah River, in a low and rather flat valley, and because of the recurrence of floods and the consequent danger to life and property, a levee was constructed between the river and the adjacent territory. However, there is a considerable elevation westward or toward the "Hill" section of the



Gambusia affinis (male).

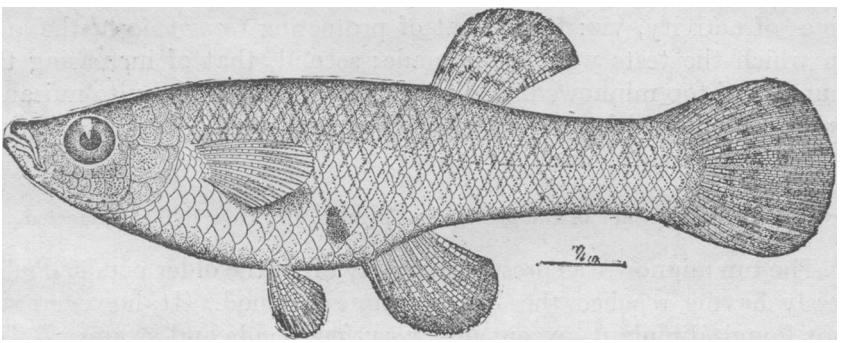
city, beyond which lies Camp Hancock. The one-mile belt surrounding the city extends across the Savannah River and includes a section of South Carolina. There were many swamps in this rather flat territory, but fortunately most of these were drainable and have been eliminated by the United States Public Health Service in cooperation with the authorities of Richmond County and the city of Augusta. In addition to the swamps there are many ponds. Nearly all of these are artificial and they vary in size and depth. Drainage, in most instances, is impracticable, if indeed not impossible. The majority of these ponds were made in the manufacture of brick, an industry which was started in Augusta in about 1808. The clay pits made by these manufacturing concerns, because of the flat nature of the country, soon become filled with water. Sometimes after hard rains the water is pumped out and digging is resumed in the old pits, but frequently the digging machines are moved. Thus new ponds are being formed constantly. There are more than one hundred of

these clay pits in the territory under protection, and in addition there are a number of ponds or lakes which were made for the purpose of furnishing a water supply, or for water power.

These ponds present a variety of conditions. Some of them are very old and have become partly filled with sediment; the shores are often gently sloping and much aquatic vegetation is present. Such ponds usually furnish an ideal environment for the support of mosquito larvæ. The newer ponds generally have steep shores; there is not much vegetation, but considerable wave action, and as a rule these ponds are not well suited to prolific mosquito breeding.

III. Gambusia Affinis and the General Plan Pursued in Testing Its Value in Anti-Mosquito Work.

Gambusia was selected for the present tests because, first, it seeks its food at the surface, which appears to make it especially suitable for antimosquito work; second, it lives and thrives under a large



Gambusia affinis (female).

variety of conditions and especially in water suitable for the support of mosquito larvæ; third, it proved to be quite common in the extra-cantonment zone and adjacent territory; fourth, it is very prolific; and fifth, its usefulness in destroying mosquito larvæ in aquaria and fountains was already well known.

This fish does not lay eggs, but gives birth to well developed and very active young. It, therefore, requires no special environment, as most other fishes do, for depositing and hatching the eggs. Young of the season were noticed for the first time on April 24, and during the latter half of October a gravid female still occasionally appeared among collections. The author,[1] working with *Gambusia* at Beaufort, N. C., found that it breeds throughout the summer and that a new brood is produced at intervals of about one month or six weeks. It was observed that a single female gave birth to six broods of young during a single season. The number of young produced at

[1] Hildebrand, Samuel F., Report U. S. Commissioner of Fisheries, Appendix VI, 1917, p. 6.

one time appears to bear a direct relation to the size of the female, a large female producing many more young than a small one. The largest brood observed by the writer numbered 63, but Smith,[1] working with fish from the Potomac River, found 100 in a single brood. The young are approximately one-half inch in total length when born; they are very active and are apparently much better adapted to begin the struggle for an existence than most fish hatched from eggs. They, in fact, are ready to begin the work of destroying mosquito larvæ at once, for the writer has seen them attacking and eating small and even medium-sized mosquito larvæ in aquaria before they were a day old. *Gambusia* gains growth rapidly and the earliest broods of the season, born in April and May, become sexually mature and produce young when four to five months old. The later broods of course do not produce young until the following season.

The general plan pursued in testing the practical value of the top minnow in antimalaria work may be divided into three principal lines of activity, viz: First, that of protecting *Gambusia* in the area in which the tests were to be made; second, that of increasing the number of top minnows in the ponds in which the mosquito nuisance was to be abated by means other than protection; and, third, that of making careful field observations.

IV. The Abundance of Gambusia, Its Enemies, and How It Was Protected.

The top minnow was present in nearly all of the older ponds, doubtlessly having reached these during times of flood. It, however, was not found abundant, except in a very few ponds and swamps. The common local practice of using *Gambusia* for bait for larger fish without doubt resulted in keeping the top minnow from becoming more abundant. Then there were certain ponds with insufficient shallow water to provide protection for the minnows from larger fish, and in at least one instance a lake had become greatly overstocked with predacious fishes, so that there was a great dearth of food. This lake is situated in Allen Park, within the city of Augusta. It had been artificially stocked with large-mouthed black bass, locally known as "trout," in addition to several species which probably reached it during floods. Bass of 3 inches and upward in length were almost constantly present in very shallow water, preying on the top minnows. Sunfishes were also present in the shallow water, but it was not observed that they actually fed on the minnows. In August it was quite evident that fewer *Gambusia* were present in this lake than there were in April, notwithstanding the fact that approximately 18,000 minnows had been introduced from other

[1] Smith, H. M., Science, n. s., vol. xxxvi, 1912, p. 224.

sources during the intervening months. Other ponds apparently well stocked with sunfishes and bass, and which certainly did not offer better protection for the minnow than the lake in Allen Park, were stocked with *Gambusia*, but in none of these did such disastrous results ensue. In Allen Park all fishing was prohibited, while in the other ponds there was a limited amount of hook and line fishing. The entire prohibition of fishing in Allen Park doubtlessly accounts for the great abundance of predacious fishes, and the shortage of food made it necessary for the fish to venture into shallower water than they ordinarily do in search of food. Later when an effort was made to give *Gambusia* a chance of survival in Allen Park, it was learned that the shortage of food was so great that cannibalism had undoubtedly prevailed.

The following experiment shows that the common local species of sunfishes are not serious enemies of *Gambusia*. It, therefore, is quite certain that the bass was the chief enemy of the minnow in Allen Park. An old pond, measuring about 75 by 50 feet, with an average depth of approximately 5 feet, was stocked during the first week of April with about 3,000 sunfishes. Probably about 90 per cent of the fish were bream, *Lepomis incisor* (Cuvier and Valenciennes), and the others were warmouth and a few of other species. The pond was already well stocked with *Gambusia*, and it doubtlessly possessed conditions suitable for the propagation of the top minnow, but probably not for that of sunfishes. However, there were present before stocking a few sunfishes. The bottom of the pond was very muddy, the shore edges were almost free of vegetation; there was little algæ and the water was quite foul. Nearly all of the sunfishes lived, so far as known, and the top minnow made a notable increase during the summer. It undoubtedly is true that *Gambusia* is not as abundant in this pond with the large number of sunfishes present as it otherwise would have been, but the experiment certainly shows that the bream is not very destructive to the top minnow.

Gambusia in a few instances needed protection from natural enemies, but much more generally from man. The top minnow had become quite a favorite bait for larger fish, and wherever this fish was fairly common, fishermen and bait collectors were frequently seen catching it with small seines and dipnets. This practice quite certainly did more than any other one thing toward preventing *Gambusia* from becoming more abundant. Consequently, it was thought advisable to publish a notice in the local newspapers, explaining that this fish was useful in destroying the wiggle-tail and asking fishermen to kindly discontinue using it for bait. In addition, a placard was posted at each pond, stating that the small fish were protected as a health measure and that they were not to be used for bait. The

response to these requests was most cordial, as not an offender was seen.

Several ponds with steep shores provided very little shallow water and the top minnow did not thrive. These ponds supported larger fish, including the large-mouthed black bass, and it is believed that they destroyed the minnows. The chief protection which *Gambusia* finds from the larger predacious fishes, appears to be shallow water. An effort, therefore, was made to provide this protection in the above-mentioned ponds by grading the shore at several points in each pond. The difficulty encountered in the pond in Allen Park has already been mentioned. This greatly overstocked lake was seined and a large number of predacious fishes were removed. It was then restocked with *Gambusia*, and after that, bass were not observed feeding on the top minnow. The provisions against natural enemies were made too late in the season to bear very evident results during the present investigation.

V. Means and Methods Employed in Stocking Ponds With Gambusia.

Minnows for stocking ponds were secured mainly from two sources; first, from swamps within the protected area which were being drained; and second, from waters outside of the extra-cantonment zone, from places where minnows did not appear to be needed. Large numbers of minnows were secured from these sources and placed in ponds where few or none were present.

One pond, about 100 by 30 feet, with an average depth of about 3 feet, was used as a "hatchery." This pond has a very muddy bottom and it supports much algæ and several attached plants. All fish were removed from this pond. Then a partition, composed partly of a dam and partly of wire netting, was built across the pond. About 3,000 adult female *Gambusia* were placed in the larger compartment. No record was kept of the number of males which were introduced, as this is relatively unimportant,[1] but there were probably not more than 10 to each 100 females. The purpose of dividing the pond into two compartments, using a one-fourth inch wire screen for a portion of the partition, was to give the young fish an opportunity to migrate to that section of the pond where they could not be followed by the adults. This was thought advantageous because of the cannibalistic habit of *Gambusia*, which the mother, in confinement at least, so impressively displays by eating her own young oftentimes nearly as rapidly as they are born. The one-fourth inch mesh, however, proved to be a little too large and some of the adults succeeded in getting through it. The reproduction in this hatchery, nevertheless, exceeded all expectations. This pond,

[1] Hildebrand, Samuel F., Report U. S. Commissioner of Fisheries, Appendix VI, 1917, p. 7.

being conveniently situated, furnished a ready supply of top minnows for aquaria, fountains, pools, and wells wherever they were found to be needed or as requests for them were received.

A very useful net for collecting top minnows is a small bobbinet seine. The one used by the writer was about 12 feet long and 3 feet deep. Such a net, if made of a good grade of netting, is light and durable, and it can be quickly and easily handled. A dipnet, also made of bobbinet, was used to some advantage in places where there was so much vegetation that a seine could not be operated.

VI. Observations and Experiments.

Field observations were made at all ponds in the protected zone at more or less definite intervals of one week each throughout the investigation. These were often extended beyond the protected area for the purpose of obtaining checks on the effectiveness of the work within the zone.

As early as March 29 a certain pond was found to be fairly alive with mosquito larvæ and pupæ. Further investigation proved that no fish were present. Top minnows were then placed in the pond for the purpose of observing whether or not the fish would destroy the large numbers of immature mosquitoes. The fish, however, all died in less than 45 minutes. Since the pond was near that portion of the Georgia Chemical Works where sulphuric acid is manufactured, the presence of a chemical fatal to fish life was at once suspected. A litmus-paper test gave a strongly acid reaction. While the first purpose of the experiment failed, it, nevertheless, was learned that mosquitoes can breed in water so strongly acid that *Gambusia* is killed almost instantly thereby. There, however, was another pond very near the acid pond and in appearance very similar to it. This one was well supplied with top minnows in addition to a few food fishes, and it was entirely free of mosquito larvæ. As it did not seem reasonable that mosquitoes would select the acid pond in preference to the unpolluted one for breeding purposes, the only apparent logical conclusion was that the absence of mosquito larvæ in the latter was due to the presence of natural enemies or fish.

Another situation very similar to the one discussed in the preceding paragraph was not far away, for there were nearly end to end an acid swamp and the pond previously referred to as the hatchery. *Anopheles* bred in the acid swamp throughout the season, except as interrupted from time to time by the application of oil. The hatchery pond, which was evidently well suited for the support of *Anopheles* larvæ, was, nevertheless, free from them, except when the vegetation became dense and provided protection.

On April 1, mosquito larvæ of the *Culex* type were found in a ditch, in several pools, and in a large pond. These waters were all free of débris and vegetation. The pond had steep shores and it was very clean. It was one of the newer brickyard ponds and no fish were present. All of these places, being close together, were stocked with *Gambusia* at the same time. Only 6 fish were placed in each of the pools, which were about 10 to 12 feet long, about 2 feet wide, and very shallow. Each pool supported thousands of mosquito larvæ, but in about two weeks they were made entirely free of wrigglers by the fish and remained so until they became dry later in the season. The presence of comparatively few skins showed that not many of the larvæ reached the adult stage. The ditch referred to was approximately 30 feet long and 1 foot wide. Mosquito larvæ were especially abundant in it. About 200 top minnows were placed there and in two weeks it was completely free of wrigglers. Mosquito larvæ were seen only along the shore of the big pond. It was at first stocked with about 1,500 *Gambusia*, but later several thousand more were added. The larvæ in this pond, too, disappeared in about two weeks from the time the first fish were introduced and none were again seen until September. By that time the shores had become overgrown with vegetation which furnished protection for *Anopheles* larvæ against fish. This vegetation was cut and the shores were raked. A large school of top minnows followed the workmen, destroying the immature mosquito and other insect larvæ as quickly as their hiding places were destroyed.

It was possible in several instances to connect ditches and swamps which were thickly infested with mosquito larvæ with ponds that were well supplied with top minnows. Wherever this was done, large numbers of fish entered these waters and destroyed the mosquito larvæ in a surprisingly short time.

For the purpose of comparison and as further evidence of the value of *Gambusia* in controlling mosquito breeding two other small ponds are worthy of mention. These ponds are situated at the intersection of the tracks of the Georgia Central and the Belt Line railroads, and they are of about equal size. The top minnow had reached one of the ponds from an unknown source, and it was entirely free of mosquito larvæ. The other was without fish, and mosquitoes were breeding in it in abundance. The inference, in the absence of any evidence to the contrary, of course, is that the top minnows destroyed the mosquito larvæ in the first pond.

During the latter part of October two new brickyard ponds were found to be breeding large numbers of mosquito larvæ. The ponds had become supplied with some vegetation; the mosquito larvæ, however, were not confined to these hiding places, but were quite generally distributed over the ponds, and could be seen in perfectly

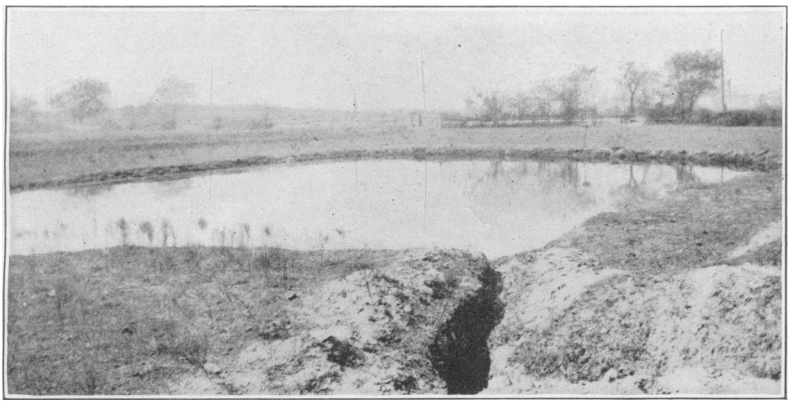


FIG. 1.—POND ABUNDANTLY STOCKED WITH SUNFISHES AND TOP MINNOWS.

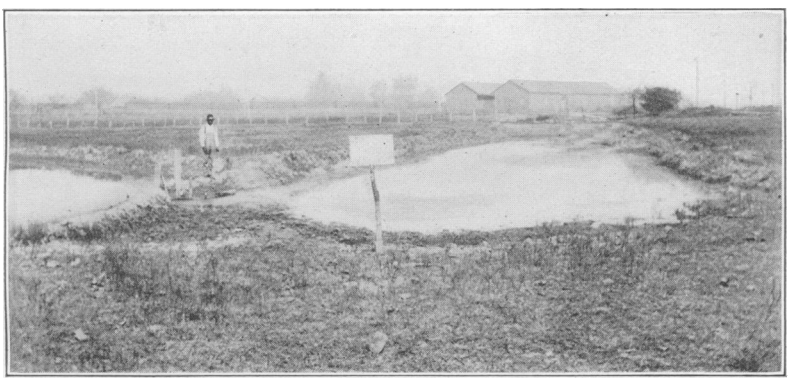


FIG. 2.—SECTION OF HATCHERY.

Notice reads: "Small fish in this pond are protected by the United States Public Health Service as a health measure, and must not be used for bait."

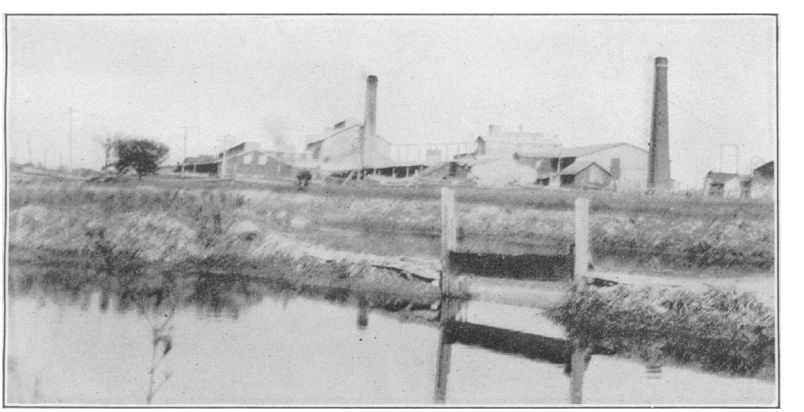


FIG. 3.—SECTION OF HATCHERY SHOWING PARTITION BETWEEN PONDS (A PORTION OF THE GEORGIA CHEMICAL WORKS IN BACKGROUND).

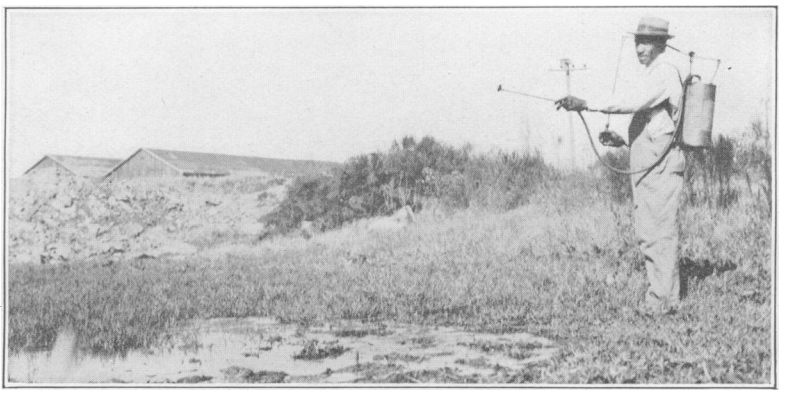


FIG. 4.—SPRAYING OIL ON AN ACID SWAMP IN WHICH FISH CAN NOT LIVE BUT WHICH SUPPORTS ANOPHELES LARVÆ.

FIG. 5.—SECTION OF CLEAN SHORE OF A POND WHERE MOSQUITO LARVÆ WERE ABUNDANT BEFORE INTRODUCING TOP MINNOWS.

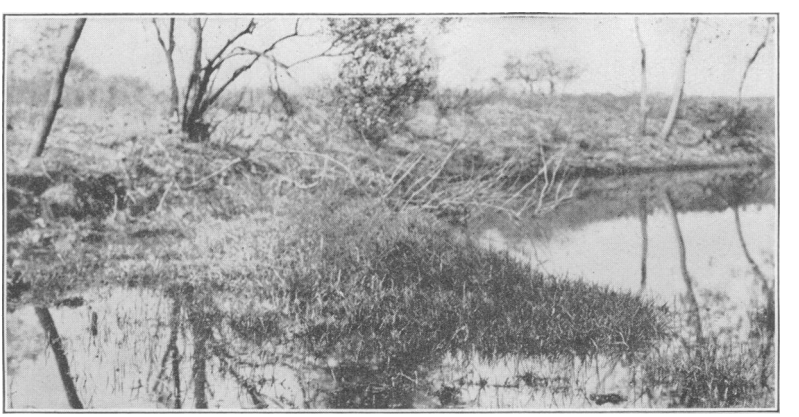


FIG. 6.—SHOWING GROWTH OF AQUATIC GRASS IN CORNER OF POND. SUCH GRASS FURNISHES EXCELLENT PROTECTION FOR MOSQUITO LARVÆ.

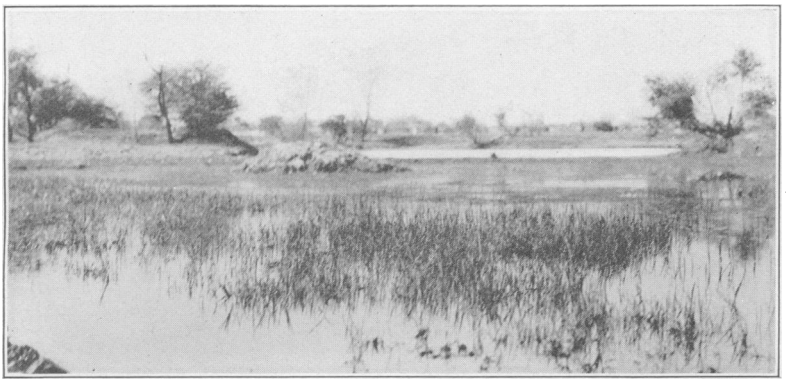


FIG. 7.—AQUATIC GRASS GROWING ALONG THE SHALLOW EDGE OF A POND WHERE IT FORMS PROTECTION FOR MOSQUITO LARVÆ.

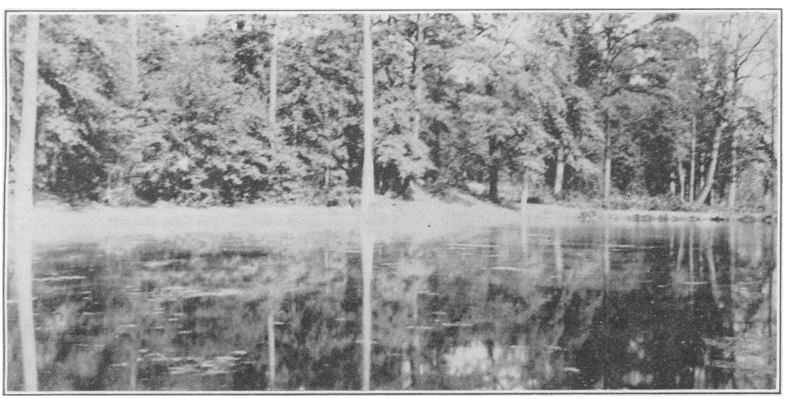


FIG. 8.—FLOATING PLANTS OF MYRIOPHYLLUM AND DÉBRIS WHICH PROVIDE PROTECTION FOR MOSQUITO LARVÆ.

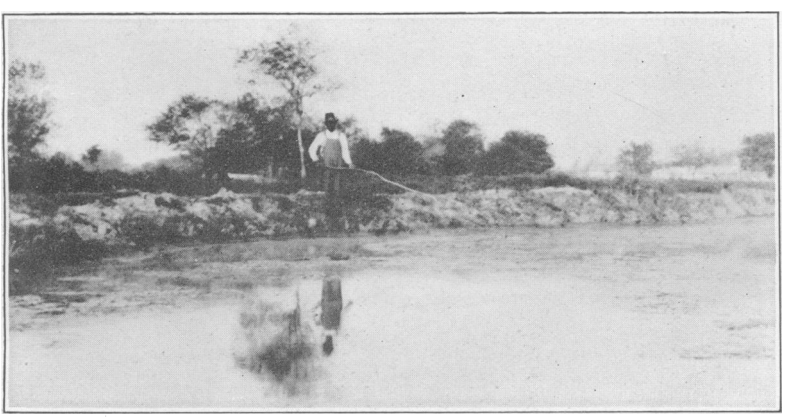


FIG. 9.—TREATING POND WITH COPPER SULPHATE FOR KILLING ALGÆ. LABORER IS DRAGGING A SMALL BAG OF THE CHEMICAL THROUGH THE WATER BY MEANS OF A POLE.

