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THE OCCURRENCE OF *BACTERIUM TULARENSE* IN THE WOOD TICK, *DERMACENTOR OCCIDENTALIS*, IN CALIFORNIA

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The recent occurrence of an unrecognized pathological condition in cattle heavily tick-infested in San Benito County, Calif., has resulted in the demonstration of natural tularæmia infection in adults of the Pacific coast tick, *Dermacentor occidentalis* Newmann. This finding is of importance, because this tick, which is common in many sections of California [1] and in southwestern Oregon, is a frequent parasite of man, and, hence, an apparent potential source of human tularæmia infection. It has also been reported in horses, cattle, deer, dogs, sheep, and rabbits.

The pathological condition of the cattle concerned was observed by one of the writers (Brooks) in two groups of cattle shipped to a ranch in San Benito County; one from Madera County, Calif., the other from Denver, Colo. The first group were turned out on a tick-infested range on December 5 or 6, and affected cattle were first observed December 15. Cattle of the second group were released on the same range December 24 or 25, and affected animals were found January 3. In both groups the symptoms were the same and there was an apparent typical paralysis, the animals frequently appearing to be lifeless. Several died. Local cattle on the same range were not affected, nor were part of those of the second shipment which were held in feed corrals and remained free from ticks.

The pathology observed in the above-noted groups of cattle was reported at a meeting of veterinarians in California and suggestions asked as regards diagnosis. The possibility that it was tick paralysis was suggested by one of us (Marsh) who was in attendance and who was familiar both with an apparently similar condition that sometimes affects wood-tick-infested cattle in Montana and with the recently reported finding of tularæmia infection in somewhat similarly affected sheep and in wood ticks (*D. andersoni*) that were infesting

[1] Hooker, W. A., Bishopp, F. C., and Wood, H. P.: The Life History and Bionomics of Some North American Ticks. U. S. Department of Agriculture, Bureau of Entomology, Bull. 106, pp. 1–239 (Sept. 7, 1922).

them in Idaho [2] and Montana,[3] and who, therefore, arranged for the sending of material to the United States Public Health Service Laboratory, at Hamilton, Mont.

Ticks and serum were secured by Brooks, on January 6, from the only animal then affected, a steer from the second group, that had been down but a few hours. This animal got up and walked away a half hour after the removal of the infesting ticks. The materials were received at Hamilton January 14, and although, unfortunately, the ticks were dead, one each was injected into six guinea pigs. Four of the guinea pigs remained well. Two died, 4 and 10 days, respectively, after injection, with lesions indicative of tularæmia. Twenty-nine guinea pigs were used in two series of transfers from these two initial test animals. All but one died with lesions characteristic of acute tularæmia. Cultures isolated from the spleens of first transfer guinea pigs of both series produced typical lesions of tularæmia in guinea pigs and were agglutinated by tularæmia immune human sera.

The serum of the above steer agglutinated both *Bacterium tularense* and *Brucella abortus* completely in dilutions of 1:10 and 1:20 and partially at 1:40. Another serum sample taken by Brooks on February 18, from a steer found affected on December 16, and which had since failed to regain normal condition (to April 1), agglutinated *B. tularense* completely in all dilutions up to and including 1:40 and partially at 1:80, and *B. abortus* in dilutions of 1:10 and 1:20. Serum samples from other cattle that had been affected could not be obtained, because of objections of the owner.

The above data are not sufficient to justify any assumption as to what part *B. tularense* might have played in the pathology of the affected cattle. They are of interest chiefly as further evidence of the wide dissemination of tularæmia infection in nature and of the numerous possible avenues for human contact.

MALARIA AND THE MALARIA DANGER IN CERTAIN IRRIGATED REGIONS OF SOUTHWESTERN UNITED STATES

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Many thousands of acres have been reclaimed by irrigation in the arid or semiarid regions of the southwestern United States, and new irrigated areas are being opened every year. The climate in these regions is warm, the summers are long, and water brought in by

[2] Parker, R. R., and Dade, J. S.: Tularæmia in Sheep in Nature. Public Health Rep., vol. 44, No. 3, pp. 126-130, Jan. 18, 1929.

[3] Parker, R. R., and Butler, W. J.: Results of Preliminary Investigations in Montana of Pathological Conditions in Sheep Due to the Wood Tick *Dermacentor andersoni* Stiles. Mont. State Bd. Entomology, Seventh Biennial Report, pp. 77-85, February, 1929.

irrigation often becomes highly productive of *Anopheles* mosquitoes. Malaria and the malaria danger of these localities, then, are subjects worthy of attention.

Our studies were begun in 1926 and continued to the close of the summer of 1928. We did the major part of our work in the Rio Grande Valley of New Mexico, but made shorter surveys in the Rio Grande Valley of Texas, in the Pecos Valley of New Mexico, in the Salt River Valley of Arizona, and in the Imperial Valley of California. Our observations were confined chiefly to localities where a considerable proportion of the *Anopheles* production is due to irrigation.

The types of *Anopheles*-producing waters due to irrigation or associated with it may be grouped as follows:

1. *Drainage ditches (drains.)*—Where irrigated lands lack sufficient natural drainage they may become water-logged. Evaporation from the surface of such lands is rapid in elevated arid regions, and may cause an accumulation of alkali harmful to agriculture. This condition is sometimes remedied by a series of deep ditches or drains, which lower the water level and permit a proper drainage of the soil. Drains vary much in size; they may be 15 or 20 feet deep and contain a stream of water 15 or 25 feet across. The drain water is usually clear, slowly flowing, and fairly constant in level. It may contain a luxuriant growth of cattails, sedges, water cress, *Myriophyllum*, algæ, and various other types of aquatic vegetation. The drains thus afford very favorable places for the development of *Anopheles* larvæ.

2. *Pools, ponds, and swampy pastures* are often formed by water which seeps from irrigation ditches or is intentionally directed to grassy lands. There it forms wet pastures or meadows which remain wet all summer and form ideal breeding places for *Anopheles*. These wet pastures are usually found where irrigation water is plentiful, and often occupy lands which could be put to a better agricultural purpose.

3. *The irrigation canals* themselves sometimes produce *Anopheles*, especially where they are broad and sluggish and contain considerable aquatic vegetation. The water in them is generally swift, however, and frequently changing in level; and therefore these canals do not often produce large numbers of *Anopheles*.

The anopheline species and their breeding places, and the prevalence of malaria in the localities we surveyed may be described as follows:

In the Rio Grande Valley of Texas we made observations in Cameron, Hidalgo, Webb, Del Verde, and El Paso Counties.

In the course of short surveys made in August, 1926, and May, 1928, near Brownsville, in Cameron County, Tex., we found *A. pseudopunctipennis* the prevailing species. *A. quadrimaculatus* appeared in smaller numbers; and we found *A. crucians* plentiful in one locality. Turner has reported from this region *A. albimanus*,

the chief malaria carrier of Central America. We found no *A. maculipennis*, a species which may be expected in the Rio Grande Valley of Texas, for it occurs plentifully along the Rio Grande in New Mexico. In Cameron County, *Anopheles* breed chiefly in the "resacas" (ancient river beds), but they breed also in drains and seepages from irrigation canals.

In May, 1928, we examined for malaria parasites the blood of 184 school children of Cameron County and found only 3 positive. In August, 1926, we found 10 positive among 17 persons of all ages residing in a locality near Brownsville, and other positives near San Benito. It would seem that the endemic index is low, but that malaria is scattered widely over the county and sharp local outbreaks may occur.

In Hidalgo County, near Hidalgo, we found *Anopheles* larvæ plentiful in a pool formed by seepage from an irrigation canal. In a house-to-house survey made in August, 1926, we found 10 positive among 72 persons examined. It would seem that malaria conditions there are not unlike those of Cameron County.