FIG. 10.—SPRAYING OIL ON ALGAL PADS TO DESTROY THEIR USEFULNESS AS HIDING PLACES FOR THE IMMATURE MOSQUITO.

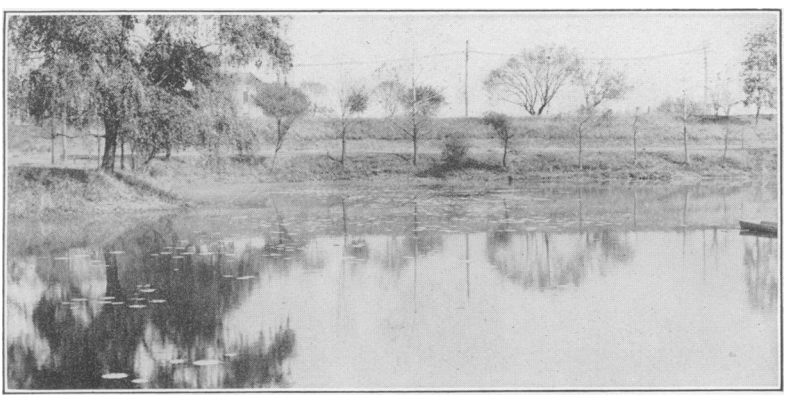


FIG. 11.—SECTION OF POND SHOWING PRESENCE OF WATER LILIES.

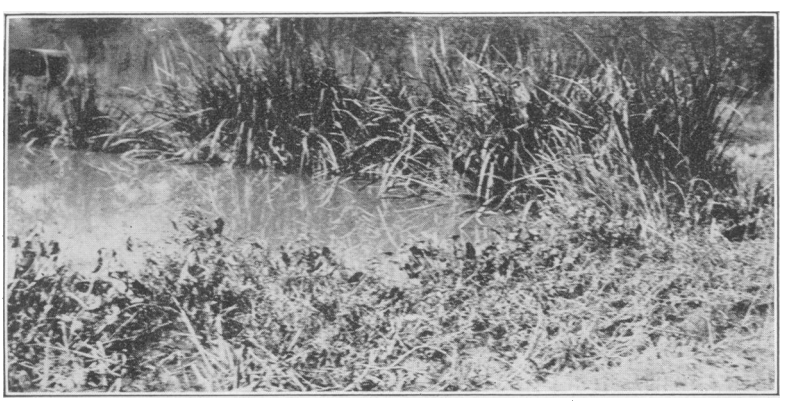


FIG. 12.—RUSHES GROWING IN END OF POND. THESE PLANTS RARELY PROVIDE PROTECTION FOR MOSQUITO LARVÆ.

FIG. 13.—TALL RUSHES AND GRASSES WHICH DO NOT PROVIDE PROTECTION FOR MOSQUITO LARVÆ.

FIG. 14.—POND SUPPORTING DENSE VEGETATION CONSISTING PRINCIPALLY OF SMART WEEDS WHICH DO NOT PROVIDE PROTECTION FOR MOSQUITO LARVÆ.

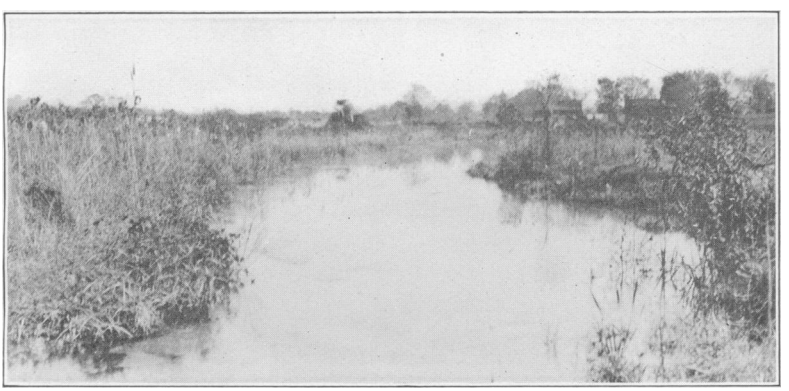


FIG. 15.—SECTION OF POND SHOWING ABUNDANT GROWTH OF TALL VEGETATION WHICH DOES NOT PROVIDE MUCH PROTECTION FOR MOSQUITO LARVÆ.

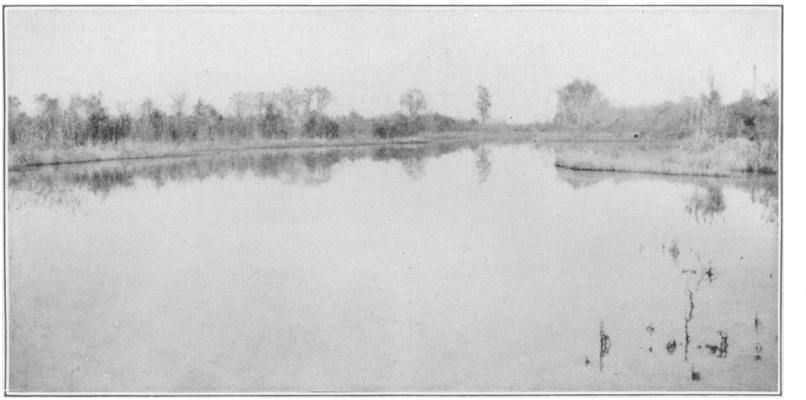


FIG. 16.—DISTANT VIEW OF POND. MUCH MARGINAL VEGETATION WHICH USUALLY FURNISHES SOME PROTECTION FOR MOSQUITO LARVÆ.

FIG. 17.—SHOWING MARGINAL VEGETATION REMOVED.

FIG. 18.—SPRAYING OIL ON ALGAL PADS.

In foreground is seen some of the aquatic grass, Hydrochloa caroliniensis, which provides excellent protection for mosquito larvæ.

clear water. *Anopheles* larvæ previously had been noticed only once away from all protection, and then, as now, in a pond not stocked with fish. On October 23 about 1,000 *Gambusia* were placed in one pond and the other was left as a control. On October 26 no pronounced reduction in the number of larvæ in the pond which had been stocked was noticeable. On October 29, however, a remarkable decrease was evident, only a few larvæ being left, and these were found in vegetation. At the end of this time the immature mosquitoes in the other pond (control) were as abundant as ever.

Many similar experiments and observations could be mentioned, but as the results for all were nearly identical it is not advantageous to do so. It then may be stated that wherever mosquitoes were breeding prolifically *Gambusia* was not present, but, if introduced, mosquito breeding was eliminated or at least greatly reduced. Wherever the complete elimination of mosquito larvæ did not result, if sufficient top minnows were present the immature mosquitoes were so protected by vegetation or débris that they could not be detected or reached by the fish.

All aquatic plants, however, do not furnish protection for mosquito larvæ and pupæ against fish, and some even may be repellent. The following-named plants appeared to provide good protection and caused considerable trouble during the investigation: *a*. The aquatic grass, *Hydrochloa caroliniensis; b*. "Coon-tail moss," a species of *Myriophyllum;* and *c*. Algæ. The aquatic grass grows in shallow water and along the shores. It has many slightly submerged leaves over which the horizontally floating or swimming *Anopheles* larvæ hover, out of sight and out of reach of fish. Wherever this plant occurs some *Anopheles* larvæ are almost sure to be present regardless of the abundance of *Gambusia*. It, therefore, is obvious that if this plant occurs in ponds in which mosquito control is desired, it must be removed. This may be done by cutting and raking, or if growing in soft mud it may be pulled up by the roots.

The plant locally known as "coon-tail moss" causes trouble only when it becomes detached and rises to the surface. This plant was present in only a few ponds in which an endeavor was made to secure mosquito control, and it caused considerable trouble in only one. It is ordinarily attached to the bottom, but in this instance some of the plants became detached from time to time and came to the surface. There each plant collected more or less débris, algæ grew among its branches and thus formed a mass in which both types of mosquito larvæ found protection. This floating mass must be removed from time to time, and can be done best on a windy day when it drifts inshore.

Algæ often form mats which float at or near the surface. Mosquito larvæ, praticularly *Anopheles*, find protection from fish over and in

these mats. Copper sulphate was used in the proportion of 8 pounds to 1,000,000 gallons of water for killing the algæ, but this treatment must usually be repeated frequently. Toward the close of the season a light gas oil, used by the local office of the United States Public Health Service in antimalaria work, was sprayed on the algal pads wherever the use of the water did not preclude this practice. This oil, if used in moderate quantities, is not injurious to fish; it can be quickly and conveniently applied, and it is very effective, for the alga pads act like sponges, retaining the oil and making them uninhabitable for the mosquito.

Water lilies do not, as a rule, appear to furnish much protection while growing, but some of the plants die from time to time. The leaf then often partly sinks, forming a depression over the center while the edges remain at the surface. The cup thus formed holds enough water to support mosquito larvæ, and with respect to fish the larvæ contained therein are perfectly safe. When the dead leaves drift inshore, they of course frequently make places inaccessible to fish.

Grasses and rushes and other plants, having straight stocks and no slightly submerged leaves, furnish no protection. Areas overgrown with such plants have been carefully examined for mosquito larvæ, but wherever *Gambusia* was present no immature mosquitoes were found.

The aquatic plant, *Naias flexilis*, which was common in several ponds, forming a dense growth over the bottom, normally does not provide protection, as it does not reach the surface of the water. During the severe fall drought the water, however, became so low that it was near the surface or partly exposed in many places, making such a dense mass that fish could not penetrate it. Wherever this occurred it furnished excellent protection and *Anopheles* larvæ and pupæ were common.

The duck weed, *Spirodela polyrrhiza*, was present in only one pond, over which it formed an almost continuous cover. No mosquito larvæ were seen in this pond, indicating that this plant does not furnish protection for the mosquito from fish. It, in fact, is likely that mosquitoes can not breed under such conditions, but as this pond was well supplied with *Gambusia* no data supporting this probability were obtainable therefrom.

The smart weed (*Polygonum*) is another plant that not only does not appear to provide protection but which may actually be repellent. Many places overgrown with this weed were repeatedly examined, but mosquito larvæ were not found even in apparently favorable hiding places.

Nearly all marginal plants, by projecting partly into the water, by falling into it after maturing, or by becoming partly submerged after

freshets, furnish protection for mosquito larvæ. These plants should be removed when possible.

It is evident from the study of plants in relation to mosquito control by means of fish that it is highly desirable to remove from the ponds those plants having leaves just below the surface of the water and to treat algæ in such a way as to make them useless as protectors of mosquitoes. The presence of these plants was by far the most important obstacle to be overcome in securing mosquito control in the many ponds in the extra-cantonment zone of Camp Hancock. A rather constant vigilance was necessary in order to keep a large series of ponds free of such plants, but it is not very difficult work or usually very expensive, for two laborers provided with hoes, rakes, a knapsack spray can, and some oil could take care of quite a number of ponds during the course of a season. In badly infested ponds it is occasionally advantageous to cut the vegetation with a patented device known on the market as a submarine saw.

It is very interesting to observe how quickly the top minnows learn to follow the workmen engaged in cutting and raking vegetation from ponds. They soon become quite tame and schools of them work almost under the tools of the laborers, catching mosquito larvæ and other insects as quickly as their hiding places are destroyed.

This work around the ponds caused the top minnows to become tame and that made it possible to perform certain feeding experiments which otherwise could not have been made. One of these feeding observations is described in the writer's field notes as follows: "I took several large *Anopheles* larvæ from dense vegetation and placed them in open water among top minnows. With one larva was a small piece of bark. The larva hovered over this piece of bark and the fish did not detect it. When it was placed in open water, without the least protection, the fish swam around it, even 'nosed' it, while the larva lay perfectly motionless. At last a rather small minnow seized and swallowed it. Placed another larva in open water among fish. This one too lay perfectly still, drifting like a small stick, while fish swam all about, nosing it a time or two, but apparently not detecting that it was alive and something to eat. Finally it drifted near a tuft of grass and with a surprisingly quick movement it swam into the vegetation. It was removed and placed in open water. There it lay motionless for about five minutes, when at last it was snapped up by an undersized minnow. A third was placed in open water; it too drifted along perfectly motionless for about five minutes before it was finally detected by an undersized minnow. Once this larva drifted very close to the grass from which it was originally removed, but it made no effort to get back into it. This may have been due to the presence of fish between it and the grass." In some of the feeding experiments the larvæ were much

more quickly detected by the fish than in the one just described. The rapidity with which they are found and eaten probably depends to a certain extent, at least, upon the eagerness with which food is being sought by the fish.

These feeding experiments, which were repeated many times, demonstrated that the protective instinct in mosquito larvæ is highly developed. It was shown many times that the only protection an *Anopheles* larva has from fish in open water is inactivity. When the larva thus drifts along fish evidently mistake it for an inanimate object, for, as already shown, they may swim all around it for several minutes, even touch the larva with the snout and yet not discover that it is food. The slightest movement, however, on the part of the wriggler apparently never goes unseen and it is instantly seized and devoured by the fish. It often happens that a mosquito larva placed in open water drifts toward places of protection before it is discovered by the minnows and, if no fish are very near, or are present between the larva and the place of protection, it moves toward it with a remarkable rate of speed and quickly places itself over the object near the surface of the water where it can not be seen by fish. It, however, remains motionless if fish are near.

It is not to be assumed from what has been said in the foregoing paragraphs that mosquito larvæ are as abundant in vegetation and débris when *Gambusia* is present as when absent. An *Anopheles* larva may find temporary protection over a blade of grass, but it is scarcely probable that this larva will spend its entire existence over a single blade of grass, and, if it moves, it is in great danger of losing its life. Then when it reaches the pupal stage the blade of grass is obviously not as well suited as previously to furnish protection. In this stage of life the mosquito appears to be much more active than in the larval stage. This would endanger its life still further, for it has been shown that in the presence of fish, action is certain destruction. The presence of larvæ in a pond, therefore, must not be taken as a certain criterion that fish are failing to provide mosquito control. On the other hand the many dipping experiments have shown that comparatively few mosquito larvæ are present in the best hiding places, if *Gambusia* is at hand, for rarely more than three or four larvæ were taken at one time. When *Gambusia* was absent, it, however, was not unusual to take so many larvæ at one dip that they could not be accurately counted in the dipper.

It, then, is evident that mosquito breeding, if not entirely eliminated, is at least greatly reduced by the top minnow.

VII. The Number of Top Minnows Necessary in Order to Secure Mosquito Control.

The writer has already been asked several times the general question, "How many top minnows are necessary in a pond in order to prevent mosquito breeding?" Data upon which a definite answer

could be based are extremely difficult to obtain, for there are scarcely two ponds which offer identical conditions. The size of the pond of course must be considered; whether or not it is subject to wave action is of importance; the presence or absence of vegetation is very important; and the presence or absence of enemies of *Gambusia* must not be overlooked. Even then, we can only make a guess, for anopheline mosquito larvæ, at least, breed much more prolifically in some ponds than they do in others for reasons not understood.

A pond on the Milledgeville Road belonging to the Sanitary Dairy Co. furnishes a notable example of a place which is apparently well adapted to mosquito breeding, yet during many inspections comparatively few larvæ were found. Among them were present not more than a half dozen *Anopheles*. There is much vegetation present along the shores, consisting principally of aquatic grass, and there is considerable débris. *Gambusia* is wanting and the species of fishes which are present failed to provide mosquito control elsewhere. Furthermore, wherever apparently similar conditions prevail in other ponds, particularly with respect to the presence of aquatic grass, some *Anopheles* larvæ were present regardless of the abundance of *Gambusia*.

That *Anopheles* do not breed in some places which apparently offer excellent conditions for the support of the larvæ has been noted by Le Prince and Orenstein:[1] "In many places apparently well fitted for the support of *Anopheles* larvæ they were absent yet lived and developed when placed therein as an experiment. The reason why *Anopheles* eggs are not laid in certain areas apparently in every way similar to those in which larvæ are found is yet unexplained."

It has been demonstrated through laboratory tests that one top minnow may destroy a large number of mosquito larvæ in a short time. The writer[2] observed that one adult female ate 165 large larvæ in less than 12 hours, and Seale,[3] working with this fish in the Philippine Islands, reports that one pair of half-grown *Gambusia* ate 5,041 mosquito larvæ, by actual count, from December 9, 1915, to February 25, 1916. It has been shown in this paper that a small number of minnows freed badly infested pools of mosquito larvæ in a short time; also that they destroyed the mosquito larvæ in ponds and kept the ponds free of the aquatic stages of the mosquito, unless protection was provided by plants or débris. From the knowledge which has thus been gained we may conclude that, if a pond furnishes little or no protection for mosquito larvæ, a small number of top minnows are sufficient, but if it does furnish protection a much larger

[1] Le Prince, Joseph A., and Orenstein, A. J., Mosquito Control in Panama, p. 12. Putnam, New York and London, 1916.

[2] Hildebrand, Samuel F., Report U. S. Commissioner of Fisheries, Appendix VI, 1917, p. 5.

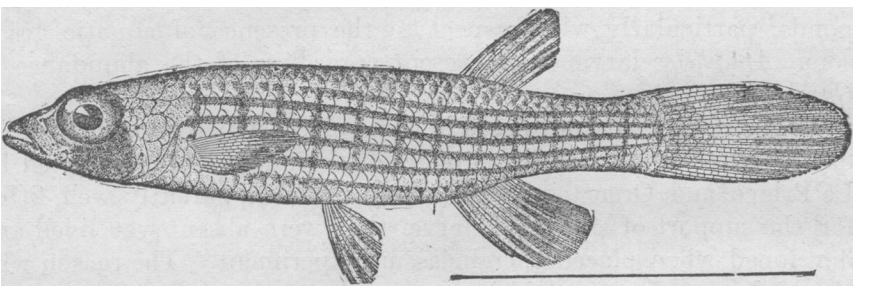
[3] Seale, Alvin, The Philippine Journal of Science, Vol. XII, sec. D, No. 3, Manila, 1917, p. 180.

number is desirable. Antimosquito work, however, may be started with a very small number of *Gambusia*, for this fish multiplies rapidly. There appears to be no danger of overstocking, as observations indicate that the more fish a pond supports the more certain are the practical results.

VIII. Other Species of Fishes in Relation to Antimosquito Work.

No special experiments were conducted with other species of fishes in relation to mosquito control, but some information was gained from incidental observations.

The "Star headed minnow," *Fundulus nottii* (Agassiz), is probably of considerable value in antimalarial work. Its habits are very similar to those of *Gambusia*, for it feeds at the surface and frequents localities suitable for the support of mosquito larvæ. Its habits certainly are such that it is worthy of a trial. This fish occurred in a few ponds in the protected area, but as *Gambusia* was also



Fundulus nottii.

present, nothing definite in regard to their value could be learned from these sources. This species, however, was very abundant and *Gambusia* scarce in a lake located just off the Old Savannah Road, about 8 miles distant from Augusta, belonging to the Carmichael Hunting Club. This lake apparently offered excellent conditions for the support of *Anopheles* larvæ, but during two visits when several hundred yards of shore edge margined with considerable vegetation were examined only a very few larvæ were seen. The scarcity of mosquito larvæ was very probably due to the presence of *F. nottii*, unless this pond should happen to be one of those in which mosquitoes do not oviposit for reasons unknown.

Several species of sunfishes have been mentioned by authors in connection with antimosquito work, but the writer's observations indicate that they are of doubtful value. For example, one large pond supplied with bream, warmouth, and the blue spotted sunfish supported large numbers of mosquito larvæ of both types, and top minnows had to be introduced in order to secure mosquito control.

A similar condition in the presence of sunfishes, the pumpkin seed being the most abundant one, was observed by the writer on the Potomac River at Bryants Point, Md., in 1912.

The size and habitat of the pigmy sunfish suggest that it might be of value in the control of the mosquito, but the information obtained points to the contrary, for *Culex* larvæ were plentiful in unprotected places in a certain swamp where this fish was quite common.

The roach minnow, in confinement, at least, appears to destroy mosquito larvæ, as indicated in the following observation. Two minnows were left in a "bait well" when it was abandoned by bait collectors. This well was about 10 feet long and 5 feet wide with a depth of about 2 feet. The two minnows kept this well wholly free of mosquito larvæ for several months. Then an oil distributor came by, seeing that it was a favorable place for breeding mosquitoes, and not knowing of the presence of the fish, sprayed the well with oil. The oil killed the roach minnows and after it evaporated mosquito larvæ appeared in countless numbers.

Goldfish, while probably of very little value in large bodies of water where other food is obtainable, are useful in confinement. A considerable number of fountains stocked with goldfish were examined, and if they were properly built so that all parts were accessible to fish, and if fairly free of vegetation and débris, no mosquito larvæ were present.

IX. Conclusions.

1. *Gambusia affinis* is especially suitable for antimosquito work because: (*a*) It seeks its food at the surface; (*b*) it is very prolific; (*c*) it gives birth to well-developed young, therefore requiring no special environment for depositing and hatching the eggs; (*d*) It lives and thrives under a large variety of conditions and frequents areas especially suitable for the support of mosquito larvæ; (*e*) it usually lives and multiplies in ponds stocked with predacious fishes, providing it has very shallow water for refuge.

2. Plants which have slightly submerged leaves and stems or which form floating masses are the chief sources of protection for mosquito larvæ against the top minnow. Such plants should be removed from the water or treated in such a way as to make them uninhabitable for the immature mosquito.

3. Mosquitoes may breed in water so badly polluted that *Gambusia* is almost instantly killed thereby.

4. *Gambusia affinis* is of great value in antimosquito work. It eliminates the wriggler completely from ponds which are fairly free of protective vegetation and débris. If much protection is furnished by vegetation and débris, the immature mosquito is not entirely eliminated, but the number reaching the adult stage is greatly reduced.

5. The number of top minnows necessary in a body of water in order to secure mosquito control depends largely upon the conditions which prevail with respect to places of protection, i. e., a much smaller number of *Gambusia* is necessary, if the water is fairly free of hiding places for mosquito larvæ against fish, than if the reverse is true.

ANTENATAL AND NEONATAL FACTORS IN INFANT MORTALITY.

An extraordinarily helpful analysis of some of the causes of infant mortality is presented by Ballantyne in an article entitled "Antenatal and neonatal factors in infantile mortality," published in Maternal and Child Welfare, October, 1918. Inasmuch as a correct understanding of these factors underlies all effective preventive measures undertaken by health officers to lower the infantile death rate, we reproduce here the following abstract of this valuable analysis:

The author points out that at the very center of the problem of the reduction of infantile mortality lie the evaluation and analysis of the causal factors which are responsible for that loss of young lives which is still, notwithstanding all that has been accomplished in prevention and treatment, only to be fitly characterized as appalling.

On account of the defects in statistics it is not possible to know what is the total loss of young life which occurs before birth, at birth, and during the first year after birth. Some babies die in the first year of life from postnatal causes, such as the various zymotic maladies, improper feeding, defective housing, etc. Others die because of antenatal conditions, such as prematurity of birth, congenital malformations, debility, etc. Not a few die from both antenatal and postnatal causes. It is in the first month of life that these two factors tend to unite in their attack upon the newborn infant. It is at this age, after birth, that the antenatal factor is acting most powerfully, and it is at this time also, that the postnatal factor has a character which differs so markedly from that which it possesses later. Somewhere between one-third and one-half of all the deaths which occur in the first year of life take place in the first four weeks of it. Obviously, the neonatal period is a most critical one. If deaths were evenly distributed over the first year of life, one-thirteenth of them should occur in these first four weeks; but instead of that, never less than one-third of them occur then. If the fatalities of the first 4 weeks were to be continued during the remaining 48 weeks, the infantile mortality rate for the first year of life would be over 500 per thousand live births instead of 100, which it is at the present time. On the other hand, if the deaths in the first 4 weeks were to be reduced to the same proportion as those during the subsequent 48 weeks the

infantile mortality rate would fall to something like 70 per thousand live births. The first four weeks, therefore, have an importance which can hardly be overestimated.

Suggested New Rates in Statistics.

The author suggests the use of the following new rates in studying infant mortality:

(*a*) Conception rate.
(*b*) Miscarriage rate.
(*c*) Stillbirth rate.
(*d*) Neonatal death rate.

Under (*c*) the author urges that it be made possible to state (1) how many of stillbirths were prematurely born and how many had reached the full term, and (2) in how many stillbirths did the death of the unborn infant precede the confinement of the mother, and in how many was it coincident with and caused by it.

Then, there must be a differentiation made between the stillbirths which are prematurely born and those which have reached the full term; in other words, there will have to be a premature stillbirth rate and a mature stillbirth rate. Further, it must be made possible to separate the stillbirths which have died before labor from those which died in labor and to construct a rate for each; the former will be the antenatal stillbirth rate, and the latter the intranatal stillbirth rate; the former will depend mainly upon the maternal health in pregnancy, and the latter mainly upon the obstetric assistance which the mother gets in her confinement.

In discussing (*d*), the neonatal death rate, the author urges an intensive study of the deaths which occur in the first four weeks of life.

In all mortality tables the neonatal deaths must be stated separately from those occurring in the first 12 months. The neonatal mortality rate may be calculated in various ways. The one suggested is that the proportion of deaths per thousand live births which occur in the first four weeks of life should constitute the rate. It might perhaps be better to include the stillbirths which occur intranatally, but in the meantime their inclusion would complicate matters. Again, the rate might be that for the first month of life instead of that for the first four weeks; but the objection to that is that a month is less definite than four weeks, and the results would be vitiated for purposes of comparison. The rate suggested is that for one-thirteenth of the time included within the infantile mortality rate, that is for 4 weeks out of 52.

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Lessons from the Edinburgh Neonatal Mortality Rates.

The following table gives the Edinburgh birth rates, infantile death rates, and neonatal death rates for the years 1911 to 1917, inclusive:

Year.	Birth rate.	Infantile death rate.	Neonatal death rate.	Year.	Birth rate.	Infantile death rate.	Neonatal death rate.
1911	20.8	115	42.2	1915	17.8	132	43.9
1912	19.7	110	44.9	1916	17.4	100	44.8
1913	19.4	101	40.6	1917	14.7	123	41.5
1914	19.8	110	43.7				

The first thing that arrests the attention is the height of the neonatal rate. During the seven-year period it never fell below a third of the infantile mortality rate, which varied from 100 in 1916 to 132 in 1915, and averaged 113. It marked out the first four weeks of life as by far the most fatal time in all postnatal life.

The second is that the neonatal rate does not vary *pari passu* with the infantile one. In 1916 the neonatal rate was almost at its highest level, 44.8, while the infantile rate was at its lowest, namely, 100. In 1913, however, with an infantile rate of 101, the neonatal rate was only 40.6.

A third point that invites attention is the comparison of the rates in legitimates and illegitimates. This is well brought out by the following tables of rates obtaining in the city of Edinburgh:

Year.	Rates for infantile mortality.			Rates for neonatal mortality.		
	Legitimates and illegitimates combined.	Legitimates alone.	Illegitimates alone.	Legitimates and illegitimates combined.	Legitimates alone.	Illegitimates alone.
1915	132	130	151	43.9	42.7	56.6
1916	100	99	110	44.8	49.4	47.4
1917	123	113	212	41.5	38.0	76.0

It is quite clear that the neonatal rate must be scrutinized not only from the point of view of legitimacy and illegitimacy but from all other aspects—of housing, alcoholism, bottle and breast feeding, etc.

The fourth matter which must engage careful attention is prematurity of birth. Of the neonatal deaths in Edinburgh for the years 1915–1917 nearly one-half were attributable to premature birth. There is a considerable difference, however, between what a baby is said to have died of and the conditions which would be found on post-mortem examination. In a sense the approximate 50 per cent of neonatal deaths are due to prematurity of birth, but hardly in any case is it the sole cause; alongside of it is nearly always something else, and something which the death certificate rarely names.

In the same way, other alleged causes of neonatal death, such as atrophy, marasmus, and debility would, on close inspection, be found to be translatable into other medical terms and to represent other and much more definite morbid conditions.

Factors in Infantile Mortality.

Ballantyne gives the following summary of the factors involved in infant mortality:

(*a*) The antenatal factor, determined by placenta.

(*b*) The intranatal factor, injuries in child birth.

(*c*) The postnatal factor, the germ-laden environment.

(*d*) A complexity of causes.

The causes of antenatal death are comparatively simple in action and reach the unborn infant through the placenta. The fatality in such cases is largely decided by the state of that organ.

The causes of intranatal death are more complicated. They represent a noncompatibility between the child about to be born and the powers by which its birth is to be effected. The causes of intranatal death can, to a great degree, be anticipated, and in many cases they can be defeated by good obstetrics.

The causes of neonatal death are far more complicated and are much less easy to master either in the sense of understanding or combating them.

IMPORTANT PRECAUTIONS IN ADMINISTERING ARSPHENAMINE AND NEOARSPHENAMINE.

Experience has shown that the untoward results occasionally associated with the administration of arsphenamine are due in a large measure to the use of too highly concentrated solutions of the drug, to too rapid administration, and to insufficient care in rendering the solution slightly alkaline.

The reader, therefore, may be interested in studying the following instructions just issued to medical officers of the Public Health Service regarding the administration of arsephenamine and neoarsphenamine. Careful observance of the precautions here described will reduce the number of reactions from the use of these drugs.

GENERAL DIRECTIONS.

The ampule, before opening, should be immersed in 95 per cent alcohol for 15 minutes in order to detect any crack or aperture not primarily recognizable. (Should such a breach be discovered, the contents of the ampule should be discarded.)

Arsphenamine.

(1) *Solution.*—Cold, boiled, freshly distilled water should be used in all cases except in the case of "arsenobenzol" made by the Dermatological Research Laboratory, in which case hot water is required. No more solution should be prepared at one time than can be given in 30 minutes.

(2) *Neutralization and alkalinization of the above solution.*—With a graduated pipette or burette add 0.9 cc. of normal NaOH for each 0.1 gm. of the drug (i. e., 5.4 cc. for each 0.6 gm.). The alkali should be added all at once and should quickly convert the acid salt solution of arsphenamine into the alkaline salt solution, or the disodium of salt of the arsphenamine base. (The solution of arsenobenzol, which is hot, should be cooled before adding the alkali). This represents slightly more alkali than just enough to redissolve the precipitate formed by the addition of this reagent.

The alkali used should be standardized against normal acid. Normal NaOH is a 4 per cent solution of the c. p. product. However, if made on the basis of weight, it may be considerably less than this strength, hence the necessity for titration. It could be made up in amount sufficient for a month's use if kept in a well-stoppered bottle and exposed to the air for only a few seconds at a time when using the solution. It should be kept in a bottle that has been used for NaOH solution for some time, so that all action it causes in the glass will have occurred. Where it is impossible to have this made up at the station, it will be furnished upon request from the Hygienic Laboratory. Should the NaOH solution become cloudy or contain a precipitate, it should be discarded.

(3) *Concentration of the drug.*—It is desired to emphasize the fact that the concentration of the drug should not be greater than 0.1 gm. to 30 cc. of final solution. The practice of using concentrated solution is not only in direct conflict with the instructions on the circular, but carries a distinct hazard to the patient.

(4) *Method of injection.*—The gravity method only should be used. Where several patients are to be injected from the same solution, the container for the solution should be graduated. If not already graduated, this can be done in a few minutes by sticking on a strip of adhesive plaster and marking the graduations on this. A convenient way to do this is to have each mark represent 30 cc., with a long mark for each 180 cc.; then, if the volume is made up so that each 0.1 gm. of drug is contained in each 30 cc., the doses can be given accurately. It is a great convenience to have a glass stopcock near the glass tubing, which serves as a window just above the needle in order to control the rate of injection. If no stopcocks are at hand, the rate can be controlled by the size of the needle and the height of the column of fluid. A No. 18 or 20 B. & S. gauge is the best sized needle.

(5) *Rate of injection.*—Operators should pay particular attention to the rate of administration and in no case should it exceed 0.1 gm. of drug (30 cc. of solution) in two minutes. This point is especially emphasized because it is believed that excessive rapidity of administration accounts for more unfavorable results in the use of arsphenamine than any other one thing.

Neoarsphenamine.

The principal precautions to be observed in the administration of neoarsphenamine are:

(1) Only a single ampule should be dissolved at a time. This drug must not be dissolved in bulk to be given to a series of patients.

(2) Cold water only should be used.

(3) The dilution should be not stronger than 0.1 gm. of the drug in 2 cc. of freshly distilled water.

(4) A very small needle should be used, and the time of injection of the dose should not be less than five minutes.

THE JOURNAL OF INDUSTRIAL HYGIENE MAKES ITS BOW.

All engaged or interested in industrial hygiene have for some time felt the need of some special periodical devoted solely to this important branch of preventive medicine. This lack was the more regretted because it was realized that such a periodical would be of great value in promoting the development of industrial hygiene. It is a pleasure, therefore, to record the appearance of the initial number of the Journal of Industrial Hygiene, edited for the United States by David L. Edsall, and for Great Britain by A. F. Stanley Kent. The new journal is to be published monthly, one volume appearing in a year. The first number consists of two parts, of which the first or main part of 68 pages contains the following original articles:

Industrial Medicine and Surgery, A Résumé of its Development and Scope. By Henry E. Mock.

Lead Poisoning in American Industry. By Alice Hamilton.

The Problem of Fatigue. By Reynold A. Spaeth.

Telephone Operating: A Study of its Medical Aspects with Statistics of Sickness Disability Records.

The second part, containing 19 pages, consists of an Abstract of the Literature of Industrial Hygiene, the material being classified under 25 different headings and covering the entire domain of the subject.

The excellence of the articles in the first number is an earnest of those which are to come. Typographically, the Journal makes a fine appearance. The type is large and clear, and reading is still

further facilitated by the division of the page into two columns. The absence of an editorial section is to be regretted, for in the hands of the able editors this would surely have been most interesting and helpful.

GRAVE TYPHUS SITUATION IN CENTRAL EUROPE.

Some idea of the devastating effect of typhus in central Europe and of the danger which threatens the western countries may be gained from the following translation of an appeal addressed to the international committee of the Red Cross by the president of the Austrian Red Cross on behalf of the chiefs of the sanitary service of the former Austrian monarchy. In transmitting this to the various allied Governments, the vice president of the international committee of the Red Cross, Mr. Ferriere, says:

"* * * We consider that the danger which this circular describes is very real and worthy of special attention on the part of the Governments of Europe.

"We will be grateful to you, consequently, if you would intercede with your Government in order that prompt measures be taken in this respect and that, if possible, an international medical commission may be constituted in conformity with the request of the inclosed report, to organize on the premises the necessary prophylactic measures, as was done in Serbia during the epidemic of 1915."

VIENNA, *March 7, 1919.*

INTERNATIONAL COMMITTEE OF THE RED CROSS,

Geneva:

The danger of an epidemic of spotted typhus is threatening, in an alarming manner, all countries of central Europe that have suffered so intensely through the horrors of the war.

Typhus is raging in all the districts of Poland, in the country of the Jugo-Slavs, especially in Old Serbia. In the western part of this country it has become pandemic. Communities, hospitals, barracks, schools have become veritable centers of infection. The epidemic that is threatening the Central Powers from north, east, and south is rapidly spreading toward the west. Contamination is spread by the repatriated soldiers who are in a bad condition, weakened by hunger and privations, who have neither clothes nor linen and are generally covered with lice, and who, therefore, become the victims of infection. In this way this illness, almost unknown in our country, is brought into central and western Europe, into countries where the population is not partially vaccinated through the recurring appearance of the disease, as is the case in the Near East.

The impending danger has, notwithstanding actual divergencies, reunited the countries of the former Austro-Hungarian Empire in a joint action of defense.

In view of the constant spreading of the plague, the Austrian Red Cross Society has received calls for help from all sides, especially from Poland and Ukraine. In accordance with the Austrian Department of Public Health, this Red Cross assembled the sanitary delegates of Poland, the Ukraine, of Jugo-Slavia, and of German Austria for a conference which took place on February 28 last. The "Conseil International d'Hygiène de Prophylaxie," which had met at Budapest with the same intention of uniting all efforts in view of contending with the typhus, had provided one of these delegates with full authority to act. The war having completely exhausted the former Austro-Hungarian States, and these, lacking all material and financial help, can not hope by their own means to be able to put a stop to the constantly progressing epidemic. Quite aware of these circumstances, the sanitary delegates decided unanimously to appeal *by way of the Austrian Red Cross to the International Committee of the Red Cross in Geneva, in order that the allied States, as well as the neutral powers, under the emblem of the Red Cross should be required to set up immediately an international commission in view of contending with the typhus, and that this commission should be provided with all necessary financial and material aid as well as with medical help, in order to carry out an action of assistance and defense on the required large scale.*

When in 1915 typhus killed thousands of people in Serbia, the powerful intervention of the allied countries succeeded in a comparatively short time, but only with considerable effort, in mastering the dreadful plague. It is necessary that sanitary help should be given in an equally generous and clear-sighted way in Serbia and Poland, but especially in Ukraine. In order to destroy the centers of contagion, modern hospitals and disinfection stations should be erected. Mobile sanitary formations, disinfection units, field laboratories, etc., should set to work to suppress the numberless sources of infection.

At the same time, prophylactic measures ought to be taken at all the points of entrance on the western border. Central depots for the repatriated soldiers should be created and provided with an important stock of linen, clothes, food, medicines, disinfectants, and sanitary articles of every kind.

Already the centers of contagion have progressed far into the heart of the former Austrian countries. The small territory of Moravia annexed by the Tcheco-Slovac State had, according to the official sanitary reports of the Government, 231 cases of typhus between February 2 and 8. Almost daily the concentration depots of the Ukranians and Poles in Vienna transferred cases of typhus to the hospitals for infectious diseases.

The sanitary delegate of Jugo-Slavia reports an increasing wave of typhus proceeding from Old Serbia.

The conditions in the western part of the Ukraine, in former East Galicia, appear to be disastrous.

A report drafted at Stanislau on February 21 and signed by the Ukranian Secretary of the Interior, the Health Board of the War Office, and the health board of the home office, as well as by the delegate of the "Conseil d'Hygiène et de Prophylaxie" at Budapest, states as follows concerning the sanitary conditions of this country:

"All the districts of East Galicia are infected by spotted typhus and smallpox. As there are no sources of help as regards doctors, medicines, and sanitary material in the country, rapid and abundant help from without is wanted. In the former fighting zone the people live in underground excavations. They have no linen, scanty clothing, totally insufficient food, and numberless cases of œdema and scurvy. In the whole country there is the greatest need of the most primitive hygienic commodities—baths, soap, coal, etc. The means of communication are absolutely insufficient, roads almost impassable and railways destroyed, and there is a lack of experienced physicians and nurses, of hospitals for infectious diseases, of sanitary establishments, hospital linen, and disinfection establishments. Conditions seem to be similar in eastern Ukraine, but not quite as bad."

In order to understand completely the great danger of the actual typhus epidemic for the whole of Europe it is necessary to refer to the fact that the disease is extremely infectious. During an epidemic of the illness in East Galicia, the mortality amongst adults was about 10 per cent during the war. The character of the plague has become highly aggravated, probably owing to the diminished powers of resistance of the populations, and mortality has greatly increased.

According to scientific research, *the transmission of the disease is caused by the clothes louse; consequently the disease is easy to catch. The formation of centers of infection in distant localities is constantly possible; therefore no country and no people are safe from contagion.*

The danger for Europe is not alone actual but increasing because, without a uniform method of sanitation on a large scale, of the aforesaid territories, the centers of contagion will never be destroyed nor the epidemic exterminated. Europe must not only ward off a constant menacing plague but it also has a mission of civilization to perform. *Contending with typhus is a question of civilization. Almost in the heart of Europe a great part of the inhabitants live in conditions unworthy of humanity, a degree of culture that knows neither soap nor linen.*

The Ukranian authorities show us a tragic picture of the lodging, alimentation, and clothing of the population of a great part of eastern

Galicia, and these conditions demand an immediate intervention of the European powers, even if they were not a constant source of danger for the whole of Europe. For the time being, the coefficient of diseases is increasing on all sides.

According to scientific research the epidemic increases during March and April, and only attains its culminating point at the end of April and in May; therefore, we must expect a progress of the epidemic and its destructive spreading in countries of central Europe that have heretofore been spared.

We can not foresee when and where the epidemic will stop. It is a *great danger for the western countries, so that not only human solidarity but also the certainty of contagion—the immediate danger for the western countries—implies a common action of assistance of all the European countries.*

The sanitary delegates assembled in Vienna decided unanimously on March 1 to send the following telegram to the International Committee of the Red Cross in Geneva:

"To-day's conference of all sanitary delegates of former Austro-Hungarian countries confirms far-spread epidemic of spotted typhus in Ukraine, Poland, Serbia. Central and western Europe threatened. In accordance with decision of conference, Austrian Red Cross begs Red Cross, Geneva, convoke immediate meeting international commission with all necessary authorization and means of help and equal assistance of all European countries as during typhus epidemic in Serbia in 1915. Detailed report will follow."

The undersigned committee repeats, with reference to the condition of affairs described in the preceding, an urgent appeal to the International Committee and begs that in consideration of the extreme seriousness of the sanitary situation, thorough and rapid aid may be granted.

For the Central Committee:

(Signed) TRAUN.

ATTENDANCE AT FREE VENEREAL DISEASE CLINICS OPERATED IN EXTRA-CANTONMENT ZONES.

The activities of the 239 free venereal disease clinics operated by, or in cooperation with, the United States Public Health Service can best be understood by a consideration of the report on the operation of the 25 clinics situated in the extra-cantonment zone areas. These 25 clinics, although they are in communities where the laws regarding the suppression of vice are rigidly enforced, and where the control of communicable diseases is well in hand, are typical of the average clinic operated under the joint supervision of the State boards of health and the United States Public Health Service.

The accompanying table, therefore, while including only the clinics operating in these zones may be used as an index to the work in general at the other free venereal disease clinics.

With the signing of the armistice and the rapid demobilization of troops, which naturally led, in a greater or less degree, to the diminishing of the intensive work done by the police and local authorities during the war in connection with the suppression of vice, we find the average daily attendance at these clinics increasing. The increase is due entirely to the great number of patients voluntarily applying to the clinics for treatment. During the first three months of 1919, the voluntary visits constituted between 60 and 70 per cent of the total visits. Of the 25,616 visits made during March, it is noted that 17,806, or 69.6 per cent, were voluntary, the remaining 7,810, or 30.4 per cent, being involuntary. During this same period there was a total of 7,336 new patients admitted to these clinics, making an average of 109 new admissions to each clinic during each of these three months.

From July 1, 1918, to April 1, 1919, there were 36,595 patients treated in these clinics. The total number of patients discharged as "probably cured" during this period was 9,769.

Average daily attendance, by months, at the free venereal-disease clinics operated in the extra-cantonment zones, July, 1918, to March, 1919, inclusive.

Clinic.	1918						1919		
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Anniston, Ala.	.....	13.0	13.2	9.0	14.2	17.4	13.7	14.3	16.0
Atlanta, Ga.	58.5	50.0	85.5	97.5	80.6	79.7	94.3	84.3	93.5
Augusta, Ga.	31.2	22.7	.....	.....	.....	25.0	9.5	15.1	.....
Charlotte, N. C.	43.5	41.1	43.6	34.9	38.3	38.0	56.0	35.8	.....
Chattanooga, Tenn.	298.0	164.5	193.9	122.3	107.1	88.3	139.7	110.1	.....
Chillicothe, Ohio	13.7	30.4	26.7	13.5	12.8	12.3	9.1	7.4	8.4
Columbia, S. C.	7.5	17.2	25.2	27.5	36.3	32.0	31.4	38.0	47.5
Des Moines, Iowa.	43.5	45.3	24.5	.....	.....	.....	57.0	45.3	28.4
El Paso, Tex.	61.9	73.2	84.4	75.0	67.9	75.1	78.5	72.1	68.4
Forth Worth, Tex.	15.5	44.5	34.5	35.2	30.7	25.4	23.1	37.5	.....
Greenville, S. C.	77.5	75.8	75.5	40.5	43.0	55.0	49.7	43.5	70.9
Hattiesburg, Miss.	9.3	[1] 8.3	11.0	14.2	18.5	17.7	14.1	18.3	.....
Houston, Tex.	90.5	134.3	126.3	113.3	137.6	124.0	108.3	111.5	67.0
Jacksonville, Fla.	35.9	46.8	51.8	15.8	36.7	[1] 47.5	.....	.....	.....
Leavenworth, Kans.	55.5	62.0	63.8	82.6	82.1	88.6	110.6	105.4	125.3
Little Rock, Ark.	.....	[2] 20.0	[2] 22.0	20.0	8.9	8.4	6.5	4.4	.....
Louisville, Ky.[3]	71.8	59.3	75.5	152.5	146.6	184.0	228.0	197.8	166.3
Macon, Ga.	34.0	31.3	28.0	41.5	32.8	25.4	29.5	33.4	43.7
Montgomery, Ala.	74.0	146.5	121.1	69.5	60.9	58.0	55.8	67.4	73.3
Newport News, Va.	32.3	30.9	38.8	33.3	23.3	18.5	21.0	53.7	53.1
Petersburg, Va.	28.5	59.0	73.9	24.1	36.6	34.8	38.3	42.0	35.0
Portsmouth, Va.	[1] 32.0	[1] 41.0	56.2	42.5	43.7	36.2	35.0	41.8	39.9
San Antonio, Tex.	96.0	65.4	62.4	50.9	30.9	42.6	36.9	40.3	63.9
Spartanburg, S. C.	28.3	49.5	55.4	38.5	42.9	43.8	42.7	40.5	38.0
Waco, Tex.	.....	[2] 24.0	[2] 19.0	25.0	28.8	25.4	.....	.....	.....
Daily averages by months.	56.3	54.2	58.9	51.3	50.5	47.6	56.0	54.8	61.1

[1] Report for half month only. [2] First month opened. [3] Includes jail and workhouse.

DEATHS DURING WEEK ENDED MAY 10, 1919, IN CITIES.

The table following shows the registered deaths from all causes and from pneumonia (all forms) and influenza combined in certain large cities of the United States during the week ended May 10, 1919.

The data are taken from the "Weekly Health Index," May 13, 1919, issued by the Bureau of the Census, Department of Commerce.

Registered deaths and annual death rates per 1,000 population in certain large cities of the United States, week ended May 10, 1919—Deaths from all causes, and from pneumonia (all forms) and influenza combined.