In the vicinity of Laredo, Webb County, water used for irrigation is pumped up from the river. There are no drains, and little water is allowed to accumulate anywhere. We found no anopheline breeding that was due to irrigation. In August, 1926, we found a breeding place of *A. pseudopunctipennis*, profuse but limited in extent, at the margins of a small creek near the city of Laredo.

Among 212 blood specimens collected in or near Laredo we found only one positive—a case with a history of malaria contracted in another locality. From all we could learn from local health officers and physicians, malaria is now a minor problem at Laredo, if of any importance at all.

Near Del Rio, Del Rio County, we found abundant production of *A. pseudopunctipennis*, and a few *A. punctipennis*, in seepage areas and pools formed by springs and in river pools, but no breeding attributable to irrigation. We made no blood parasite survey there, but information furnished by the local health officer indicates that malaria is little, if at all, prevalent in that region.

We made two surveys in the portion of El Paso County below the city of El Paso, one in July and one in September, 1928. In both surveys we found anopheline larvæ in the drains, with which the irrigated region below the city is abundantly supplied. We also found larvæ in seepages from irrigation canals and in the pools and swamps situated in the low ground along the river. Adult *Anopheles* were plentiful. In the September survey we collected 452, mostly under bridges over drains, in the course of a few hours collecting. Under a single bridge we found 387. All were *A. pseudopunctipennis*.

The county health officer informed us that no cases of malaria have been reported from this part of the county.

The following data on cases reported to the State department of health of Texas were furnished us through the kindness of Dr. J. C. Anderson, State health officer.

TABLE 1.—*Malaria reported to the Texas State Department of Health by certain counties in the Rio Grande Valley*

	1926	1927	1928 (first 10 months)		1926	1927	1928 (first 10 months)
Cameron County:				Val Verde County:			
Cases reported	391	167	403	Cases reported	None.	None.	None.
Deaths	8	7	6	Deaths	None.	None.	None.
Hidalgo County:				El Paso County:			
Cases reported	608	115	222	Cases reported	17	None.	None.
Deaths	1	5	5	Deaths			2
Webb County:							
Cases reported	None.	None.	None.				
Deaths	None.	None.	None.				

Chaves County, N. Mex., situated in the valley of the Pecos River, obtains its water for irrigation from deep artesian wells. In wet seasons many of these wells are flowing; in dry seasons pumping is necessary. The water flows from the wells to shallow ditches, which distribute it through the fields. No drains are necessary. The irrigation ditches are often open to the sun and full of algæ. At the time of our visit, August, 1928, the wells were flowing freely, the ditches full, and larvæ of *Anopheles* abundant in them. Adult *Anopheles* were abundant under bridges and in other shelters; in a few hours' collection in the vicinity of Roswell we got 110 of them. All the adults collected, and all the larvæ examined, 44 in number, were *A. pseudopunctipennis.*

The county health officials state that all of the few cases of malaria occurring in the county give a history of infection elsewhere.

Dona Ana County is situated in southern New Mexico at an elevation of about 3,800 feet. The summers are warm and extend from May to October. Rainfall is light, and agriculture depends almost wholly on irrigation. Water is diverted from the Rio Grande and distributed by canals built above the level of the fields. The river is but little below the level of the valley, and the natural drainage is supplemented by a system of drains situated roughly parallel to the river and at intervals of about three-fourths of a mile. Most of the drains are overgrown with reeds and other aquatic vegetation, and contain water which is usually clear and flows all the summer at a nearly constant level. Conditions favor a large production of *Anopheles;* the larvæ are so plentiful in some parts of the drains that one can take up 50 or 100 at one dipperful. *Anopheles* larvæ are found in lesser numbers in water seeping from irrigation canals and in borrow pits, but the drains are the chief source of the *Anopheles* of the region.

The species we found there were almost exclusively *A. pseudopunctipennis* and *A. maculipennis.* During the summer of 1928 we

collected and identified 5,500 adults, of which approximately two-thirds were *pseudopunctipennis*.