City.	Population July 1, 1918, estimated.	Total deaths, all causes.	Annual death rate per 1,000.	Annual death rate for preceding years.[1]	Influenza and pneumonia (all forms).	
					Number of deaths.	Annual death rate per 1,000.
Albany, N. Y.	112,565	41	19.0	C. 20.8	10	4.6
Atlanta, Ga.	201,732	60	15.5	C. 14.5	.....	.....
Baltimore, Md.	[2]669,981	219	17.0	A. 19.3	32	2.5
Boston, Mass.	785,245	221	14.7	A. 18.0	28	1.9
Buffalo, N. Y.	473,229	139	15.3	C. 17.4	.....	.....
Cambridge, Mass.	111,432	27	12.6	A. 13.5	.....	.....
Chicago, Ill.	2,596,681	653	13.1	A. 15.2	85	1.7
Cincinnati, Ohio	418,022	131	16.3	C. 16.0	.....	.....
Cleveland, Ohio	810,306	199	12.8	C. 13.0	42	2.7
Columbus, Ohio	225,296	73	16.9	C. 18.3	12	2.8
Dayton, Ohio	130,655	50	20.0	C. 19.2	5	2.0
Denver, Colo.	.....	69	.....	.....	.....	.....
Fall River, Mass.	128,392	35	14.2	C. 17.1	.....	.....
Grand Rapids, Mich.	135,450	28	10.8	C. 13.1	.....	.....
Indianapolis, Ind.	289,577	77	13.9	C. 17.8	.....	.....
Jersey City, N. J.	318,770	90	14.7	C. 17.0	.....	.....
Kansas City, Mo.	313,785	58	9.6	C. 15.6	.....	.....
Los Angeles, Calif.	568,495	126	11.6	A. 12.6	11	1.0
Louisville, Ky.	242,707	89	19.1	C. 15.9	7	1.5
Lowell, Mass.	109,081	31	14.8	A. 17.4	3	1.4
Memphis, Tenn.	154,759	66	22.2	C. 21.9	7	2.4
Milwaukee, Wis.	453,481	89	10.2	A. 13.0	21	2.4
Minneapolis, Minn.	383,442	77	10.5	C. 17.5	.....	.....
Nashville, Tenn.	119,215	37	16.2	C. 19.7	.....	.....
Newark, N. J.	428,784	89	10.8	C. 15.3	.....	.....
New Haven, Conn.	154,865	37	12.5	C. 18.9	.....	.....
New Orleans, La.	382,273	118	16.1	A. 19.4	.....	.....
New York, N. Y.	5,215,879	1,400	14.0	C. 16.0	246	2.5
Oakland, Calif.	214,206	53	12.9	A. 10.0	.....	.....
Omaha, Nebr.	180,264	45	13.0	C. 15.3	.....	.....
Philadelphia, Pa.	1,761,371	521	15.4	[3]16.7	.....	.....
Pittsburgh, Pa.	593,303	175	15.4	C. 20.9	40	3.5
Portland, Oreg.	.....	49	.....	.....	7	.....
Providence, R. I.	263,613	84	16.6	C. 12.7	9	1.8
Richmond, Va.	160,719	46	14.9	C. 21.1	1	0.3
Rochester, N. Y.	264,856	73	14.4	C. 15.7	15	3.0
St. Louis, Mo.	779,951	165	11.0	C. 15.2	.....	.....
St. Paul, Minn.	257,699	49	9.9	C. 14.6	.....	.....
San Francisco, Calif.	478,530	140	15.3	C. 14.6	15	1.6
Seattle, Wash.	.....	71	.....	.....	13	.....
Spokane, Wash.	.....	25	.....	.....	.....	.....
Syracuse, N. Y.	161,404	39	12.6	C. 14.5	2	0.6
Toledo, Ohio	262,234	47	9.3	A. 14.1	4	0.8
Washington, D. C.	401,681	108	14.0	A. 15.9	5	0.6
Worcester, Mass.	173,650	45	13.5	C. 16.2	10	3.0

[1] "A" indicates that the rate given is the average annual death rate per 1,000 population for the corresponding week of the years 1913 to 1917, inclusive. "C" indicates that the rate is the annual death rate per 1,000 population for the corresponding week of 1918.
[2] Population estimated as of July 1, 1919.
[3] Rate is based on statistics of 1915, 1916, and 1917.

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.

EXTRA-CANTONMENT ZONES—CASES REPORTED WEEK ENDED MAY 17.

CAMP DIX ZONE, N. J.

	Cases.
Measles:	
Chesterfield Township	5

FAYETTEVILLE SANITARY DISTRICT, N. C.

Chancroid	1
Gonorrhea	5
Measles	1
Pneumonia, broncho	1
Syphilis	6
Typhoid fever	1

CAMP FUNSTON ZONE, KANS.

Junction City:	
Scarlet fever	1
Whooping cough	1
Manhattan:	
Chicken pox	11
Measles	2
Mumps	1
Scarlet fever	1
Smallpox	1
Whooping cough	2
Ogden:	
Scarlet fever	2

GAS AND FLAME SCHOOL ZONE, GA.

Chancroid:	
Columbus	1
Chicken pox:	
Muscogee County	1
Gonorrhea:	
Columbus	4
Malaria:	
Columbus	1
Measles:	
Columbus	1
Bibb City	3
Muscogee County	3
Pneumonia:	
Columbus	2
Scarlet fever:	
Columbus	1

GAS AND FLAME SCHOOL ZONE, GA.—continued.

	Cases.
Smallpox:	
Columbus	1
Muscogee County	
Syphilis:	
Columbus	2
Girard	1
Muscogee County	1
Tuberculosis:	
Columbus	2
Typhoid fever:	
Muscogee County	1
Whooping cough:	
Columbus	3
Muscogee County	3

CAMP GORDON ZONE, GA.

Atlanta:	
Chancroid	1
Chicken pox	6
Diphtheria	1
Gonorrhea	23
Influenza	1
Measles	13
Mumps	3
Scarlet fever	2
Smallpox	29
Syphilis	21
Tuberculosis	6
Typhoid fever	3
Whooping cough	1

GULFPORT HEALTH DISTRICT, MISS.

Chicken pox:	
Biloxi	3
Gulfport	1
Lyman	1
Diphtheria:	
Biloxi	1
Dysentery:	
Escatawpa	1
Lyman	1
Moss Point	1

GULFPORT HEALTH DISTRICT, MISS.—continued.

Dysentery, amebic:	Cases.
Kiln	1
Gonorrhea:	
Biloxi	2
Kreole	1
Moss Point	1
Pascagoula	1
Hookworm:	
Standard	2
Influenza:	
Moss Point	1
Malaria:	
Beauvoir	1
De Lisle	1
Escatawpa	1
Gochier	1
Gulfport	11
Handsboro	1
Harleston	1
Logtown	2
Moss Point	4
Pascagoula	3
Pass Christian	1
Measles:	
Gulfport	1
Escatawpa	1
Mumps:	
Biloxi	5
Syphilis:	
Moss Point	1
Whooping cough:	
Gulfport	3
Pascagoula	1

CAMP A. A. HUMPHREYS ZONE, VA.

Alexandria:	
Cerebrospinal meningitis	1
Diphtheria	1
Gonorrhea	3
Pneumonia	1
Scarlet fever	1
Syphilis	1
Typhoid fever	1

CAMP JACKSON ZONE, S. C.

Columbia:	
Chicken pox	13
Diphtheria	1
Mumps	2
Whooping cough	4
Government clinic:	
Gonorrhea	25
Syphilis	18

CAMP LEE ZONE, VA.

Petersburg:	
Gonorrhea	4
Measles	1
Syphilis	5
Tuberculosis	2

CAMP MERRITT ZONE, N. J.

Chicken pox:	
Englewood	15
German measles:	
Englewood	1

CAMP MERRITT ZONE, N. J.—continued.

Measles:	Cases.
Englewood	3
Haworth	11
Mumps:	
Englewood	2
Pneumonia:	
Englewood	1
Scarlet fever:	
Closter	1
Demarest	1
Englewood	2
Haworth	2
Syphilis:	
Englewood	2
Tuberculosis:	
Tenafly	1

MUSCLE SHOALS SANITARY DISTRICT, ALA.

Lauderdale County:	
Chicken pox	3
Gonorrhea	1
Mumps	1
Nitrate Plant No. 2:	
Gonorrhea	13
Influenza	3
Malaria	2
Mumps	1
Pneumonia	2
Syphilis	7

PICRIC ACID PLANT ZONE, GA.

Brunswick:	
Gonorrhea	2
Pneumonia	3
Syphilis	3
Tuberculosis	2
Typhoid fever	1

CAMP PIKE ZONE, ARK.

Little Rock:	
Chicken pox	13
Diphtheria	1
Erysipelas	1
Gonorrhea	11
Malaria	2
Mumps	18
Pneumonia	1
Scarlet fever	4
Syphilis	4
Tuberculosis	1
North Little Rock:	
Diphtheria	1
Measles	1
Scarlet fever	3
Scott:	
Malaria	1

CAMP POLK ZONE, N. C.

Chicken pox:	
Durham	2
Raleigh	4
Gonorrhea:	
Holly Springs Township	1
Marks Creek Township	1
Neuse River Township	1
Raleigh	15

CAMP POLK ZONE, N. C.—continued.

Measles:	Cases.
Durham	1
Raleigh	1
Scarlet fever:	
Raleigh	1
Smallpox:	
Durham	4
White Oak Township	1
Syphilis:	
Cary Township	1
Marks Creek Township	1
Raleigh	8
Tuberculosis:	
Buckhorn Township	1
Raleigh	4
White Oak Township	1
Whooping cough:	
Durham	1
White Oak Township	5

CAMP SHERMAN ZONE, OHIO.

Chillicothe:	
Scarlet fever	4
Government clinic:	
Gonorrhea	6
Syphilis	1

SOUTHER FIELD ZONE, GA.

No cases of communicable diseases reported.

CAMP TRAVIS ZONE, TEX.

San Antonio:	Cases.
Chancroid	1
Chicken pox	2
Gonorrhea	9
Scarlet fever	2
Syphilis	1
Typhoid fever	2

CAMP UPTON ZONE, N. Y.

Bellport:	
Tuberculosis	1
Brook Haven:	
Measles	1
Poliomyelitis	1
Syphilis	1
Tuberculosis	1
Riverhead:	
German measles	1

WILMINGTON SANITARY DISTRICT, N. C.

Sea Gate:	
Measles	1
Wilmington:	
Gonorrhea	24
Mumps	1
Syphilis	2
Tuberculosis	3
Typhoid fever	3
Winter Park:	
Measles	1

DISEASE CONDITIONS AMONG TROOPS IN THE UNITED STATES.

The following data are taken from telegraphic reports received in the office of the Surgeon General of the United States Army for the week ended May 9, 1919. Reports from the American Expeditionary Forces are delayed in transmission, and the "current week" for troops in the American Expeditionary Forces is not the same period as "current week" for troops in the United States.

	Current week.	Last week.
Annual admission rate per 1,000 (all causes)	596.23	728.60
All troops in United States	1,219.96	1,468.57
American Expeditionary Forces	348.71	445.53
Annual admission rate per 1,000 (disease only)	517.27	655.27
All troops in United States	1,029.80	1,316.11
American Expeditionary Forces	309.70	402.47
Noneffective per 1,000 on day of report	40.04	41.80
All troops in United States [1]	52.68	57.76
American Expeditionary Forces	35.04	35.72
Annual death rate per 1,000 (all causes)	6.04	6.25
All troops in United States [1]	9.33	9.39
American Expeditionary Forces	4.73	5.05
Annual death rate per 1,000 (disease only)	4.43	4.83
All troops in United States [1]	7.37	7.56
American Expeditionary Forces	3.27	3.79

[1] Sick and death rates among troops in the United States will continue to be relatively high, as the numerical strength of troops in the United States continues to decline from week to week as a result of demobilization. Well men only are eligible for discharge, while the sick and otherwise disabled are retained in service for further treatment. The continued influx of sick and wounded (properly chargeable to commands overseas) is another factor tending to increase rates in the United States and to diminish correspondingly similar rates overseas.

Cases of special diseases reported during the week ended May 9, 1919.

Camp.	Pneumonia.	Dysentery.	Malaria.	Venereal diseases. Total.	Venereal diseases. New infection.	Influenza.	Measles.	Meningitis.	Scarlet fever.	Annual admission rate per 1,000 (disease only).	Noneffective rate per 1,000 on day of report.
Bowie	....	....	....	43	14	....	....	....	....	9,559.20	277.75
Bragg	....	....	....	....	....	....	....	....	....	493.95	10.36
Custer	1	....	....	4	4	....	....	....	1	746.01	37.01
Devens	....	....	....	24	....	5	....	....	....	911.60	73.33
Dix	2	....	....	33	4	....	....	....	....	700.82	58.89
Dodge	1	....	....	10	6	....	1	....	6	708.35	87.92
Funston	....	....	....	13	....	....	....	....	....	649.68	35.88
Gordon	....	....	....	6	....	2	....	....	....	4,682.68	69.05
Grant	2	....	....	30	....	....	1	....	1	4,927.80	97.01
Humphreys	....	....	....	2	....	....	....	....	1	740.07	32.95
Jackson	1	....	2	11	....	1	....	....	....	1,815.59	96.19
Kearny	....	....	....	2	2	....	2	....	....	3,875.95	176.67
Henry Knox	2	....	....	4	....	....	....	....	....	65.49	5.45
Lee	....	....	1	16	11	....	....	....	1	2,161.25	112.05
Lewis	1	....	....	7	1	1	....	....	....	2,223.35	139.11
Meade	....	....	....	9	3	....	1	....	3	1,594.66	73.24
Pike	8	....	....	37	3	....	....	....	....	2,523.47	130.69
Shelby	1	....	....	6	....	....	....	....	....	5,141.00	123.58
Sherman	5	....	....	20	10	2	....	....	3	2,622.75	127.60
Taylor	....	....	....	14	8	....	1	....	....	453.47	130.80
Travis	....	....	....	7	3	1	....	....	....	914.31	76.78
Upton	4	....	....	33	1	4	1	1	....	585.09	30.46
Northeastern Department	....	....	1	3	....	....	....	....	....	442.61	20.25
Eastern Department	1	....	....	19	1	....	....	....	....	523.70	19.35
Southeastern Department	1	....	1	15	5	....	....	....	....	627.45	23.83
Central Department	....	....	....	1	....	....	....	....	....	404.75	18.59
Southern Department	5	1	....	46	....	6	....	....	....	687.07	56.11
Western Department	1	....	....	11	....	2	....	....	....	518.47	20.23
Aviation camps	....	....	....	41	3	1	....	....	1	712.04	36.98
Port of embarkation:											
Hoboken	8	....	....	43	....	55	8	1	6	680.84	82.43
Newport News	23	....	....	25	11	17	2	2	1	1,265.64	32.89
Fort Monroe	....	....	....	2	....	....	....	....	....	444.20	22.42
Alcatraz Disciplinary Barracks	....	....	....	....	....	2	....	....	....	1,268.29	27.43
Leavenworth Disciplinary Barracks	....	....	....	3	....	....	....	....	....	759.23	40.82
Columbus Barracks	1	....	....	1	1	....	....	....	....	1,232.85	35.56
Jefferson Barracks	....	....	....	8	....	....	....	....	....	1,527.27	93.32
Fort Logan	....	....	....	2	2	....	....	....	....	2,136.98	45.20
Fort McDowell	....	....	....	3	3	....	....	....	....	1,602.95	39.45
Fort Sill	....	....	....	9	9	....	....	....	....	544.34	21.92
Fort Slocum	....	....	....	2	....	....	....	....	....	911.68	25.97
Fort Thomas	....	....	....	1	1	....	....	....	....	1,306.04	30.69
West Point	....	....	....	....	....	....	....	....	....	687.49	21.63
Arsenals	....	....	....	4	....	....	....	....	....	346.85	29.34
Miscellaneous small stations	....	1	....	5	....	....	....	....	1	475.50	29.44
Total	68	2	5	575	106	99	17	4	25	1,029.80	52.68

Number of deaths at large camps in the United States, week ended May 9, 1919.

Camp.	Strength.	Deaths. All causes.	Deaths. Disease only.	Camp.	Strength.	Deaths. All causes.	Deaths. Disease only.
Bowie	2,981	....	....	Taylor	8,715	1	1
Bragg	1,158	....	....	Travis	4,493	....	....
Custer	5,646	....	....	Upton	27,642	4	4
Devens	12,159	2	2	Northeastern Department	3,407	1	1
Dix	19,447	....	....	Eastern Department	14,888	....	....
Dodge	6,480	1	....	Southeastern Department	6,630	2	1
Funston	8,164	1	....	Central Department	4,625	1	1
Gordon	5,519	....	....	Southern Department	31,561	4	3
Grant	8,463	1	1	Western Department	10,231	1	1
Humphreys	2,670	....	....	Aviation camps	20,019	4	....
Jackson	7,017	....	....	Ports of embarkation:			
Kearny	3,515	1	1	Hoboken	35,825	4	3
Henry Knox	9,528	....	....	Newport News	28,767	3	3
Lee	7,603	1	1	All others	89,531	43	37
Lewis	4,701	....	....	Total	423,366	78	60
Meade	11,255	1	....				
Pike	5,708	....	....				
Shelby	2,468	....	....				
Sherman	12,570	....	....				

Annual admission rate per 1,000 for certain diseases.

Disease.	Troops in United States.		American Expeditionary Forces.	
	Current week.	Last week.	Current week.	Last week.
Pneumonia	8.35	10.86	7.37	10.25
Dysentery	.24	.12	.14	.23
Malaria	.61	1.22	.19	.37
Venereal	70.63	71.65	38.32	40.01
Paratyphoid	.....	.....	.04	.09
Typhoid	.12	.12	.78	.84
Measles	2.08	1.46	2.14	3.04
Meningitis	.49	.85	.68	.84
Scarlet fever	3.07	2.92	.53	.60
Influenza	12.16	10.98	.....	.....

CURRENT STATE SUMMARIES.

Telegraphic Reports for Week Ended May 17, 1919.

Alabama.—State totals: Typhoid fever 4, malaria 29, smallpox 9, measles 8, scarlet fever 3, diphtheria 1, whooping cough 5, pulmonary tuberculosis 11, pellagra 1, venereal diseases 108.

Arkansas.—State totals: Malaria 51, chicken pox 36, mumps 23, smallpox 19, measles 16, pellagra 6, tuberculosis 6, influenza 5, hookworm 4, trachoma 3, meningitis 1, typhoid fever 1.

California.—Influenza: Cases reported 296. Smallpox: Los Angeles 2, Los Angeles County 3, Longbeach 4, Oakland 1, San Francisco 6, Santa Clara County 1. Typhoid fever: Los Angeles 6, Fresno County 4, Tulare County 1, El Centro 2, Blythe 1. Cerebrospinal meningitis: Los Angeles 1, San Francisco 2, Kern County 1. Poliomyelitis: San Francisco 1. Lethargic encephalitis: Santa Paula 1.

Connecticut.—Cerebrospinal meningitis: Norwalk 2, New Haven 1. Influenza, 1 case reported.

Delaware.—Diphtheria: Marshalltown 2. Measles: Frederica 1, Dover 1, East Dover 2. Pneumonia: Marshalltown 1. Scarlet fever: Dover 1, Wilmington 2. Tuberculosis: Wilmington 1, West Dover 2.

Florida.—State totals: Typhoid fever 24, Malaria 13, smallpox 6, measles 18, diphtheria 5, dysentery 8.

Georgia.—State totals: Hookworm 3, cerebrospinal meningitis 3, chickenpox 30, diphtheria 3, dysentery (amebic) 10, dysentery (bacillary) 47, German measles 2, gonorrhea 76, influenza 24, malaria 42, measles 27, mumps 31, paratyphoid fever 1, pneumonia (acute lobar) 30, scarlet fever 10, septic sore throat 9, smallpox 48, syphilis 52, tuberculosis (pulmonary) 22, typhoid fever 18, whooping cough 25.

Illinois.—Diphtheria: Cases reported 153, of which in Chicago 124, Granite City 4, Decatur 3. Scarlet fever: Cases reported 106, of which in Chicago 56, Stockton 5, Polo 5, Oglesby 5, Rockford 4,

Dixon 3. Smallpox: Cases reported 138, of which in Rock Island 30, Granite City 14, Cedar Point 13, Pekin 10, East Alton 9, Aledo 4, Fairmount 4, Sawyerville 4, Preemption Township (Mercer County) 4, Amboy Township (Lee County) 3, Savanna 3, Cobden precinct (Union County) 3, Joliet Township (Will County) 3. Meningitis: Chicago 5. Poliomyelitis: Chicago 3. Influenza: Cases reported 37, of which in Chicago 34. Gonorrhea 181, syphilis 72.

Iowa.—Chancroid: Cherokee 1, Des Moines 1. Diphtheria: Burlington 2, Cedar Rapids 1, Davenport 1, Des Moines 2, Dubuque 1, Tama 4, South Fort Des Moines 1. Gonorrhea: Boone 2, Cherokee 11, Council Bluffs 8, Davenport 12, Des Moines 6, Dubuque 2, Emmetsburg 1, Greene 2, Oskaloosa 3, Shenandoah 2, Sioux City 8, Stanwood 1, Washta 1. Mumps: Fort Des Moines 2. Scarlet fever: Bellevue 1, Brooklyn 1, Des Moines 4, Dubuque 2, Mason City 3, Perry 6, South Fort Des Moines 1. Smallpox: Albion 1, Aurora 3, Blencoe 1, Boone 13, Bradford 1, Cedar Rapids 15, Davenport 4, Des Moines 6, Mason City 5, Ottumwa 5, Sigourney 3. Syphilis: Cherokee 4, Davenport 2, Des Moines 2, Dubuque 2. In rural districts of the following counties. Scarlet fever: Cherokee 1, Des Moines 1, Floyd 1, Howard 6. Smallpox: Buchanan 2, Grundy 3, Harrison 1.

Kansas.—Meningitis by cities: Colony 1. State totals: Smallpox 33, diphtheria 16, scarlet fever 34, influenza 57.

Louisiana.—Poliomyelitis 1, meningitis 1, smallpox 39, typhoid fever 20, diphtheria 6, gonorrhea 131, syphilis 41, chancroid 22.

Maine.—Chicken pox: Milo 1, Portland 2. Diphtheria: Nillinocket 1, Pittsfield 1, Washburn 1, Brunswick 2. Gonorrhea: Bath 1, Bridgeton 1, Calais 1, Danforth 1, Guilford 1, Limestone 1, Rumford 1, Camden 1, Jonesport 1, Lewiston 3, Portland 14, Rockland 3. Mumps: Bath 4, Baileyville 20, Portland 2, Sanford 1. Scarlet fever: Farmington 3, Brunswick 4, Portland 1, Bath 1, Danforth 1, Auburn 1. Smallpox: Brunswick 1, Van Buren 3. Syphilis: Augusta 5, Portland 5, Bath 1, Lewiston 1, Harpswell, 1, Rangeley 1. Tuberculosis: Cases reported 8. Typhoid fever: Portland 2, Bath 1, Rockland 1. Whooping cough: Portland 2, Sanford 2. Influenza: Waldoboro 11.

Massachusetts.—Measles (unusual prevalence): Fall River 79, Worcester 65. Whooping cough: Haverhill, 27.

Minnesota.—Smallpox (new foci): Chippewa County (Montevideo) 1, Marshall County (Holt Township) 1, Hennepin County (Edina village) 1, Kanabec County (Southfork Township) 1, Washington County (New Scandia Township) 2. Syphilis 49, gonorrhea 71, chancroid 4. Cerebrospinal meningitis 2.

New Jersey.—Cases reported: Influenza 32, pneumonia 89. Smallpox reported from Beverly, Beverly Township, Burlington Township and Florence Township in Burlington County. No unusual prevalence of other diseases.

New York.—Reports exclusive of New York city. Typhoid fever 16, measles 458, scarlet fever 136, whooping cough 74, diphtheria 142. Smallpox: Cases reported 17, of which in Elmira Heights 1, North Collins town 7, North Collins village 3, Maryland town 4, Schenevus 2. Cerebrospinal meningitis: Utica city 1, Middletown city 1. Poliomyelitis: Brook Haven 1. Pneumonia: Cases reported 94. Voluntary reports: Syphilis 113, gonorrhea 27.

North Carolina.—State totals: Whooping cough 118, measles 262, diphtheria 10, scarlet fever 10, septic sore throat 5, smallpox 86, chicken pox 43, infantile paralysis 1, typhoid fever 16, epidemic meningitis 2, broncho-pneumonia 8, lobar-pneumonia 11, cholera infantum 10, dysentery (bacillary) 4, dysentery (amebic) 1, influenza (Cumberland County) 1, syphilis 132, gonorrhea 66, chancroid 12, gonorrhea and chancroid 3, syphilis and chancroid 1, syphilis, gonorrhea and chancroid 1.

Ohio.—Scarlet fever: Sugar Grove (Fairfield County) 7, Lima 11, Cincinnati 19. Smallpox: Yellow Springs (Greene County) 11, Wyoming (Hamilton County) 12, Cleveland 27, Youngstown 15, Middletown 10.

Oregon.—Portland reports 26 cases and 2 deaths from influenza, Columbia City 11 cases and Hood River 41 cases.

Vermont.—No outbreak or unusual prevalence.

Virginia.—Smallpox: Alexandria County 1, Nansemond 1, Portsmouth 6.

Washington.—Unusual prevalence of disease reported. Scarlet fever: Seattle 11, Ellensburg 5, Shelton 13, Tacoma 5, Walla Walla 6. Smallpox: Seattle 14, Walla Walla County 10.

CEREBROSPINAL MENINGITIS.

State Reports for March and April, 1919.

Place.	New cases reported.	Place.	New cases reported.
Indiana (March):		Wisconsin (April):	
Clark County	13	Brown County	1
Hendricks County	1	Jefferson County	1
Marion County	1	Milwaukee County	5
Vanderburg County	4	Polk County	1
Total	19	Shawano County	1
West Virginia (April):		Total	9
Kanawha County	2		
Mercer County	2		
Total	4		

CEREBROSPINAL MENINGITIS—Continued.

City Reports for Week Ended May 3, 1919.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Atlanta, Ga	1	1	New Bedford, Mass		1
Baltimore, Md	3	2	Newburgh, N. Y		1
Birmingham, Ala		1	New Haven, Conn		1
Boston, Mass	1	1	New Orleans, La	1	
Bridgeport, Conn		1	New York, N. Y	3	2
Cambridge, Mass	1		North Adams, Mass	1	1
Charleston, W. Va		1	Philadelphia, Pa	1	1
Chicago, Ill	1	1	Piqua, Ohio		1
Detroit, Mich	3		Portland, Oreg		1
East Chicago, Ind		1	Racine, Wis		1
Fond du Lac, Wis		1	Riverside, Calif		1
Galveston, Tex		1	Trenton, N. J	1	
Louisville, Ky	1	1	Troy, N. Y	1	
Madison, Wis	1		Washington, D. C	1	
Memphis, Tenn		1	White Plains, N. Y	1	
Milwaukee, Wis	2	2	Wilmington, Del	1	1
Nashville, Tenn		1	Worcester, Mass	1	
Newark, N. J	1				

CHANCROID.

Cases Reported in Extra-Cantonment Zones, Week Ended May 17, 1919.

	Cases.		Cases.
Fayetteville sanitary district, N. C	1	Camp Gordon zone, Ga	1
Gas and Flame School zone, Ga. and Ala	1	Camp Travis zone, Tex	1

DIPHTHERIA.

Cases Reported in Extra-Cantonment Zones, Week Ended May 17, 1919.

	Cases.		Cases.
Camp Gordon zone, Ga	1	Camp Jackson zone, S. C	1
Gulfport health district, Miss	1	Camp Pike zone, Ark	2
Camp A. A. Humphreys zone, Va	1		

See also Diphtheria, measles, scarlet fever, and tuberculosis, page 1155.

GONORRHEA.

Cases Reported in Extra-Cantonment Zones, Week Ended May 17, 1919.

	Cases.		Cases.
Fayetteville sanitary district, N. C	5	Muscle Shoals sanitary district, Ala	14
Gas and Flame School zone, Ga. and Ala	4	Picric acid plant zone, Ga	2
Camp Gordon zone, Ga	23	Camp Pike zone, Ark	11
Gulfport health district, Miss	5	Camp Polk zone, N. C	19
Camp A. A. Humphreys zone, Va	3	Camp Sherman zone, Ohio	6
Camp Jackson zone, S. C	25	Camp Travis zone, Tex	9
Camp Lee zone, Va	4	Wilmington sanitary district, N. C	24

INFLUENZA.

Cases Reported in Extra-Cantonment Zones, Week Ended May 17, 1919.

	Cases.		Cases.
Camp Gordon zone, Ga	1	Muscle Shoals sanitary district, Ala	3
Gulfport health district, Miss	1		

LEPROSY.

City Reports for Week Ended May 3, 1919.

During the week ended May 3, 1919, one case of leprosy was reported at each of the following-named places: New Orleans, La., New York, N. Y., Philadelphia, Pa., and Portland, Oreg. One death from leprosy was reported at New York, N. Y.

MALARIA.

Cases Reported in Extra-Cantonment Zones, Week Ended May 17, 1919.

	Cases.		Cases.
Gas and Flame School zone, Ga. and Ala	1	Muscle Shoals sanitary district, Ala	2
Gulfport health district, Miss	27	Camp Pike zone, Ark	3

Maryland Report for April, 1919.

Place.	New cases reported.	Place.	New cases reported.
Maryland:		Maryland—Continued.	
Baltimore County—		Charles County—Continued.	
St. Dennis	1	Waldorf, R. D	1
Charles County—		Baltimore	1
Waldorf	1		
Bolton, R. D	1	Total	5

City Reports for Week Ended May 3, 1919.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Atlanta, Ga	1		Newark, N. J	1	
Birmingham, Ala	2	1	Passaic, N. J	1	
High Point, N. C	1		San Francisco, Calif		1
Little Rock, Ark	1		Wilmington, N. C	1	
Memphis, Tenn	2				

MEASLES.

Cases Reported in Extra-Cantonment Zones, Week Ended May 17, 1919.

	Cases.		Cases.
Camp Dix zone, N. J	5	Camp Lee zone, Va	1
Fayetteville sanitary district, N. C	1	Camp Merritt zone, N. J	14
Camp Funston zone, Kans	2	Camp Pike zone, Ark	1
Gas and Flame School zone, Ga. and Ala	7	Camp Polk zone, N. C	2
Camp Gordon zone, Ga	13	Camp Upton zone, N. Y	1
Gulfport health district, Miss	2	Wilmington sanitary district, N. C	2

See also Diphtheria, measles, scarlet fever, and tuberculosis, page 1155.

PELLAGRA.

City Reports for Week Ended May 3, 1919.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Austin, Tex		1	Memphis, Tenn	1	1
Birmingham, Ala	1		Mobile, Ala		1
Charleston, S. C		1	Nashville, Tenn		1
Charlotte, N. C		1	Pine Bluff, Ark	1	
Fort Worth, Tex		1	Raleigh, N. C		1
Houston, Tex		1	Winston-Salem, N. C	1	1

PLAGUE-INFECTED GROUND SQUIRRELS.

Alameda County, Calif.

Two plague-infected ground squirrels (*Citellus beechyi*) were reported found April 28 and 29 in different localities in the northeastern part of Alameda County, Calif. In both cases diagnosis was based upon animal inoculation and cultures. Intensive hunting operations are being carried on.

PNEUMONIA.

Cases Reported in Extra-Cantonment Zones, Week Ended May 17, 1919.

	Cases.		Cases.
Fayetteville sanitary district, N. C	1	Muscle Shoals sanitary district, Ala	2
Gas and Flame School zone, Ga. and Ala	2	Picric acid plant zone, Ga	3
Camp A. A. Humphreys zone, Va	1	Camp Pike zone, Ark	1
Camp Merritt zone, N. J	1		

City Reports for Week Ended May 3, 1919.

Place.	Lobar.		All forms.		Place.	Lobar.		All forms.	
	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.	Cases.	Deaths.
Akron, Ohio	1	.....	.....	.....	Lynn, Mass	1	2	.....	.....
Arlington, Mass	1	1	.....	.....	Manitowoc, Wis	.....	.....	3	3
Atlantic City, N. J	1	1	.....	.....	Medford, Mass	2	1	.....	.....
Baltimore, Md	14	9	.....	.....	Methuen, Mass	2	.....	.....	.....
Baton Rouge, La	.....	.....	2	.....	Morgantown, W. Va	3	2	.....	.....
Beaumont, Tex	1	.....	.....	.....	Mount Vernon, N. Y	3	.....	.....	.....
Belleville, N. J	1	.....	.....	.....	Newark, N. J	42	11	.....	.....
Beverly, Mass	2	.....	.....	.....	New Bedford, Mass	1	.....	.....	.....
Boston, Mass	42	19	.....	.....	Newburgh, N. Y	2	1	.....	.....
Brockton, Mass	2	2	.....	.....	New York, N. Y	.....	.....	133	185
Cadillac, Mich	1	.....	.....	.....	Northampton, Mass	1	.....	.....	.....
Cambridge, Mass	1	3	.....	.....	North Attleboro, Mass	1	.....	.....	.....
Camden, N. J	2	.....	.....	.....	Oak Park, Ill	2	.....	.....	.....
Canton, Ohio	1	1	.....	.....	Paterson, N. J	.....	.....	9	.....
Chicago, Ill	.....	.....	172	63	Philadelphia, Pa	55	32	.....	.....
Cleveland, Ohio	26	27	.....	.....	Phillipsburg, N. J	2	2	.....	.....
Cumberland, Md	1	1	.....	.....	Pontiac, Mich	1	.....	.....	.....
Dayton, Ohio	4	4	.....	.....	Port Chester, N. Y	2	1	.....	.....
Detroit, Mich	9	13	11	23	Reno, Nev	3	2	.....	.....
Duluth, Minn	9	2	.....	.....	Rochester, N. Y	14	12	.....	.....
Elizabeth, N. J	2	3	.....	.....	Saginaw, Mich	1	3	.....	.....
Elmira, N. Y	3	1	.....	.....	San Antonio, Tex	3	1	.....	.....
El Paso, Tex	4	4	.....	.....	San Diego, Calif	.....	.....	2	2
Fall River, Mass	4	1	.....	.....	Sandusky, Ohio	.....	.....	2	.....
Fitchburg, Mass	4	2	.....	.....	Sanford, Me	1	1	.....	.....
Framingham, Mass	1	1	.....	.....	San Francisco, Calif	11	6	.....	.....
Grand Rapids, Mich	7	5	.....	.....	Saratoga Springs, N. Y	1	.....	.....	.....
Green Bay, Wis	1	1	.....	.....	Sault Ste. Marie, Mich	1	1	.....	.....
Haverhill, Mass	2	.....	.....	.....	Schenectady, N. Y	2	2	.....	.....
Holyoke, Mass	2	1	.....	.....	Somerville, Mass	7	3	.....	.....
Independence, Mo	.....	.....	1	1	South Bend, Ind	2	2	.....	.....
Jamestown, N. Y	6	.....	.....	.....	Spartanburg, S. C	1	1	.....	.....
Kalamazoo, Mich	4	3	.....	.....	Springfield, Mass	4	3	.....	.....
Kansas City, Kans	.....	.....	7	.....	Toledo, Ohio	3	3	.....	.....
Kansas City, Mo	.....	.....	6	18	Trenton, N. J	1	5	.....	.....
Kearny, N. J	1	.....	.....	.....	Watertown, Mass	1	.....	.....	.....
Lakewood, Ohio	1	1	.....	.....	Westfield, Mass	1	.....	.....	.....
Lawrence, Mass	1	2	.....	.....	Winston-Salem, N. C	1	1	.....	.....
Los Angeles, Calif	5	1	5	6	Winthrop, Mass	2	1	.....	.....
Louisville, Ky	2	4	.....	.....	Worcester, Mass	1	4	.....	.....

POLIOMYELITIS (INFANTILE PARALYSIS).

State Reports for April, 1919.

Place.	New cases reported.	Place.	New cases reported.
Maryland:		Wisconsin:	
Washington County—		Grant County	1
Hancock	1	Iowa County	1
		Winnebago County	1
		Total	3

City Reports for Week Ended May 3, 1919.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Chicago, Ill	2	1	New Brunswick, N. J	1	
Detroit, Mich	1		New York, N. Y		1
Lancaster, Ohio		1	Pittsburgh, Pa	1	
Minneapolis, Minn	1				

RABIES IN ANIMALS.

City Reports for Week Ended May 3, 1919.

During the week ended May 3, 1919, one case of rabies in animals was reported at Akron, Ohio, and one at Memphis, Tenn.

RABIES IN MAN.

Austin, Tex., Week Ended May 3, 1919.

One death from rabies was reported at Austin, Tex., during the week ended May 3, 1919.

ROCKY MOUNTAIN SPOTTED OR TICK FEVER.

Missoula, Mont., Week Ended May 3, 1919.

During the week ended May 3, 1919, one fatal case of Rocky Mountain spotted or tick fever was reported at Missoula, Mont.

SCARLET FEVER.

Cases Reported in Extra-Cantonment Zones, Week Ended May 17, 1919.

	Cases.		Cases.
Camp Funston zone, Kans	4	Camp Pike zone, Ark	7
Gas and Flame School zone, Ga. and Ala	1	Camp Polk zone, N. C	1
Camp Gordon zone, Ga	2	Camp Sherman zone, Ohio	4
Camp A. A. Humphreys zone, Va	1	Camp Travis zone, Tex	2
Camp Merritt zone, N. J	6		

See also Diphtheria, measles, scarlet fever, and tuberculosis, p. 1155.

SMALLPOX.

Cases Reported in Extra-Cantonment Zones, Week Ended May 17, 1919.

	Cases.		Cases.
Camp Funston zone, Kans	1	Camp Gordon zone, Ga	29
Gas and Flame School zone, Ga. and Ala	1	Camp Polk zone, N. C	5

SMALLPOX—Continued.

State Reports for April, 1919—Vaccination histories.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
Maryland:						
Baltimore	4				4	
Allegany County—						
Pekin	3				3	
Anne Arundel County—						
Leitches	6				6	
Fair Haven	7				7	
Nutwell	1				1	
Dorchester County—						
Bryantown	1				1	
Hawkeye	2				2	
Cambridge	2				2	
Hurlock, R. D	1				1	
Prince Georges County—						
Upper Marlboro	2				2	
Washington County—						
Hagerstown	10				10	
Keedysville, R. D	4				4	
Total	43				43	
Wisconsin:						
Ashland County	3				3	
Barron County	4			2	1	1
Bayfield County	15		6		8	1
Brown County	20					20
Chippewa County	2					2
Clark County	15				5	10
Columbia County	10					10
Dane County	15		9		4	2
Dodge County	1			1		
Douglas County	6				6	
Eau Claire County	1				1	
Fond du Lac County	21		3		14	4
Forest County	3				3	
Green Lake County	7		1		3	3
Jefferson County	2				1	1
Kenosha County	1					1
Kewaunee County	1				1	
Langlade County	2				2	
Manitowoc County	4			2	1	1
Marathon County	1				1	
Marinette County	5				5	
Milwaukee County	39					39
Oneida County	1				1	
Outagamie County	12		3	1	4	4
Portage County	2			1	1	
Price County	21		4	1	2	14
Racine County	15		13	2		
Rock County	7				4	3
St. Croix County	3				3	
Shawano County	7			7		8
Taylor County	8					
Trempealeau County	8		8			
Washburn County	7				7	
Waukesha County	1				1	
Waushara County	1				1	
Winnebago County	68				9	59
Wood County	7		1	1	5	
Total	346		48	18	97	183

SMALLPOX—Continued.

State Reports for March and April, 1919.

Place.	Cases.	Deaths.
Indiana (March):		
Allen County	23	
Cass County	13	
Clay County	1	
Clinton County	8	
Dearborn County	9	
Decatur County	7	
Delaware County	22	
Elkhart County	59	
Fayette County	20	
Fountain County	1	
Franklin County	5	
Fulton County	9	
Hamilton County	7	
Harrison County	7	
Huntington County	25	
Jennings County	10	
Lake County	12	
Laporte County	48	
Lawrence County	30	
Madison County	66	
Marion County	16	
Marshall County	1	
Ohio County	2	
Parke County	17	
Porter County	4	
Ripley County	1	
Rush County	6	
St. Joseph County	11	
Tippecanoe County	8	
Union County	4	
Vanderburg County	1	
Vigo County	2	
Wayne County	1	
Wells County	2	
Indiana (March)-Continued.		
White County	4	
Whitley County	1	
Total	463	
West Virginia (April):		
Berkeley County	8	
Brooke County	1	
Cabell County	56	
Fayette County	1	
Gilmer County	3	
Grant County	3	
Greenbrier County	14	
Harrison County	1	
Jefferson County	3	
Kanawha County	4	
Lewis County	1	
Logan County	2	
McDowell County	5	
Mineral County	12	
Monongalia County	14	
Monroe County	5	
Ohio County	1	
Preston County	1	
Raleigh County	3	
Randolph County	4	
Roane County	8	
Summers County	2	
Wayne County	4	
Wood County	6	
Wyoming County	7	
Total	174	

City Reports for Week Ended May 3, 1919.

Place.	Cases.	Deaths.
Aberdeen, S. Dak	4	
Adrian, Mich	3	
Atchison, Kans	16	
Atlanta, Ga	35	
Austin, Tex	1	
Baltimore, Md	1	
Beatrice, Nebr	2	
Bedford, Ind	9	
Beloit, Wis	2	
Billings, Mont	1	
Birmingham, Ala	1	
Boston, Mass	1	
Boulder, Colo	10	
Brunswick, Ga	1	
Burlington, Iowa	1	
Canton, Ill	1	
Carbondale, Pa	3	
Cedar Rapids, Iowa	13	
Chanute, Kans	5	
Charleston, W. Va	1	
Charlotte, N. C	1	
Cheyenne, Wyo	2	
Chicago, Ill	1	
Chillicothe, Ohio	1	
Cincinnati, Ohio	5	
Cleveland, Ohio	10	
Columbia, S. C	2	
Council Bluffs, Iowa	1	
Davenport, Iowa	13	
Denver, Colo	12	
Detroit, Mich	7	
Duluth, Minn	3	
Elgin, Ill	1	
El Paso, Tex	3	
Fond du Lac, Wis	1	
Fort Wayne, Ind	9	
Fort Worth, Tex	5	
Galesburg, Ill	8	
Grand Forks, N. Dak	1	
Great Falls, Mont	1	
Green Bay, Wis	6	
Hibbing, Minn	1	
Independence, Mo	4	
Indianapolis, Ind	11	
Joplin, Mo	1	
Kalamazoo, Mich	4	
Kansas City, Kans	4	
Kansas City, Mo	7	
Knoxville, Tenn	2	
Kokomo, Ind	16	
La Fayette, Ind	1	
Leavenworth, Kans	5	
Lincoln, Nebr	24	
Logansport, Ind	3	
Long Beach, Calif	5	
Los Angeles, Calif	2	
Madison, Wis	1	
Manitowoc, Wis	2	
Marinette, Wis	2	
Marshalltown, Iowa	12	
Middletown, Ohio	1	
Milwaukee, Wis	6	
Minneapolis, Minn	17	
Mobile, Ala	9	
Moline, Ill	1	
Muskogee, Okla	3	
New Orleans, La	6	
New York, N. Y	2	

SMALLPOX—Continued.

City Reports for Week Ended May 3, 1919—Continued.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Niagara Falls, N. Y.	1		St. Cloud, Minn.	1	
Norfolk, Va.	5		St. Joseph, Mo.	11	
Oklahoma City, Okla.	13		St. Louis, Mo.	5	
Omaha, Nebr.	47		St. Paul, Minn.	10	
Parkersburg, W. Va.	3		Salt Lake City, Utah	6	
Pekin, Ill.	6		San Francisco, Calif.	3	
Peoria, Ill.	9		Sioux City, Iowa	2	
Pittsburgh, Pa.	1		Steubenville, Ohio	1	
Pontiac, Mich.	1		Superior, Wis.	2	
Portland, Oreg.	33		Terre Haute, Ind.	3	
Portsmouth, Va.	4		Toledo, Ohio	14	
Racine, Wis.	1		Topeka, Kans.	1	
Raleigh, N. C.	1		Tulsa, Okla.	5	
Richmond, Va.	1		Washington, D. C.	29	
Riverside, Calif.	1		Wichita, Kans.	2	
Roanoke, Va.	4		Wilmington, N. C.	1	
Rockford, Ill.	1		Winston-Salem, N. C.	13	
Rock Island, Ill.	10		Youngstown, Ohio	4	

SYPHILIS.

Cases Reported in Extra-Cantonment Zones, Week Ended May 17, 1919.

	Cases.		Cases.
Fayetteville sanitary district, N. C.	6	Muscle Shoals sanitary district, Ala.	7
Gas and Flame School zone, Ga. and Ala.	4	Picric acid plant zone, Ga.	3
Camp Gordon zone, Ga.	21	Camp Pike zone, Ark.	4
Gulfport health district, Miss.	1	Camp Sherman zone, Ohio.	1
Camp A. A. Humphreys zone, Va.	1	Camp Travis zone, Tex.	1
Camp Jackson zone, S. C.	18	Camp Upton zone, N. Y.	1
Camp Lee zone, Va.	5	Wilmington sanitary district, N. C.	2
Camp Merritt zone, N. J.	2		

TETANUS.

City Reports for Week Ended May 3, 1919.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Atlantic City, N. J.	1	1	Lynchburg, Va.		1
Colorado Springs, Colo.		1	Newark, N. J.	1	
Easthampton, Mass.	1	1	Pine Bluff, Ark.	1	1
Houston, Tex.		1	St. Paul, Minn.		1
Los Angeles, Calif.	1	1			

TUBERCULOSIS.

Cases Reported in Extra-Cantonment Zones, Week Ended May 17, 1919.

	Cases.		Cases.
Gas and Flame School zone, Ga. and Ala.	2	Camp Pike zone, Ark.	1
Camp Gordon zone, Ga.	6	Camp Polk zone, N. C.	6
Camp Lee zone, Va.	2	Camp Upton zone, N. Y.	2
Camp Merritt zone, N. J.	1	Wilmington sanitary district, N. C.	3
Picric acid plant zone, Ga.	2		

See also Diphtheria, measles, scarlet fever, and tuberculosis, page 1155.

TYPHOID FEVER.

Cases Reported in Extra-Cantonment Zones, Week Ended May 17, 1919.

	Cases.		Cases.
Fayetteville sanitary district, N. C.	1	Picric acid plant zone, Ga.	1
Gas and Flame School zone, Ga. and Ala.	1	Camp Travis zone, Tex.	2
Camp Gordon zone, Ga.	3	Wilmington sanitary district, N. C.	3
Camp A. A. Humphreys Zone, Va.	1		

TYPHOID FEVER—Continued.

State Reports for March and April, 1919.

Place.	New cases reported.
Indiana (March):	
Allen County	1
Carroll County	3
Clark County	16
Delaware County	3
Elkhart County	1
Gibson County	3
Green County	1
Howard County	2
Kosciusko County	1
Lake County	14
Lawrence County	1
Marion County	3
Tipton County	1
Warrick County	2
White County	1
Total	53
Maryland (April):	
Baltimore	12
Allegany County—	
Flintstone	1
Allegany Hospital	1
Anne Arundel County—	
Germantown	2
Odenton	1
Annapolis	3
Baltimore County—	
Lansdowne	1
Carroll County—	
New Windsor	2
Lineboro, R. D.	1
Cecil County—	
Elk Mills	1
Charles County—	
White Plains, R. D.	1
Bolton	1
Frederick County—	
Brunswick	1
Burkittsville, R. D.	1
Garrett County—	
Kitzmiller	1
Maryland—Continued.	
Kent County—	
Sassafras	3
Prince Georges County—	
Upper Marlboro	1
Queen Annes County—	
Chester	1
St. Marys County—	
Charlotte Hall	1
Somerset County—	
Marion	1
Marion, R. D.	1
Marion Station	1
Washington County—	
Weverton	2
Sharpsburg	1
Worcester County—	
Pocomoke City	1
Total	43
West Virginia (April):	
Braxton County	3
Greenbrier County	3
Jackson County	1
Kanawha County	5
Lewis County	2
Logan County	5
Putnam County	2
Total	21
Wisconsin (April):	
Douglas County	4
Milwaukee County	3
Price County	1
Racine County	2
Rock County	1
Winnebago County	2
Total	13

City Reports for Week Ended May 3, 1919.