In this portion of New Mexico *pseudopunctipennis* breeds in nearly all types of water at all suitable for *Anopheles*, but occurs more abundantly in warmer waters. *A. maculipennis* prefers cooler water found in shady places or near springs. In some drains one can trace a decreasing proportion of *maculipennis* from the shady margin outward. In masses of algae in the sun *maculipennis* may be almost lacking and *pseudopunctipennis* very plentiful.

The temperature of the water in the bottom of the drains or where it flows swiftly may vary from 65° to 70° F. in midsummer. At the surface of calm water it may rise to 95° or 100° F., especially in the full sun and over mats of vegetation.

Malaria is prevalent in the northern and central parts of the county and has increased rapidly during the past four years. But few cases have been reported from the southern part of the county. In Table 2 are shown cases reported to the county health officer, Dr. C. W. Gerber, by months and years. Cases which we confirmed by blood examination are shown at the bottom of the table.

Doubtless a large proportion of the cases occurring in 1928, and probably many of those of 1927, were relapses. Many cases gave histories of previous attacks, and it will be noted that an increasing percentage of cases occurs in the spring months, a time when relapses of benign tertian are likely to occur. Except in a restricted area during 1927, nearly all cases blood-examined were benign tertian.

TABLE 2.—*Malaria in Dona Ana County, N. Mex. Cases as reported to the county health officer, by months and years*

	1924	1925	1926	1927	1928		1924	1925	1926	1927	1928
January	0	0	0	1	4	September	0	3	15	157	107
February	0	0	0	0	1	October	0	4	5	47	80
March	0	0	0	1	4	November	0	0	1	5	-----
April	0	0	0	1	13	December	0	1	0	4	-----
May	0	2	0	0	18	Totals	0	11	24	351	408
June	0	1	1	7	33	Confirmed by blood examination	----	----	18	83	133
July	0	0	0	27	36						
August	0	0	2	101	112						

We made the following blood examination of school children of Dona Ana County in September, 1928:

	Number examined	Number positive	Per cent positive
WHITE			
Fairacres	91	7	7.7
Dona Ana	88	1	1.1
Hill	56	10	17.9
COLORED			
Vado	81	0	0

All of these school children live in the part of the county where malaria is prevalent except those of Vado, who live in an area from which very few or no cases have been reported.

During the summers of 1927 and 1928, we made a more or less extensive study of a region in northern New Mexico, a part of the Rio Grande Valley situated near Espanola, N. Mex., and including parts of Rio Arriba and Santa Fe Counties. The elevation there is about 5,600 feet; the summers are warm, but short, comprising hardly more than three months of the year. The climate is dry, and lands are irrigated by water diverted from the Rio Grande and its tributaries.

Anopheles are very abundant in that locality. It is perhaps easier to find larvæ and adults in abundance there than in any other region in which we have worked, excepting in the prairie rice regions of Louisiana and Arkansas. They breed in wet pastures formed by water seeping from irrigation ditches or canals, or intentionally diverted from them. They are also found in the ancient beds of some of the numerous channels traversing the broad bed of the Rio Grande. Breeding in less amount occurs in irrigation ditches, borrow pits, in the partially dry beds of streams, or in pools and seepages near springs or irrigation ditches. The chief sources of *Anopheles*, however, are the wet pastures and ancient river channels.

The anopheline species are nearly or wholly *A. pseudopunctipennis* and *A. maculipennis*. During the summer of 1927 we collected and identified nearly 3,700 adults, of which 77 per cent were *A. maculipennis*. During 1928 we collected 3,800 adults, of which 80 per cent were *maculipennis*.

As in southern New Mexico, temperature seems to determine the distribution of the two species in their breeding places; but in the cooler northern climate the distribution of *A. maculipennis* is much wider than in Dona Ana County. In waters fully exposed to the sun, larvæ of *pseudopunctipennis* often appear in large numbers and may be the only species found; but in very many breeding places conditions are so varied that both species breed side by side.