Place.	Cases.	Deaths.
Baltimore, Md	6	
Bedford, Ind	1	
Boston, Mass	1	
Bridgeport, Conn	1	
Buffalo, N. Y	1	
Charleston, S. C	1	
Charleston, W. Va	1	
Chicago, Ill	2	
Cincinnati, Ohio	1	
Concord, N. H	1	
Detroit, Mich	2	1
Duluth, Minn	1	
Durham, N. C	1	
East Chicago, Ind		2
Elizabeth, N. J	1	
Eureka, Calif	1	1
Everett, Mass	1	1
Fairmont, W. Va	1	
Highland Park, Mich	1	
Homestead, Pa	3	
Indianapolis, Ind	1	
Ironwood, Mich		1
Ithaca, N. Y	1	
Kansas City, Mo	1	
Lackawanna, N. Y	2	
Lawrence, Kans	2	
Lawrence, Mass	2	
Little Rock, Ark	1	
Los Angeles, Calif	1	
McKeesport, Pa	1	
Macon, Ga	1	
Mankato, Minn	1	
Memphis, Tenn	3	2
Nashville, Tenn		1
New Bedford, Mass	1	
New Haven, Conn	1	
New Orleans, La	3	2
New York, N. Y	4	1
Norfolk, Va	1	
Oshkosh, Wis	2	
Passaic, N. J	1	
Philadelphia, Pa	17	1
Portland, Me	1	
St. Louis, Mo	2	
St. Paul, Minn	2	1
San Antonio, Tex	2	1
San Francisco, Calif	4	
Superior, Wis	2	
Toledo, Ohio	1	
Tulsa, Okla	2	
Washington, D. C	1	
Wheeling, W. Va	1	
Wilmington, Del	1	
Wilmington, N. C	2	1
Winston-Salem, N. C	1	

TYPHUS FEVER.

New York, N. Y., Week Ended May 3, 1919.

One case of typhus fever was reported in New York, N. Y., during the week ended May 3, 1919.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

State Reports for March and April, 1919.

State.	Cases reported.			State.	Cases reported.		
	Diphtheria.	Measles.	Scarlet fever.		Diphtheria.	Measles.	Scarlet fever.
Indiana (March)	.....	713	469	West Virginia (April)	40	482	152
Maryland (April)	172	776	1,123	Wisconsin (April)	113	449	331

City Reports for Week Ended May 3, 1919.

City.	Population as of July 1, 1917 (estimated by U. S. Census. Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Aberdeen, S. Dak.	15,926	.....	.....	.....	2	.....	1	.....	.....	.....
Adams, Mass.	14,406	3	.....	.....	.....	.....	.....	.....	.....	1
Adrian, Mich.	11,570	5	.....	.....	.....	.....	.....	.....	.....	.....
Akron, Ohio.	93,604	38	1	.....	40	.....	6	.....	.....	.....
Alameda, Calif.	28,433	5	2	.....	6	.....	.....	.....	.....	.....
Allentown, Pa.	65,109	.....	2	.....	39	.....	1	.....	.....	.....
Alton, Ill.	23,783	.....	.....	.....	.....	.....	2	.....	.....	.....
Altoona, Pa.	59,712	.....	1	.....	.....	.....	.....	.....	.....	.....
Anderson, Ind.	24,230	8	.....	.....	.....	.....	.....	.....	.....	.....
Ann Arbor, Mich.	15,041	12	1	.....	1	.....	.....	.....	1	1
Ansonia, Conn.	16,954	4	.....	.....	1	.....	.....	.....	1	.....
Appleton, Wis.	18,005	6	.....	.....	.....	.....	.....	.....	.....	.....
Arlington, Mass.	13,073	9	1	.....	.....	.....	1	.....	.....	.....
Asbury Park, N. J.	14,629	2	.....	.....	2	.....	.....	.....	1	.....
Ashtabula, Ohio.	22,008	2	.....	.....	.....	.....	2	.....	.....	.....
Atchison, Kans.	16,785	.....	.....	.....	.....	.....	4	.....	.....	.....
Atlanta, Ga.	196,144	58	.....	.....	8	.....	7	.....	6	5
Atlantic City, N. J.	59,515	12	.....	.....	6	.....	.....	.....	3	.....
Attleboro, Mass.	19,776	2	.....	.....	.....	.....	.....	.....	.....	.....
Austin, Tex.	35,612	10	.....	.....	.....	.....	1	.....	.....	1
Bakersfield, Calif.	17,543	4	.....	.....	.....	.....	3	.....	.....	.....
Baltimore, Md.	594,637	223	28	4	24	.....	174	1	29	21
Bangor, Me.	26,958	.....	.....	.....	.....	.....	1	.....	.....	.....
Barre, Vt.	12,401	1	.....	.....	.....	.....	.....	.....	.....	.....
Baton Rouge, La.	17,544	6	.....	.....	1	.....	.....	.....	2	1
Battle Creek, Mich.	30,159	.....	5	.....	6	.....	2	.....	.....	.....
Bayonne, N. J.	72,204	.....	6	.....	1	.....	1	.....	1	.....
Beatrice, Nebr.	10,437	2	.....	.....	.....	.....	.....	.....	.....	.....
Beaumont Tex.	28,851	10	.....	.....	.....	.....	.....	.....	.....	2
Beaver Falls, Pa.	13,749	.....	.....	.....	2	.....	.....	.....	.....	.....
Bedford, Ind.	10,613	2	.....	.....	.....	.....	.....	.....	.....	.....
Bellaire, Ohio.	14,575	5	.....	.....	3	.....	.....	.....	.....	.....
Belleville, N. J.	12,797	.....	2	.....	.....	.....	1	.....	.....	.....
Beloit, Wis.	18,547	3	.....	.....	1	.....	7	.....	1	.....
Benton Harbor, Mich.	11,099	4	.....	.....	2	.....	.....	.....	1	.....
Berkeley, Calif.	60,427	11	2	.....	.....	.....	1	.....	.....	.....
Berlin, N. H.	13,892	3	.....	.....	.....	.....	.....	.....	.....	.....
Bethlehem, Pa.	14,353	.....	3	.....	17	.....	.....	.....	4	.....
Beverly, Mass.	22,128	5	.....	.....	.....	.....	1	.....	3	.....
Biddeford, Me.	17,760	3	.....	.....	.....	.....	.....	.....	.....	.....
Billings, Mont.	15,123	.....	1	1	1	.....	4	.....	.....	.....
Binghamton, N. Y.	54,864	10	1	.....	.....	.....	.....	.....	.....	1
Birmingham, Ala.	189,716	54	.....	.....	4	.....	.....	.....	9	3
Bloomfield, N. J.	19,013	1	2	.....	1	.....	1	.....	.....	1
Boise, Idaho.	35,951	4	.....	.....	1	.....	4	.....	.....	.....
Boston, Mass.	767,813	259	31	3	15	.....	42	1	74	32
Braddock, Pa.	22,060	.....	3	.....	.....	.....	.....	.....	1	.....

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City Reports for Week Ended May 3, 1919—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Brazil, Ind.	10,472	4			8					1
Bridgeport, Conn.	124,724	43	3		6		2			6
Bristol, Conn.	16,318	3								1
Brockton, Mass.	69,152	19					2		3	2
Brookline, Mass.	33,526	9	2		12		1		2	
Brunswick, Ga.	10,984	5								1
Buffalo, N. Y.	475,781	123	38	4	70		15		16	14
Burlington, Iowa.	25,144	6					6			
Burlington, Vt.	21,802	10			14					
Butler, Pa.	28,677						1			
Butte, Mont.	44,057						2			
Cairo, Ill.	15,995	6	1							3
Cambridge, Mass.	114,293	26	3		13		5		4	5
Camden, N. J.	108,117		3				4		2	
Canton, Ill.	13,674	6								1
Canton, Ohio.	62,566	15	1		20		2			
Carlisle, Pa.	10,795				31					
Cedar Rapids, Iowa.	38,033						1			
Chanute, Kans.	12,968	3			5					
Charleston, S. C.	61,041	25	1							4
Charleston, W. Va.	31,060	17	2		6		2			3
Charlotte, N. C.	40,759		1		6				1	1
Chelsea, Mass.	48,405	13					2		3	1
Chester, Pa.	41,857				4					
Cheyenne, Wyo.	[1] 11,320				9					
Chicago, Ill.	2,547,201	695	122	17	1,056	10	53	2	313	88
Chicopee, Mass.	29,950	13	1				3		4	3
Chillicothe, Ohio.	15,625		1						1	
Cincinnati, Ohio.	414,248	124	5	1	38		39		23	25
Cleveland, Ohio.	692,259	212	17	3	32	1	15		41	23
Clinton, Mass.	[1] 13,075	4					3			1
Coatesville, Pa.	14,998				5					
Coffeyville, Kans.	18,331				1		1			
Colorado Springs, Colo.	38,965	18					1		1	
Columbia, S. C.	35,165				1				1	
Columbus, Ohio.	220,135	71	4		15		2		7	6
Concord, N. H.	22,858	11			1					1
Corpus Christi, Tex.	10,789	1		1						
Council Bluffs, Iowa.	31,838	6	1							
Covington, Ky.	59,623	15	1				2		1	2
Cranston, R. I.	26,773	5					2		1	1
Cumberland, Md.	26,686	12	2		17		1			1
Danbury, Conn.	22,931	5								
Danville, Va.	20,183	7								
Davenport, Iowa.	49,618		1							
Dayton, Ohio.	128,939	37	3	1	1		1		3	
Decatur, Ill.	41,483	8	2		1				7	1
Dedham, Mass.	10,618	1								
Denver, Colo.	268,439	53	8		1		11			12
Des Moines, Iowa.	104,052		4				14			
Detroit, Mich.	619,648	205	63	5	51	1	62	1	64	21
Dover, N. H.	13,276	4								
Du Bois, Pa.	14,994						4		1	
Dubuque, Iowa.	40,096		1							
Duluth, Minn.	97,077	13	5		36		2		4	3
Dunmore, Pa.	21,286		2							
Durham, N. C.	26,160	1			2					
East Chicago, Ind.	30,286	4								
East Cleveland, Ohio.	13,864						2			
Easthampton, Mass.	16,656	3	3	1						1
Easton, Pa.	30,854		1							
East Orange, N. J.	43,761	8			1		6		1	
Eau Claire, Wis.	18,887				8		3			
Elgin, Ill.	28,562	5	2		1					
Elizabeth, N. J.	88,830		6		3		15		8	2
Elmira, N. Y.	38,272	13			2		3		3	1
El Paso, Tex.	69,149	31	1							7
Englewood, N. J.	12,603	3								
Eureka, Cal.	15,142	4			1		1			
Evanston, Ill.	29,304	11	1		127					

[1] Population Apr. 15, 1910.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City Reports for Week Ended May 3, 1919—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census. Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Evansville, Ind	76,981	25	.....	.....	1	.....	3	.....	3	4
Everett, Mass	40,160	9	1	.....	1	.....	.....	.....	2	.....
Fall River, Mass	129,828	40	2	.....	56	3	2	.....	8	5
Fargo, N. Dak	17,872	6	.....	.....	12	.....	4	1	1	.....
Farrell, Pa	10,190	.....	.....	.....	1	.....	.....	.....	.....	.....
Findlay, Ohio	14,858	1	.....	.....	34	.....	.....	.....	.....	.....
Fitchburg, Mass	42,419	11	.....	.....	.....	.....	1	.....	3	1
Flint, Mich	57,386	12	2	.....	3	.....	.....	.....	.....	1
Fond du Lac, Wis	21,486	7	.....	.....	.....	.....	6	.....	.....	1
Fort Scott, Kans	10,564	3	.....	.....	.....	.....	.....	.....	.....	.....
Fort Wayne, Ind	78,014	26	2	.....	11	.....	2	.....	.....	1
Fort Worth, Tex	109,597	25	.....	.....	1	.....	.....	.....	1	1
Framingham, Mass	14,149	5	.....	.....	1	.....	.....	.....	1	.....
Frederick, Md	11,225	8	.....	.....	.....	.....	1	.....	.....	.....
Freeport, Ill	19,844	5	.....	.....	.....	.....	.....	.....	.....	.....
Fremont, Ohio	11,034	3	.....	.....	1	.....	.....	.....	1	1
Fresno, Calif	36,314	6	.....	.....	.....	.....	.....	.....	.....	.....
Galesburg, Ill	24,629	14	.....	.....	.....	5	.....	.....	.....	.....
Galveston, Tex	42,650	12	.....	.....	.....	.....	1	1	.....	1
Grand Forks, N. Dak	16,342	4	.....	.....	.....	.....	1	.....	.....	.....
Grand Rapids, Mich	132,861	42	8	2	18	.....	1	.....	4	.....
Great Falls, Mont	[1] 13,948	10	1	.....	2	.....	5	.....	1	.....
Green Bay, Wis	30,017	14	3	.....	.....	.....	.....	.....	1	.....
Greenfield, Mass	12,251	3	3	.....	.....	.....	2	.....	2	1
Greensboro, N. C	20,171	7	.....	.....	.....	.....	.....	.....	.....	.....
Greensburg, Pa	15,881	.....	.....	.....	22	.....	3	.....	.....	.....
Greenville, S. C	18,574	3	.....	.....	1	.....	.....	.....	1	.....
Hackensack, N. J	17,412	10	2	.....	.....	.....	.....	.....	.....	.....
Harrisburg, Pa	73,276	.....	.....	.....	84	.....	7	.....	.....	.....
Harrison, N. J	17,345	.....	1	.....	.....	.....	3	.....	.....	.....
Hartford, Conn	112,831	45	2	.....	7	.....	4	.....	5	4
Haverhill, Mass	49,180	16	3	.....	2	.....	2	.....	2	3
Hazleton, Pa	28,981	.....	.....	.....	.....	.....	2	.....	.....	.....
Hibbing, Minn	17,550	.....	.....	.....	.....	.....	1	.....	.....	.....
Highland Park, Mich	33,859	7	13	.....	.....	.....	1	.....	.....	.....
High Point, N. C	13,439	1	1	.....	4	.....	.....	.....	1	.....
Hoboken, N. J	78,324	18	4	.....	1	.....	.....	.....	1	.....
Holland, Mich	12,459	2	.....	.....	.....	.....	.....	.....	.....	.....
Holyoke, Mass	66,503	13	.....	.....	.....	.....	8	.....	4	2
Homestead, Pa	23,071	.....	1	.....	.....	.....	2	.....	1	.....
Houston, Tex	116,878	38	1	.....	2	.....	.....	.....	.....	5
Hudson, N. Y	12,898	1	.....	.....	.....	.....	.....	.....	.....	.....
Independence, Mo	11,964	6	.....	.....	8	.....	.....	.....	.....	.....
Indianapolis, Ind	283,622	88	5	1	59	.....	25	.....	13	10
Ironwood, Mich	15,005	4	.....	.....	1	.....	.....	.....	.....	.....
Ithaca, N. Y	16,017	7	1	.....	2	.....	10	.....	1	1
Jamestown, N. Y	37,431	10	1	.....	2	.....	3	.....	2	.....
Janesville, Wis	14,411	2	.....	.....	.....	.....	.....	.....	.....	.....
Jersey City, N. J	312,557	.....	20	.....	13	.....	5	.....	22	.....
Johnstown, N. Y	10,678	1	.....	.....	.....	.....	.....	.....	.....	.....
Johnstown, Pa	70,473	.....	2	.....	.....	.....	1	.....	3	.....
Joplin, Mo	33,400	.....	.....	.....	.....	.....	.....	.....	2	.....
Kalamazoo, Mich	50,408	20	.....	.....	8	.....	4	.....	3	1
Kankakee, Ill	14,270	1	.....	.....	.....	.....	.....	.....	.....	.....
Kansas City, Kans	102,096	.....	5	.....	7	.....	3	.....	.....	.....
Kansas City, Mo	305,816	99	4	1	34	2	2	.....	.....	9
Kearny, N. J	24,325	3	3	1	.....	.....	3	.....	.....	.....
Keene, N. H	10,725	4	.....	.....	.....	.....	.....	.....	.....	.....
Kenosha, Wis	32,833	4	2	.....	17	.....	6	.....	.....	.....
Knoxville, Tenn	59,112	.....	4	1	4	.....	3	.....	1	1
Kokomo, Ind	21,929	14	.....	.....	1	.....	4	.....	.....	.....
Lackawanna, N. Y	16,219	2	1	.....	13	.....	.....	.....	.....	.....
La Crosse, Wis	31,833	10	1	.....	.....	.....	.....	.....	.....	2
La Fayette, Ind	21,481	1	.....	.....	.....	.....	3	.....	.....	.....
Lakewood, Ohio	23,813	9	1	.....	.....	.....	.....	.....	1	1
Lancaster, Ohio	16,086	6	.....	.....	3	.....	3	.....	.....	1
Lancaster, Pa	51,437	.....	.....	.....	7	.....	3	.....	.....	.....
Lawrence, Kans	13,477	1	.....	.....	.....	.....	.....	.....	.....	.....
Lawrence, Mass	102,923	22	3	.....	.....	.....	2	.....	4	7
Leavenworth, Kans	[1] 19,363	.....	2	1	.....	.....	.....	.....	.....	.....
Leominster, Mass	21,365	4	1	.....	4	.....	1	.....	2	.....

[1] Population Apr. 15, 1910.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City Reports for Week Ended May 3, 1919—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Lexington, Ky.	41,997	9	.....	.....	5	.....	.....	.....	9	1
Lima, Ohio	37,145	8	4	.....	9	.....	14	.....	.....	2
Lincoln, Nebr.	46,957	15	4	.....	.....	.....	.....	.....	.....	1
Little Rock, Ark.	53,716	5	.....	.....	2	.....	6	.....	10	.....
Logansport, Ind.	21,338	6	.....	.....	1	.....	2	.....	.....	.....
Long Beach, Calif.	29,163	17	.....	.....	.....	.....	1	.....	1	3
Long Branch, N. J.	15,733	3	.....	.....	.....	.....	1	1	.....	.....
Lorain, Ohio	33,266	11	.....	.....	1	.....	1	.....	1	.....
Los Angeles, Calif.	535,485	132	10	.....	6	.....	10	1	34	21
Louisville, Ky.	240,808	62	5	.....	7	.....	13	.....	3	6
Lowell, Mass.	114,366	33	10	.....	3	.....	10	1	6	2
Ludington, Mich.	10,566	10	.....	.....	.....	.....	.....	.....	.....	.....
Lynchburg, Va.	33,497	4	.....	.....	.....	.....	.....	.....	.....	.....
Lynn, Mass.	104,534	22	8	1	14	.....	7	.....	2	2
McKeesport, Pa.	48,299	.....	.....	.....	.....	.....	4	.....	.....	.....
Macon, Ga.	46,099	.....	.....	.....	1	.....	.....	.....	2	.....
Madison, Wis.	31,315	5	.....	.....	15	.....	1	.....	.....	.....
Mahonoy City, Pa.	17,709	.....	.....	.....	1	.....	.....	.....	.....	.....
Malden, Mass.	52,243	10	.....	1	4	.....	5	.....	.....	1
Manchester, Conn.	15,859	5	.....	.....	1	.....	2	.....	.....	.....
Manchester, N. H.	79,607	14	2	.....	2	.....	1	.....	17	.....
Manitowoc, Wis.	13,931	3	.....	.....	.....	.....	.....	.....	.....	.....
Mankato, Minn.	[1] 10,365	2	.....	.....	.....	.....	.....	.....	.....	1
Marinette, Wis.	[1] 14,610	2	.....	.....	.....	.....	.....	.....	.....	.....
Marion, Ind.	19,923	11	3	.....	.....	.....	9	.....	.....	1
Marion, Ohio	24,129	.....	.....	.....	.....	.....	2	.....	.....	.....
Marlboro, Mass.	15,235	3	.....	.....	.....	.....	.....	.....	1	.....
Marshalltown, Iowa.	14,519	.....	.....	.....	.....	.....	1	.....	.....	.....
Martinsburg, W. Va.	12,984	.....	.....	.....	1	.....	2	.....	.....	.....
Martins Ferry, Ohio.	10,135	.....	.....	.....	.....	.....	1	.....	2	.....
Mason City, Iowa.	14,933	7	.....	.....	.....	.....	.....	.....	.....	1
Meadville, Pa.	13,968	.....	.....	.....	.....	.....	.....	.....	1	.....
Medford, Mass.	26,681	8	.....	.....	.....	.....	.....	.....	.....	.....
Melrose, Mass.	17,724	2	.....	.....	.....	.....	2	.....	.....	.....
Memphis, Tenn.	151,877	.....	6	.....	35	.....	6	.....	9	4
Meriden, Conn.	29,431	.....	.....	.....	2	.....	5	.....	6	4
Methuen, Mass.	14,320	3	1	.....	.....	.....	2	.....	.....	.....
Middletown, N. Y.	15,890	.....	.....	.....	.....	.....	.....	.....	2	.....
Middletown, Ohio.	16,384	4	.....	.....	.....	.....	.....	.....	.....	.....
Milford, Mass.	14,280	4	.....	.....	.....	.....	.....	.....	.....	.....
Milwaukee, Wis.	445,008	123	8	.....	7	.....	25	2	27	5
Minneapolis, Minn.	373,448	.....	21	1	35	1	25	.....	13	12
Missoula, Mont.	19,075	5	.....	.....	.....	.....	1	.....	1	.....
Mobile, Ala.	59,201	22	.....	.....	1	.....	.....	.....	1	.....
Moline, Ill.	27,976	2	3	1	1	.....	.....	.....	.....	1
Monessen, Pa.	23,070	.....	1	.....	.....	.....	1	.....	.....	.....
Montclair, N. J.	27,087	.....	.....	.....	2	.....	2	.....	.....	.....
Montgomery, Ala.	44,039	15	.....	.....	5	.....	3	.....	.....	.....
Morgantown, W. Va.	14,444	3	.....	.....	.....	.....	.....	.....	.....	.....
Morristown, N. J.	13,410	6	.....	.....	.....	.....	.....	.....	.....	.....
Mount Carmel, Pa.	20,709	.....	2	.....	6	.....	1	.....	1	.....
Mount Vernon, N. Y.	37,991	5	.....	.....	.....	.....	2	.....	1	1
Muscatine, Iowa.	17,713	.....	1	.....	.....	.....	.....	.....	.....	.....
Nanticoke, Pa.	23,811	.....	1	.....	1	.....	1	.....	.....	.....
Nashua, N. H.	27,541	6	.....	.....	.....	.....	.....	.....	.....	1
Nashville, Tenn.	118,136	50	1	.....	27	.....	7	.....	7	4
Natick, Mass.	10,140	5	1	.....	.....	.....	.....	.....	3	.....
Newark, N. J.	418,789	98	31	.....	4	.....	27	.....	33	14
New Bedford, Mass.	121,622	30	2	.....	12	.....	6	.....	15	5
New Britain, Conn.	55,385	13	1	.....	9	.....	4	.....	6	2
New Brunswick, N. J.	25,855	.....	.....	.....	14	.....	1	.....	.....	.....
Newburgh, N. Y.	29,893	11	1	.....	.....	.....	.....	.....	.....	.....
Newburyport, Mass.	15,291	6	.....	.....	.....	.....	.....	.....	.....	1
New Haven, Conn.	152,275	30	7	.....	5	.....	1	1	5	1
New London, Conn.	21,199	.....	2	.....	1	.....	.....	.....	3	1
New Orleans, La.	377,010	120	5	.....	7	.....	13	.....	29	22
Newport, Ky.	32,133	5	.....	.....	.....	.....	2	1	1	1
Newport, R. I.	30,585	6	1	.....	.....	.....	.....	.....	.....	1
Newton, Mass.	44,345	6	3	.....	4	.....	3	.....	.....	.....
New York, N. Y.	5,737,492	1,456	292	28	153	5	116	2	166	171

[1] Population Apr. 15, 1910.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City Reports for Week Ended May 3, 1919—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Niagara Falls, N. Y.	38,466	9	1	.....	.....	.....	1	.....	4	3
Norfolk, Va.	91,148	.....	.....	.....	9	.....	2	.....	.....	1
North Adams, Mass.	[1]22,019	7	1	1	.....	.....	.....	.....	.....	.....
Northampton, Mass.	20,006	10	.....	.....	.....	.....	3	.....	2	.....
North Attleboro, Mass.	11,248	2	.....	.....	1	.....	.....	.....	1	1
North Braddock, Pa.	15,684	.....	.....	.....	.....	.....	.....	.....	1	.....
North Tonawanda, N. Y.	14,060	5	.....	.....	17	.....	.....	.....	1	.....
Norwood, Ohio.	23,269	5	.....	.....	1	.....	2	.....	1	.....
Oak Park, Ill.	27,816	4	.....	.....	42	.....	1	.....	.....	.....
Ogdensburg, N. Y.	16,845	3	.....	.....	.....	.....	.....	.....	.....	.....
Oil City, Pa.	20,162	.....	.....	.....	77	.....	.....	.....	5	.....
Oklahoma City, Okla.	97,588	13	.....	.....	2	.....	3	.....	.....	1
Olean, N. Y.	16,927	7	.....	.....	.....	.....	.....	.....	.....	.....
Omaha, Nebr.	177,777	41	2	.....	15	.....	8	.....	.....	2
Orange, Conn.	14,393	10	1	.....	.....	.....	.....	.....	.....	4
Orange, N. J.	33,636	10	2	.....	.....	.....	1	.....	1	1
Oshkosh, Wis.	36,549	.....	3	1	1	.....	1	.....	.....	1
Ossining, N. Y.	14,064	5	.....	.....	2	.....	.....	.....	.....	.....
Parkersburg, W. Va.	21,059	4	.....	.....	1	.....	2	.....	.....	.....
Pasadena, Cal.	49,620	8	.....	.....	.....	.....	.....	.....	4	2
Passaic, N. J.	74,478	11	.....	.....	2	.....	.....	.....	2	1
Paterson, N. J.	140,512	.....	3	.....	5	.....	1	.....	.....	.....
Peekskill, N. Y.	19,034	5	.....	.....	.....	.....	.....	.....	.....	.....
Pekin, Ill.	10,973	.....	2	.....	3	.....	1	.....	.....	.....
Peoria, Ill.	72,184	16	2	.....	.....	.....	1	.....	.....	.....
Perth Amboy, N. J.	42,646	4	.....	.....	.....	.....	.....	.....	4	.....
Philadelphia, Pa.	1,735,514	472	79	4	137	.....	78	2	127	79
Phillipsburg, N. J.	15,879	6	.....	.....	.....	.....	.....	.....	.....	.....
Phoenixville, Pa.	11,871	.....	.....	.....	7	.....	.....	.....	.....	.....
Piqua, Ohio.	14,275	4	.....	.....	.....	.....	.....	.....	.....	.....
Pittsburgh, Pa.	586,196	.....	10	.....	16	.....	6	.....	9	.....
Pittsfield, Mass.	39,678	12	1	.....	.....	.....	.....	.....	2	.....
Plainfield, N. J.	24,330	4	1	.....	.....	.....	2	.....	4	.....
Plymouth, Mass.	14,001	2	.....	.....	.....	.....	.....	.....	.....	.....
Plymouth, Pa.	19,439	.....	.....	.....	6	.....	.....	.....	1	.....
Pomona, Calif.	13,624	1	.....	.....	.....	.....	.....	.....	.....	.....
Pontiac, Mich.	18,006	5	6	.....	.....	.....	.....	.....	.....	1
Port Chester, N. Y.	16,727	6	1	.....	.....	.....	1	.....	.....	.....
Portland, Me.	64,720	21	.....	.....	.....	.....	9	.....	.....	1
Portland, Oreg.	308,399	68	2	.....	2	.....	10	.....	16	4
Portsmouth, N. H.	11,730	.....	.....	.....	1	.....	.....	.....	.....	.....
Portsmouth, Va.	40,693	16	.....	.....	1	.....	.....	.....	2	2
Pottsville, Pa.	22,717	.....	.....	.....	3	.....	.....	.....	1	.....
Providence, R. I.	259,895	71	14	2	1	.....	8	.....	.....	6
Pueblo, Colo.	56,084	.....	.....	.....	.....	.....	1	.....	.....	.....
Quincy, Ill.	36,832	11	.....	.....	.....	.....	.....	.....	.....	1
Quincy, Mass.	39,022	5	3	.....	.....	.....	5	.....	1	1
Racine, Wis.	47,465	9	.....	.....	.....	.....	.....	.....	3	1
Rahway, N. J.	10,361	4	.....	.....	.....	.....	.....	.....	.....	.....
Raleigh, N. C.	20,274	12	.....	.....	.....	.....	.....	.....	.....	1
Reading, Pa.	111,607	.....	5	.....	14	.....	1	.....	.....	.....
Redlands, Calif.	14,573	.....	.....	.....	.....	.....	1	.....	1	.....
Reno, Nev.	15,514	5	.....	.....	.....	.....	.....	.....	.....	.....
Richmond, Va.	158,702	47	3	.....	37	.....	3	.....	5	7
Riverside, Calif.	20,496	4	.....	.....	.....	.....	.....	.....	.....	2
Roanoke, Va.	46,282	20	2	.....	23	.....	3	.....	.....	.....
Rochester, N. Y.	264,714	76	4	.....	9	.....	16	.....	4	5
Rockford, Ill.	56,739	19	2	.....	20	.....	5	.....	3	1
Rock Island, Ill.	29,452	.....	3	.....	1	.....	.....	.....	.....	.....
Rocky Mount, N. C.	12,673	6	.....	.....	1	.....	.....	.....	.....	.....
Sacramento, Calif.	68,984	26	.....	.....	.....	.....	2	.....	4	5
Saginaw, Mich.	56,469	14	.....	.....	.....	.....	2	.....	3	.....
St. Cloud, Minn.	12,013	.....	.....	.....	11	.....	1	.....	1	.....
St. Joseph, Mo.	86,498	33	4	.....	.....	.....	3	.....	1	2
St. Louis, Mo.	768,630	185	66	4	85	1	22	.....	42	17
St. Paul, Minn.	252,465	78	26	1	79	1	12	.....	19	11
Salem, Mass.	49,346	.....	9	.....	.....	.....	5	.....	5	.....
Salem, Oreg.	21,274	9	.....	.....	.....	.....	.....	.....	.....	2
Salt Lake City, Utah.	121,623	32	2	.....	.....	.....	2	.....	.....	3
San Angelo, Tex.	10,321	6	.....	.....	.....	.....	.....	.....	.....	1

[1] Population Apr. 15, 1910.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City Reports for Week Ended May 3, 1919—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
San Antonio, Tex.	128,215	.....	1	.....	1	.....	.....	.....	14	8
San Bernardino, Calif.	17,616	4	.....	.....	.....	.....	.....	.....	.....	2
San Diego, Calif.	56,412	16	4	.....	.....	.....	.....	.....	3	4
Sandusky, Ohio.	20,226	9	1	.....	.....	.....	.....	.....	1	1
Sanford, Me.	11,217	1	.....	.....	.....	.....	.....	.....	.....	.....
San Francisco, Calif.	471,023	148	10	.....	2	.....	10	.....	28	19
San Jose, Calif.	39,810	.....	1	.....	.....	.....	1	.....	1	.....
Santa Barbara, Calif.	15,300	8	.....	.....	.....	.....	.....	.....	.....	.....
Santa Cruz, Calif.	15,150	5	.....	.....	.....	.....	.....	.....	.....	.....
Saratoga Springs, N. Y.	13,839	4	1	.....	.....	.....	.....	.....	3	.....
Saugus, Mass.	10,210	1	.....	.....	1	.....	1	.....	.....	.....
Sault Ste. Marie, Mich.	14,130	2	.....	.....	1	.....	.....	.....	.....	.....
Schenectady, N. Y.	103,774	.....	4	1	2	.....	6	1	4	5
Scranton, Pa.	149,541	.....	.....	.....	.....	.....	1	.....	.....	.....
Sharon, Pa.	19,156	.....	.....	.....	1	.....	.....	.....	.....	.....
Sioux City, Iowa.	58,588	.....	1	.....	.....	.....	3	.....	.....	.....
Somerville, Mass.	88,618	22	4	.....	.....	.....	5	.....	11	3
South Bend, Ind.	70,967	16	.....	.....	11	.....	2	.....	1	1
Southbridge, Mass.	14,465	2	.....	.....	.....	.....	.....	.....	.....	.....
Spartanburg, S. C.	21,985	7	1	.....	.....	.....	.....	.....	.....	.....
Springfield, Ill.	62,623	.....	3	.....	.....	.....	.....	.....	.....	1
Springfield, Mass.	108,668	26	2	.....	.....	.....	3	.....	6	1
Springfield, Ohio.	52,266	.....	.....	.....	33	.....	.....	.....	2	2
Steelton, Pa.	15,759	.....	4	.....	27	.....	.....	.....	1	.....
Steubenville, Ohio.	28,259	10	.....	.....	.....	.....	.....	.....	1	.....
Stillwater, Minn.	[1] 10,198	.....	1	.....	.....	.....	.....	.....	.....	.....
Stockton, Cal.	36,209	10	2	.....	.....	.....	.....	.....	.....	.....
Streator, Ill.	14,313	5	.....	.....	.....	.....	.....	.....	.....	.....
Superior, Wis.	47,167	3	.....	.....	1	.....	3	.....	.....	.....
Syracuse, N. Y.	158,559	56	2	.....	4	.....	9	.....	6	2
Taunton, Mass.	36,610	15	1	.....	15	1	1	.....	2	1
Terre Haute, Ind.	67,361	18	.....	.....	2	.....	1	.....	1	7
Tiffin, Ohio.	12,962	3	.....	.....	.....	.....	.....	.....	.....	.....
Toledo, Ohio.	202,010	69	5	1	39	.....	11	1	2	11
Topeka, Kans.	49,538	15	.....	.....	.....	.....	.....	.....	3	3
Trenton, N. J.	113,974	35	1	1	45	1	.....	.....	6	2
Troy, N. Y.	78,094	23	14	1	.....	.....	4	.....	5	2
Vallejo, Calif.	13,803	4	.....	.....	.....	.....	.....	.....	.....	1
Virginia, Minn.	15,954	.....	4	.....	.....	.....	.....	.....	.....	.....
Waltham, Mass.	31,011	9	3	1	.....	.....	2	.....	.....	.....
Warren, Pa.	15,083	.....	.....	.....	1	.....	.....	.....	.....	.....
Washington, D. C.	369,282	.....	24	1	12	1	10	.....	20	16
Washington, Pa.	22,076	.....	1	.....	.....	.....	.....	.....	.....	.....
Waterbury, Conn.	89,201	3	5	.....	16	.....	12	.....	3	3
Watertown, Mass.	15,188	2	.....	.....	.....	.....	3	.....	.....	.....
Watertown, N. Y.	30,404	9	1	.....	1	.....	1	.....	.....	.....
Wausau, Wis.	19,666	8	.....	.....	.....	.....	1	.....	.....	1
West Chester, Pa.	13,403	.....	.....	.....	.....	.....	3	.....	.....	.....
Westfield, Mass.	18,769	7	2	.....	.....	.....	2	.....	1	1
West Hoboken, N. J.	44,386	5	2	.....	1	.....	.....	.....	1	.....
West New York, N. J.	19,613	2	2	.....	.....	.....	2	1	.....	.....
West Orange, N. J.	13,964	2	.....	.....	1	.....	1	.....	.....	.....
Weymouth, Mass.	14,041	4	.....	.....	.....	.....	.....	.....	.....	.....
Wheeling, W. Va.	43,657	14	.....	.....	1	.....	1	.....	1	2
White Plains, N. Y.	23,331	6	3	.....	.....	.....	2	.....	.....	.....
Wichita, Kans.	73,597	15	.....	.....	.....	.....	.....	.....	3	2
Wilkes-Barre, Pa.	78,334	.....	1	.....	35	.....	.....	.....	1	.....
Williamsport, Pa.	34,123	.....	3	.....	8	.....	5	.....	.....	.....
Wilmington, Del.	95,369	26	1	1	.....	.....	1	.....	.....	4
Wilmington, N. C.	30,400	12	6	1	.....	.....	.....	.....	.....	1
Winchester, Mass.	10,812	4	.....	.....	.....	.....	1	.....	.....	.....
Winston-Salem, N. C.	33,136	14	1	.....	28	1	1	.....	1	1
Winthrop, Mass.	13,105	1	.....	.....	.....	.....	3	.....	.....	.....
Woburn, Mass.	16,076	7	.....	.....	.....	.....	.....	.....	.....	.....
Worcester, Mass.	166,106	65	.....	.....	37	1	5	.....	6	5
Yonkers, N. Y.	103,066	12	3	.....	9	.....	3	.....	8	2
York, Pa.	52,770	.....	2	.....	1	.....	6	.....	.....	.....
Youngstown, Ohio.	112,282	37	5	2	61	.....	4	1	4	1
Zanesville, Ohio.	31,320	11	.....	.....	.....	.....	.....	.....	.....	1

[1] Population Apr. 15, 1910.

FOREIGN.

CHINA.

Examination of Rats—Hongkong.

During the four weeks ended February 22, 1919, 6,073 rats were examined at Hongkong. No plague infection was found.

Plague-Infected Rats—Hongkong.

During the month of March, 1919, out of 8,169 rats examined at Hongkong, 18 rats were found plague infected.

CUBA.

Communicable Diseases—Habana.

Communicable diseases have been notified at Habana as follows:

Diseases.	Apr. 11–20, 1919.		Remaining under treatment Apr. 20, 1919.	Diseases.	Apr. 11–20, 1919.		Remaining under treatment Apr. 20, 1919.
	New cases.	Deaths.			New cases.	Deaths.	
Broncho-pneumonia	1	.....	(1)	Malaria	21	.....	[2] 25
Diphtheria	5	.....	.....	Paratyphoid fever	2	.....	5
Influenza	6	4	[1] 3	Typhoid fever	18	1	[3] 66
Leprosy	.....	.....	17	Varicella	5	.....	5

[1] Excluding those remaining in hospital. [2] From the interior 22. [3] From the interior 27.

RUSSIA.

Typhus Fever—Archangel.

During the period from March 1 to 15, 1919, typhus fever was reported prevalent at Archangel, Russia, with 36 cases and 18 fatalities.

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

Reports Received During Week Ended May 23, 1919.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India:				
Calcutta	Mar. 16–22	.....	76	
Madras	Mar. 23–29	4	3	
Indo-China:				
Cochin China—				
Saigon	Mar. 17–23	128	72	City and vicinity.
Java:				
East Java	.....	.....	.....	Feb. 5–Mar. 11, 1919: Cases, 458; deaths, 541.
Surabaya	Feb. 5–Mar. 11	248	196	
Philippine Islands:				
Manila	Apr. 6–12	4	1	
Provinces	.....	.....	.....	Apr. 6–12, 1919: Cases, 53; deaths, 37.
Batangas	Apr. 6–12	5	2	
Bohol	.....do	10	6	
Iloilo	.....do	2	1	
Laguna	.....do	7	6	
Pampanga	.....do	28	21	
Pangasinan	.....do	1	1	

[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 23, 1919—Continued.

PLAGUE.

Place.	Date.	Cases.	Deaths.	Remarks.
Ceylon:				
Colombo	Mar. 16–22	1	1	
Egypt:				
City—				
Suez	Apr. 5–7	8	7	
Provinces—				
Assiout	Apr. 5		1	
Girgeh	do	3		1 pneumonic.
India				Mar. 9–15, 1919: Cases, 4,302; deaths, 3,455.
Calcutta	Mar. 16–22		14	
Indo-China:				
Cochin China—				
Saigon	Mar. 17–23	4	2	City and vicinity.
Java:				
East Java				Feb. 12–25, 1919: Cases, 110; deaths, 111.
Surabaya	Feb. 12–25	15	16	
Mesopotamia:				
Bagdad	Jan. 18–Mar. 14	59	33	

SMALLPOX.

Canada:				
Nova Scotia—				
Cape Sable Island	May 13			Present on south side.
Halifax	Apr. 27–May 3	25		
Quebec—				
Quebec	Apr. 26–May 3	1		
China:				
Nanking	Apr. 5–11			Present.
Chosen (Korea):				
Chemulpo	Feb. 1–28	9	5	
Fusan	do	5		
Seoul	do	1		
Denmark:				
Copenhagen	Feb. 9–Mar. 15	54		
Egypt:				
Alexandria	Mar. 2–8	3	1	
France:				
Paris	Apr. 6–12	6	1	
Great Britain:				
London	Apr. 13–19	2		
India:				
Calcutta	Mar. 16–22		56	
Madras	Mar. 23–29	56	21	
Indo-China:				
Cochin-China—				
Saigon	Mar. 17–23	29	4	City and vicinity.
Italy:				
Messina	do	1		
Java:				
East Java				Feb. 19–25, 1919: Cases, 1.
Surabaya	Feb. 19–25	1		
Mesopotamia:				
Bagdad	Jan. 11–Feb. 7	5		
Mexico:				
Guadalajara	Mar. 1–31	1		
Newfoundland:				
St. Johns	Apr. 27–May 2	3		Outports, 27 cases.
Philippine Islands:				
Manila	Apr. 6–12	3	1	
Portugal:				
Oporto	Mar. 28–Apr. 12	42	29	
Spain:				
Barcelona	Mar. 12–Apr. 9		2	
Cadiz	Feb. 1–28		9	
Seville	do		1	
Valencia	Mar. 9–15	55	2	

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

Reports Received During Week Ended May 23, 1919—Continued.

TYPHUS FEVER.

Place.	Date.	Cases.	Deaths.	Remarks.
Chosen (Korea):				
Fusan	Feb. 1-28	1	1	
Seoul	do	10	1	
Egypt:				
Alexandria	Apr. 2-8	66	15	
Japan:				
Nagasaki	Apr. 6-13	1	1	
Mesopotamia:				
Bagdad	Mar. 1-14	2	1	
Mexico:				
Guadalajara	Mar. 1-31	2		
Netherlands:				
Rotterdam	Mar. 23-Apr. 5	11	2	
Portugal:				
Oporto	Mar. 23-Apr. 12	244		
Russia:				
Archangel	Mar. 1-15	36	18	

YELLOW FEVER.

Brazil:				
Bahia	Jan. 26-Mar. 1	3	2	

Reports Received from Dec. 28, 1918, to May 16, 1919.

CHOLERA.

Ceylon:				
Colombo	Nov. 17-30	4	5	
Germany:				
Berlin	To Oct. 5	17	11	
Bremen	Oct. 13-19	1		On a barge.
Marienwerder				1 case in October, 1918, on a barge in canal.
India:				
Bombay	Aug. 18-Dec. 28	1,351	1,031	
Do	Dec. 29-Mar. 8	9,681	8,503	
Calcutta	Sept. 20-Dec. 21		241	Report for Nov. 23, 1918, missing.
Do	Dec. 29-Mar. 8		869	
Karachi	Jan. 26-Mar. 22	3	3	
Madras	Oct. 5-Dec. 28	264	164	Oct. 27-Nov. 2, 1918: Cases, 9; deaths, 4.
Do	Jan. 5-Mar. 8	426	296	
Rangoon	Oct. 5-Dec. 21	35	35	
Do	Dec. 29-Feb. 22	15	11	
Indo-China				July 1-Oct. 31, 1918: Cases, 753; deaths, 472.
Anam	July 1-Aug. 31	37	30	
Cambodia	July 1-Oct. 31	324	171	
Cochin China	do	436	337	
Saigon	Oct. 7-Dec. 22	75	45	
Do	Dec. 3-Mar. 9	328	195	
Kwang-Chow-Wan	July 1-31	50	34	
Tonkin	July 1-Oct. 31	6		
Java:				
East Java				Oct. 7-Dec. 31, 1918: Cases, 381; deaths, 323. Jan. 1-28, 1919: Cases, 291; deaths, 176.
Surabaya district	Oct. 7-Dec. 31	655	423	
Do	Jan. 1-28	133	84	
Mid-Java				Sept. 25-Dec. 18, 1919: Cases, 3,282; deaths, 2,014. Jan. 24-Feb. 20, 1919: Cases, 1,183; deaths, 928.
Samarang	Sept. 26-Oct. 16	120	111	
West Java				Oct. 3-Dec. 11, 1918: Cases, 412; deaths, 238. Dec. 27, 1918-Jan. 23, 1919: Cases, 10; deaths, 3.
Batavia	Oct. 3-Dec. 11	291	148	
Do	Dec. 27-Jan. 23	8	2	
Cheribon	Jan. 3-9	1		
Mesopotamia:				
Bagdad	Oct. 11-18	8		

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

Reports Received from Dec. 28, 1918, to May 16, 1919—Continued.

CHOLERA—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Philippine Islands:				
Manila	Sept. 22–Dec. 28	209	135	
Do	Dec. 29–Mar. 29	25	13	
Provinces				Nov. 2–Dec. 28, 1918: Cases, 1,986 deaths, 1,515. Dec. 29, 1918–Mar. 29, 1919: Cases, 1,301 deaths, 917.
Albay	Dec. 15–21	1	1	
Ambos Camarines	Feb. 15–21	19	2	
Bataan	Nov. 17–Dec. 28	38	32	
Batangas	Nov. 2–Dec. 28	258	230	
Do	Dec. 29–Mar. 29	71	55	
Bohol	Nov. 2–Dec. 28	29	24	
Do	Dec. 29–Mar. 29	88	55	
Bulacan	Oct. 12–Dec. 28	51	8	
Do	Dec. 29–Feb. 21	42	26	
Capiz	Dec. 22–28	7	5	
Do	Jan. 5–25	28	14	
Cavite	Oct. 27–Dec. 21	207	115	
Do	Dec. 29–Jan. 25	17	16	
Cebu	Nov. 10–Dec. 21	50	27	
Do	Jan. 12–18	13	12	
Ilocos Sur	Dec. 8–28	17	8	
Do	Dec. 29–Feb. 15	56	38	
Iloilo	Oct. 27–Dec. 21	112	78	
Do	Jan. 5–Mar. 29	186	118	
Laguna	Oct. 27–Dec. 28	18	11	
Do	Dec. 29–Mar. 29	142	99	
Lanao	Jan. 5–11	8	4	
Mindoro	Nov. 21–30	7	14	
Misamis	Oct. 27–Nov. 2	6	5	
Do	Nov. 17–Dec. 28	75	48	
Do	Jan. 5–Mar. 29	194	88	
Nueva Ecija	Jan. 12–25	9	6	
Occidental Negros	Feb. 2–Mar. 21	8	5	
Oriental Negros	Nov. 2–Dec. 7	32	18	
Do	Jan. 5–Feb. 8	35	22	
Pampanga	Nov. 24–Dec. 14	4	4	
Do	Jan. 5–Mar. 29	51	38	
Pangasinan	Nov. 2–Dec. 28	930	652	
Do	Dec. 29–Mar. 29	167	129	
Rizal	Oct. 27–Nov. 2	3	1	
Do	Nov. 24–30	16	5	
Samar	Dec. 15–21	8	1	
Sorsogon	Nov. 17–23	8	4	
Do	Jan. 19–Feb. 8	44	36	
Tayabas	Nov. 2–Dec. 28	64	31	
Do	Nov. 10–Dec. 28	54	25	
Do	Dec. 29–Feb. 15	69	62	
Union	Nov. 2–Dec. 28	18	14	
Zamboanga	Dec. 8–28	27	19	
Do	Jan. 5–Feb. 8	25	21	
Poland:				
Plonsk district	Oct. 2–Nov. 27	5		
Warsaw	Sept. 29–Oct. 26	5	1	
Russia:				
Petrograd	To July 16	3,388	1,054	
Do	July 17–Sept. 11	3,479	1,455	In civil and military hospitals. In military hospitals, July 5–Aug. 21, 1918: Cases, 884; deaths, 783. In municipal hospitals, Oct. 1, 1918: Cases, 279.
Ukrania—				
Ekaterinaslav	Sept. 1–20	7	6	
Odessa	do	25		Sept. 1–20, 1918; 11 cases on s. s. Helena.