Malaria has long been endemic in the vicinity of Espanola. Dr. W. H. Livingston, of Santa Fe, who has practiced for many years near Espanola, states that malaria has been present in that region for more than 40 years and was formerly much more prevalent than at present.

We made blood parasite surveys of school children, the results of which are shown in Table 3. Our figures indicate a slight tendency to decrease in the malaria rate during the past three years; the higher total of 1928 is due to the inclusion of the last three schools in the table. However, malaria still exists in considerable degree in several localities. As a rule, the higher rates are found in neighborhoods situated close to large breeding places.

TABLE 3.—*School examinations: Blood parasite rates, northern New Mexico*

School	September and October, 1926 [1]			September, 1927			September and October, 1928 [2]		
	Children examined	Number positive	Per cent positive	Children examined	Number positive	Per cent positive	Children examined	Number positive	Per cent positive
INDIAN PUEBLOS									
San Juan	60	17	28.3	61	8	13.1	71	8	11.2
Santa Clara	40	0	0	39	1	2.6	37	0	0
San Ildefonso	14	0	0	13	1	7.7	18	0	0
Tesuque	30	0	0	(3)	------	------	(3)	------	------
Total Indian pueblos	144	17	11.8	113	10	8.8	126	8	6.3
PUBLIC AND MISSION									
San Ildefonso Public	------	------	------	32	0	0	25	0	0
Santa Cruz Public	------	------	------	65	6	9.2	77	5	6.5
U. B. Mission, Santa Cruz	------	------	------	67	0	0	(3)	------	------
U. B. Mission, Velarde	------	------	------	14	3	21.4	25	1	4
U. B. Mission, Alcalde	------	------	------	42	4	9.5	36	0	0
Presbyterian Mission, Dixon	------	------	------	32	0	0	(3)	------	------
Espanola white primary	------	------	------	42	0	0	(3)	------	------
Ranchito Public	------	------	------	------	------	------	17	2	11.7
La Vallita Public	------	------	------	------	------	------	25	3	12
San Pedro Public	------	------	------	------	------	------	35	5	14.3
Total public and mission	------	------	------	294	13	4.4	240	16	6.6
Grand total	144	17	11.8	407	23	5.7	366	24	6.5

[1] San Juan and Santa Clara pueblos were examined in September, 1926; San Ildefonso and Tesuque in October, 1926.
[2] Ranchito, La Vallita, and San Pedro schools were examined in October, 1928; all others in September.
[3] Not examined.

The irrigated region of the Salt River Valley, Ariz., has but few drainage ditches; their function is performed by large wells from which water is pumped back into the irrigation canals. Water suitable for *Anopheles* breeding is limited. In the course of a short survey in July, 1928, we found *Anopheles* larvæ (*A. pseudopunctipennis*) on aquatic vegetation in the Salt River at Tempe.

Very few cases of malaria have been reported from this region and all have a history of infection elsewhere.

In the Imperial Valley of California, drainage ditches are numerous, and conditions in them (such as the presence of vegetation, suitable temperature and quality of water) seem to permit of *Anopheles* production; but in a day's search near El Centro we found not one larva or adult. Dr. W. B. Herms, professor of entomology and parasitology, University of California, College of Agriculture, informs us that *A. pseudopunctipennis* has been taken at Coachella, in the Imperial Valley.

The county health officer of Imperial County stated that only about six cases of malaria have been reported there during the last 12 years and that these were imported cases.

In both the Salt River Valley and the Imperial Valley summers are very hot. The Imperial Valley is below sea level.

In the localities we surveyed, malaria and the malaria danger seem to be largely confined to the Rio Grande Valley of Texas and New Mexico. The localities in this valley have certain characteristics in common:

(*1*) *The species of Anopheles.*—*A. pseudopunctipennis* is common to all localities. *A. maculipennis* occurs plentifully in New Mexico. We did not find this species in Texas, but it may be expected there, at least in the cooler waters of the mountain regions. *A. quadrimaculatus* appears in effective numbers in the lower part of the valley in Texas.