PLAGUE.

Ceylon:				
Colombo	Oct. 27–Nov. 2	1	1	
Do	Feb. 9–Mar. 15	12	9	
China:				
Amoy	Nov. 24–Dec. 8			Present.
Chungking	Dec. 1–7			Do.
Hing-Ning district	Mar. 15			Do.
Hongkong	Oct. 1–Dec. 28	4	4	
Do	Jan. 1–Mar. 15	18	15	

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

Reports Received from Dec. 28, 1918, to May 16, 1919—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Ecuador:				
Duran	Feb. 16–Mar. 16	2	1	
Guayaquil	July 1–Dec. 31	20	7	
Do	Jan. 1–Mar. 31	54	16	
Taura	Dec. 16–31	1	1	
Egypt				Jan. 1–Nov. 21, 1918: Cases, 357; deaths, 153. Jan. 1–Mar. 20, 1919: Cases, 87; deaths, 66.
Cities—				
Alexandria	Mar. 23	1	1	
Suez	Jan. 31–Mar. 26	32	18	
Provinces—				
Assiout	Feb. 24–Mar. 23	11	8	1 septicemic.
Girgeh	Feb. 22–Mar. 22	7	5	2 penumonic.
Minieh	Feb. 21–27	2	2	1 pneumonic.
India				Sept. 23–Dec. 28, 1918: Cases, 24,279; deaths, 18,369. Dec. 29, 1918–Mar. 1, 1919: Cases, 25,506; deaths, 19,401.
Bombay	Aug. 18–Dec. 28	41	29	
Do	Jan. 12–Mar. 8	6	6	
Calcutta	Dec. 22–28		1	
Do	Jan. 12–Mar. 8		43	
Karachi	Oct. 19–Dec. 28	17	17	
Do	Dec. 29–Mar. 22	18	16	
Madras	Dec. 8–28	26	17	
Do	Dec. 29–Mar. 8	131	61	
Madras Presidency	Oct. 13–Dec. 28	1,152	774	Oct. 27–Nov. 2, 1918: Cases, 142; deaths, 38.
Do	Dec. 29–Mar. 8	2,562	1,726	
Rangoon	Oct. 5–Dec. 21	84	81	
Do	Dec. 29–Feb. 22	107	100	
Indo-China				July 1–Oct. 31, 1918: Cases, 161; deaths, 145.
Anam	July 1–Oct. 31	42	36	
Cambodia	do	72	72	
Cochin-China	do	65	35	
Saigon	Oct. 7–Nov. 24	5	1	
Do	Jan. 13–Mar. 9	10	8	
Kwang-Chow-Wan	July 1–31	1	1	
Java:				
East Java				Oct. 7–Nov. 18, 1918: Cases, 109; deaths, 109. Jan. 1–14, 1919: Cases, 69; deaths, 69.
Surabaya (district)	Oct. 7–Dec. 31	92	92	
Do	Jan. 1–14	34	34	
Mid-Java				Sept. 25–Oct. 16, 1918: Cases, 14; deaths, 14. Jan. 30–Feb. 11, 1919: Cases, 110; deaths, 110.
Samarang	Sept. 25–Oct. 16	6	6	
Mesopotamia:				
Bagdad	Nov. 16–29	5	2	
Do	Feb. 22–28	6	4	
Siam:				
Bangkok	Sept. 21–Oct. 12	6	5	
Do	Jan. 19–Feb. 22	7	6	
Venezuela:				
Caracas	Dec. 30	1		
On vessel:				
S. S. Japan	Jan. 14	1	1	At Suez quarantine station from Bombay.

SMALLPOX.

Algeria:				
Algiers	Oct. 1–Dec. 31	2	1	
Austria				Dec. 1, 1918–Jan. 11, 1919: Cases, 68. Jan. 12–Feb. 8, 1919: Cases, 57.
Vienna	Dec. 1–Jan. 11	6		
Bohemia				Feb. 1919: Reported prevalent. March, 1919: Cases, 57.
Gablonz	Mar. 1–31	26		
Brazil:				
Rio de Janeiro	Dec. 1–28	46	19	Oct. 6–12, 1918: Cases, 15; deaths 10.
Do	Dec. 30–Jan. 25	25	11	
Sao Paulo	Mar. 3–9		1	
British East Africa:				
Mombasa	Sept. 1–Nov. 30	6	1	
Canada:				
New Brunswick—				
Campbellton	Dec. 22–28	1		
Do	Jan. 5–18	2		
St. John	Nov. 8–14	3		
Do	Jan. 26–Feb. 22	6		

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

Reports Received from Dec. 28, 1918, to May 10, 1919—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Canada—Continued.				
Nova Scotia—				
Bear River	Dec. 29–Jan. 4			Present.
Bigbee	Jan. 10			Do.
Digby	Jan. 4			Do.
Halifax	Dec. 7–28	10		
Do	Jan. 5–Apr. 26	278		
Middleton	Dec. 29–Jan. 4			Do.
Sydney	Jan. 5–Mar. 8	4		
Do	Mar. 23–Apr. 5	8		
Ontario—				
North Bay	Jan. 19–25	1		
Ottawa	Jan. 12–Apr. 12	13		
Toronto	Feb. 2–15	2		
Do	Mar. 16–22	1		
Prince Edward Island—				
Charlotte Town	Feb. 27–Apr. 16	2		
Quebec—				
Montreal	Jan. 24–Dec. 21	2		
Do	Jan. 12–Apr. 26	31		
Paspebiac	Jan. 12–Mar. 8	8		
Quebec	Dec. 15–21	1		
Do	Dec. 29–Apr. 26	18		
Ceylon:				
Colombo	Jan. 12–Mar. 15	3		
China:				
Amoy	Oct. 13–Dec. 28			Do.
Do	Jan. 5–Mar. 24			3 fatal cases, Mar. 11–24, 1919.
Antung	Feb. 10–16	1		
Do	Feb. 24–Mar. 2	1		
Canton	Nov. 17–23			Present.
Do	Feb. 9–15			Do.
Changsha	Mar. 16–23	3		
Chungking	Nov. 10–Dec. 28			Do.
Do	Jan. 5–Mar. 27			Do.
Foochow	Nov. 24–Dec. 28			Do.
Do	Dec. 29–Feb. 22			Do.
Hongkong	Dec. 15–21	1	1	
Do	Feb. 2–8	1		
Do	Feb. 16–Mar. 29	7	2	
Nanking	Dec. 1–28			Do.
Do	Dec. 29–Mar. 27			Do.
Shanghai	Jan. 20–26	1		
Tsingtau	Mar. 3–9	1		
Chosen (Korea):				
Chemulpo	Nov. 1–Dec. 31	15	4	
Do	Jan. 1–31	6	1	
Colombia:				
Barranquilla	Apr. 6–12		1	
Denmark:				
Copenhagen	Nov. 9–Dec. 28	12		
Do	Dec. 29–Jan. 19	15		
Egypt:				
Alexandria	Dec. 17–23	1	1	
Do	Jan. 22–Apr. 1	14	6	
Finland:				
Provinces				Jan. 1–31, 1919: Cases, 279.
Abo Och Björneborg	Jan. 1–31	47		
Kuopio	do	47		
Nyland	do	2		
St. Michael	do	51		
Tavastehus	do	4		
Uleaborg	do	1		
Vasa	do	1		
Viborg	do	126		
Provinces				Feb. 1–28, 1919: Cases, 234.
Abo Och Björneborg	Feb. 1–28	23		
Kuopio	do	54		
Nyland	do	15		
St. Michael	do	20		
Tavastehus	do	4		
Viborg	do	118		
France:				
Bordeaux	Feb. 8–13		1	
Brest	Feb. 2–8	1		
Paris	Mar. 2–27	6	2	

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

Reports Received from Dec. 28, 1918, to May 16, 1919—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Germany				Nov. 24-Dec. 7, 1918: Cases, 34.
Dresden	Nov. 24-Dec. 7	18		
Halle	do	4		
Friedland	do	1		
Königsberg	do	8		In persons evacuated from the Ukraine.
Schkeuditz	do	1		
Tilsit	do	1		
Torgau	do	1		
Germany				Dec. 8, 1918-Jan. 11, 1919: Cases, 177. Additional cases reported later, 54, for week ended Jan. 11. Jan. 12-Feb. 15, 1919: Cases, 442.
Aix-la-Chapelle (district)	Dec. 8-Jan. 11	17		
Cassel	do	10		
Danzig	do	3		
Doristhal	do	8		District of Gumbinnen.
Dresden	Dec. 8-Feb. 15	247		26 additional cases reported later at Dresden.
Halle	Dec. 8-Jan. 11	5		
Hanover	do	7		Among interned Russians.
Königsberg	do	15		
Kottowitz	do	5		
Meyrode	do	6		
Riesa	do	4		District of Dresden.
Great Britain:				
Liverpool	Jan. 23-Mar. 15	7		Of these, 2 from vessels.
London	Mar. 9-15	5	1	
Greece:				
Saloniki	Feb. 2-15		3	
India:				
Bombay	Aug. 18-Dec. 28	35	8	
Do	Dec. 29-May 8	269	104	
Calcutta	Sept. 29-Dec. 28		17	Report for week ended Nov. 23 1918, missing.
Do	Dec. 29-Mar. 8		170	
Karachi	Sept. 29-Dec. 28	13	4	
Do	Dec. 29-Mar. 22	107	41	
Madras	Oct. 5-Dec. 28	62	40	
Do	Dec. 29-Mar. 8	148	70	
Rangoon	Oct. 20-Dec. 21	32	6	
Do	Dec. 29-Feb. 22	386	135	
Indo-China:				
Anam	July 1-Oct. 31	146	67	
Cambodia	Aug. 1-Oct. 31	165	74	July 1-Oct. 31, 1918: Cases, 620; deaths, 254.
Cochin-China	July 1-Oct. 31	400	112	
Saigon	Oct. 7-Dec. 22	20	5	
Do	Dec. 30-Mar. 9	64	11	City and vicinity.
Tonkin	July 1-Oct. 31	20	1	
Italy:				
Andria	Mar. 10-16	1		Province of Bari.
Barletta	Mar. 3-9	2		Do.
Lecce (Province)	Feb. 17-23	2		
Genoa	Jan. 9-Mar. 15	4	2	
Messina	Mar. 2-16	3		Cases reported in several localities in Province.
Naples	Mar. 10-16	2		
Palermo	Jan. 31-Apr. 1	30		
Turin	Jan. 27-Mar. 2	8	2	
Japan:				
Kobe	Oct. 26-Dec. 28	186	46	
Do	Dec. 29-Mar. 22	499	165	
Nagasaki	Mar. 31-Apr. 6	3		
Nagoya	Mar. 2-15	2		
Taihoku	Jan. 15-Mar. 18	146	18	Island of Formosa.
Yokohama	Jan. 20-26	1		
Java:				
East Java				Oct. 7-Dec. 31, 1918: Cases, 22; deaths, 1. Jan. 1-21, 1919: Cases, 3; deaths, 3.
Surabaya (district)	Oct. 7-Dec. 31	16		
Do	Jan. 1-7	1		
Do	Jan. 15-21	2	2	
Mid-Java				Sept. 25-Dec. 18, 1918: Cases, 172; deaths, 3. Jan. 24-30, 1919: Case, 1.
West Java				Oct. 2-Dec. 11, 1918: Cases, 809; deaths, 263. Dec. 27, 1918-Feb. 27, 1919: Cases, 207; deaths, 43.
Batavia	Oct. 2-Dec. 11	185	151	
Do	Dec. 27-Feb. 27	41	25	
Lithuania				Sept. 1-Oct. 16, 1918: Cases, 44.
Manchuria:				
Dairen	Jan. 15-21	1		
Do	Feb. 22-Mar. 31	3	2	

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

Reports Received from Dec. 28, 1918, to May 16, 1919—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Mesopotamia:				
Bagdad	Oct. 11-Dec. 27	308	97	
Do	Dec. 28-Feb. 2	8	.....	
Mexico:				
Ciudad Juarez	Nov. 24-30	1	.....	
Do	Mar. 29-Apr. 5	1	.....	
Mexico City	Sept. 22-Dec. 28	23	.....	
Do	Dec. 29-Mar. 22	12	.....	
Vera Cruz	Feb. 10-Apr. 12	2	1	
Newfoundland:				
St. Johns	Dec. 6-20	4	.....	
Do	Dec. 28-Apr. 18	33	.....	Outports, Apr. 19-25, 1919: 21 cases.
Outports—				
Avondale	Mar. 22-Apr. 18	4	.....	
Blaine Harbor	Dec. 14-20	2	.....	
Bay of Islands	Jan. 11-17	6	.....	
Do	Feb. 15-21	10	.....	
Bay Roberts	Dec. 21-27	1	.....	
Bonavista	Jan. 26-31	1	.....	
Brigus Junction	Mar. 1-28	3	.....	
Bryants Cove	Dec. 7-13	3	.....	
Burin	do	4	.....	
Coleys Point	Dec. 14-20	1	.....	
Curling	Jan. 26-31	3	.....	
Frenchmans Cove	Feb. 1-7	1	.....	
Humbermouth	Mar. 15-21	.....	.....	Present.
Kings Cove	Jan. 18-Mar. 14	2	.....	
Little Paradise	Feb. 9-14	1	.....	
McIvers	Feb. 1-7	15	.....	
Merasheen	do	.....	.....	Present.
Mercers Cove	Feb. 9-14	1	.....	
Middle Arm	Feb. 1-7	40	.....	Bay of Islands.
Mortons Harbor	Mar. 8-14	1	.....	
Musgrove Harbor	Dec. 7-13	4	.....	
Do	Jan. 11-17	6	.....	Feb. 7, 1919: Present.
Paradise	Dec. 7-13	30	.....	Placentia Bay.
Petitforte	Feb. 15-21	1	.....	
Saddle Hill	do	1	.....	Harbor Grace.
Springdale	Feb. 1-Mar. 7	7	.....	
St. Georges	Feb. 1-Mar. 28	32	.....	Other outports, Mar. 29-Apr. 11, 1919: 14 cases.
St. Jacques	Jan. 18-24	2	.....	
Panama	.....	.....	.....	Aug. 1-31, 1918: Cases, 133, occurring at Colon, Panama, and points in the interior. Jan. 1-25, 1919: Cases, 28.
Colon	Dec. 15-21	1	.....	
Do	Dec. 29-Feb. 9	8	.....	
Philippine Islands:				
Manila	Nov. 2-16	5	3	
Do	Dec. 29-Mar. 29	37	20	Varioloid, 16.
Portugal:				
Lisbon	Nov. 16-Dec. 28	843	.....	
Oporto	Mar. 9-23	43	22	
Portuguese East Africa:				
Lourenco Marques	.....	.....	.....	July 1-Oct. 31, 1918: 45 fatal cases.
Siberia:				
Vladivostok	Nov. 1-3	4	.....	
Do	Jan. 17-23	.....	1	
Do	Feb. 1-Mar. 15	16	1	
Spain:				
Barcelona	Jan. 9-Feb. 11	.....	5	
Do	Feb. 19-Mar. 11	2	.....	
Bilbao	Jan. 1-Feb. 20	6	.....	
Cadiz	Oct. 1-Dec. 31	18	.....	
Do	Jan. 1-31	.....	17	
Madrid	Sept. 1-Oct. 31	153	.....	
Do	Jan. 1-Feb. 28	.....	74	
Seville	Nov. 1-Dec. 31	.....	8	
Do	Jan. 1-31	.....	3	
Valencia	Nov. 10-Dec. 21	40	9	
Do	Dec. 29-Jan. 25	93	10	
Do	Feb. 16-Mar. 8	160	17	
Straits Settlements:				
Penang	Oct. 6-12	1	.....	
Singapore	Feb. 2-22	3	.....	
Sweden:				
Stockholm	Feb. 2-8	.....	1	
Union of South Africa:				
Cape Town	Aug. 1-30	1	.....	
Do	Dec. 21-Jan. 31	1	.....	
Johannesburg	Aug. 1-Oct. 31	12	.....	Nov. 1-30, 1918: Cases, 4.

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

Reports Received from Dec. 28, 1918, to May 16, 1919—Continued.

TYPHUS FEVER.

Place.	Date.	Cases.	Deaths.	Remarks.
Algeria:				
Algiers	Nov. 1-30	1		
Austria-Hungary:				
Austria				Dec. 1, 1918-Jan. 11, 1919: Cases, 125. Jan. 12-Feb. 8, 1919: Cases, 157.
Vienna	Dec. 1-Jan. 11	110		Occurring almost exclusively in repatriated soldiers and their contacts.
	Jan. 12-Feb. 8	119		
Hungary	Sept. 2-8	2		Sept. 9-Nov. 26, 1918: Cases, 110; deaths, 8. Nov. 27, 1918-Jan. 12, 1919: Cases, 210.
Budapest	Sept. 9-Nov. 26	73	2	
Do	Nov. 27-Jan. 12	159		
Pressburg	Sept. 9-Nov. 26	11	1	
Tyrnau	Nov. 4-26	1		
Szatmarnemeti	Nov. 4-26	1		Present, county of Bihor.
Brazil:				
Ceara	Sept. 14-21	1		
Rio de Janeiro	Dec. 15-22	2		
Do	Dec. 29-Feb. 15	28	3	
São Paulo	Jan. 13-19	3		
Bulgaria:				
Aeteven	Mar. 10			Present.
Rustchuk	do			Do.
China:				
Antung	Dec. 2-15	2		
Do	Jan. 6-Mar. 30	2	1	
Chosen (Korea):				
Seoul	Jan. 1-31	2		
Colombia:				
Barranquilla	Nov. 8-Dec. 28		3	
Do	Jan. 5-Mar. 8	2	3	
Egypt:				
Alexandria	Oct. 14-Dec. 31	85	36	
Do	Jan. 1-Apr. 1	391	111	Confined to one quarter of city and mostly to natives. Oct. 20-Nov. 7, 1918: Cases, 12; deaths, 1.
Finland:				
Provinces—				
Abo Och Björneborg	Jan. 1-31	24		
Do	Feb. 1-28	19		
Nyland	do	10		
France:				
Marseille	Mar. 1-31		31	Apr. 26, 1919, present in two civil and two military prisons.
Germany				
Breslau	Sept. 29-Oct. 19	12	8	
Gumbinnen district	Oct. 20-Nov. 7	1		
Dresden	do	1		
Griefswald	do	1		
Godullahutte	do	1		
Königsberg	Sept. 29-Oct. 19	3	1	
Königshutte	Oct. 20-Nov. 7	1	1	
Magdeburg	do	2		
Mostalten	Sept. 29-Oct. 19	7	2	District of Allenstein.
Oppeln district	Oct. 20-Nov. 7	5		
Great Britain:				
Cork	Feb. 2-22	4		
Glasgow	Dec. 22-28	5		
Do	Jan. 5-Feb. 8	9	1	
Do	Mar. 9-15	1		
Greece:				
Athens	Mar. 8	2	2	
Saloniki	Sept. 29-Dec. 21		34	
Do	Dec. 29-Feb. 15		78	
Italy:				
Bari	Feb. 3-9	19		In soldiers returning from Black Sea.
Naples	do	3		Do.
Taranto	do	2		
Japan:				
Nagasaki	Nov. 10-Dec. 29	13	4	
Do	Dec. 30-Mar. 16	30	4	
Java:				
East Java				Oct. 7-21, 1918: Cases, 5.
Surabaya	Oct. 7-21	4		
Mid-Java				Sept. 25-Oct. 16, 1918: Cases, 3.
West Java				Oct. 2-23: Cases, 31; deaths, 6.
Batavia	Oct. 2-23	15	4	
Lithuania				Sept. 1-Oct. 26, 1918: Cases, 539; deaths, 26.

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

Reports Received from Dec. 28, 1918, to May 16, 1919—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Macedonia:				
Drama	Mar. 17			Present.
Epirus	Mar. 21			Do.
Kavala	Mar. 17	300		Estimated.
Mesopotamia:				
Bagdad	Oct. 5–Dec. 27	2		
Do	Dec. 28–Jan. 31	4		
Mexico:				
Aguascalientes	Feb. 2–23		3	
Do	Mar. 24–Apr. 13		3	
Guadelajara	Nov. 1–Dec. 31	4	1	
Do	Jan. 1–Feb. 28	2	2	
Mexico City	Sept. 22–Dec. 28	434		
Do	Dec. 29–Mar. 29	341		
Netherlands:				
Amsterdam	Dec. 8–14	1		
Do	Jan. 12–18	4		
Delft	Feb. 26			Present.
Harlem	do			Do.
Leiden	do			Do.
Limburg	do	5	1	Mining district.
Rotterdam	Feb. 2–Mar. 22	493	87	Jan. 30–Feb. 27, 1919: Cases, 462; deaths, 46.
Schiedam	Feb. 26			Present. Sept. 29–Oct. 26, 1918: Cases, 572; deaths, 50.
Poland:				
Lodz	Sept. 29–Oct. 26	55	8	
Warsaw	do	111	13	
Portugal:				
Braga	Mar. 24			
Oporto	Mar. 8–15	184		
Russia:				
Archangel	Jan. 15–Mar. 1	197	43	
Ukarine				Apr. 5, 1919: Reported to be spreading.
Serbia				Do.
Belgrade	Feb. 5	62		Among soldiers and prisoners.
Siberia:				
Vladivostok	Sept. 1–Dec. 30	43		
Do	Jan. 17–Mar. 15	143	15	
Spain:				
Huelva	Oct. 1–31		2	
Madrid	Dec. 1–31		1	
Union of South Africa:				
Port Elizabeth	Sept. 14–28			Present among natives in several interior towns.

YELLOW FEVER.

Brazil:				
Bahia	Jan. 12–18	2		
Pernambuco	Oct. 1–Nov. 30	2	1	
Colombia:				
Cartagena	Jan. 29–Feb. 4		4	
Ecuador:				
Babahoyo	Nov. 1–30	1		
Do	Mar. 1–15	1		
Catarama	Feb. 1–15	1		
Chobo	Jan. 1–15	1		
Daule	do	1	1	
Duran	Nov. 1–Dec. 31	3	2	
Do	Jan. 16–Mar. 15	5	1	
Guayaquil	July 1–Dec. 31	326	177	
Do	Jan. 1–Mar. 31	124	68	
Hacienda Vainilla	Feb. 16–28	1		
Milagro	Nov. 1–15	1		
Do	Feb. 1–Mar. 15	2	1	
Naranjal	Nov. 1–15	1	1	
Do	Jan. 1–15	1	1	
Naranjito	Nov. 1–15	1	1	
Do	Jan. 1–Feb. 28	2	2	
Payo (Hacienda)	Nov. 1–15	1		
Punta de Piedra	Nov. 1–30	1		
Salvador:				
San Salvador	Jan. 9	1		
On vessel:				
S. S. Jamaica	Jan. 30	1		At quarantine station, Canal Zone, Panama.