(*2*) *Type of malaria parasite.*—*Plasmodium vivax,* the parasite of benign tertian, is the prevailing type. Of 38 positive specimens obtained in Texas and 93 in northern New Mexico, all were of that type. In Dona Ana County, southern New Mexico, a small outbreak of estivo-autumnal malaria appeared during the summer of 1927. We found 25 cases with estivo-autumnal parasites, 13 of them harboring crescents. Nearly all of these cases occurred in a restricted area in the northern part of the county separated by deserts from the rest of the malarial region. During 1928 we obtained 133 positives in this county, many of them from the region in which estivo-autumnal was plentiful during the previous summer, and we detected only one case of estivo-autumnal malaria. During three years about 234 positive specimens were obtained from this county and all were benign tertian except the 25 estivo-autumnal described, and one quartan. Of approximately 365 positive specimens obtained in the entire Rio Grande Valley during a period of three years, all were benign tertian except the 26 described.

The list of 365 positive specimens includes some cases examined more than once, usually during different years or at different seasons.

The high incidence of benign tertian malaria in the Rio Grande Valley is remarkable, especially since so large a proportion of positive specimens was obtained in the late summer months, a time when estivo-autumnal malaria is very common in the Southern States situated in the same latitude. Much depends, probably, on the type of parasite commonly borne by carriers entering the valley. The observation we made in Dona Ana County shows that there is nothing in the climate, elevation, or species of *Anopheles* of that region which can prevent an outbreak of estivo-autumnal malaria.

(*3*) *Character of the population.*—In most parts of the Rio Grande Valley the population has increased rapidly during recent years. Many of the immigrants have come from Southern States where malaria is more or less prevalent. Large numbers of people have also come in from Mexico, and many of the inhabitants of the valley are the descendants of the Spanish-American population living in the country when it was a part of Mexico. There are many Indian villages in the valley, especially in the northern part of it. In localities where

malaria is prevalent, the Spanish-American and Indian populations show the higher incidence of the disease. In Dona Ana County, for example, 133 positive specimens were obtained during 1928, of which almost exactly three-quarters were from Spanish-Americans, although they constitute hardly more than one-half of the total population of the county. There is a large Anglo-Saxon population in the part of northern New Mexico where malaria is endemic, but only 2 of the 93 positive specimens which we obtained there were from that race.

The Spanish-American population of the Rio Grande Valley includes a larger proportion of the poorer people than do their neighbors, and the greater incidence of malaria among the Spanish-Americans and Indians may be another example of the usual tendency of malaria to afflict in a greater degree the part of a community least prosperous or most careless of treatment.

We have found some localities in the Southwest where health officers were uncertain as to whether indigenous malaria was present in their neighborhoods or not. Useful information can be obtained on this matter by the examination for malaria parasites of the blood of suspected cases, especially of very young children or of persons with no history of malaria contracted elsewhere. A blood parasite survey of the primary grades of rural schools may help to resolve any doubt. Nearly all States now have public health laboratories where blood films can be examined.

METHODS OF COMBATING MALARIA IN IRRIGATED REGIONS

No single antimalaria measure is equally adaptable to all regions; but of nearly universal application, in this country at least, is the early recognition and treatment of cases, especially among classes of people likely to neglect any treatment. To this measure may be added education, especially instruction as to the manner in which malaria is transmitted, the proper use of screens, and the value of early and thorough treatment of attacks. Education as to the proper manner of using screens seems to be especially desirable, if this excellent antimalaria measure is to become fully effective. In New Mexico certain well-screened regions have shown an increase in malaria, or, at best, a slow decrease, probably because the people do not keep behind their screens at nightfall. It is a difficult matter to change the customs of people, but one might recommend that at least malaria patients and children be protected against *Anopheles*.

In localities where the malaria rate is low, these general measures may suffice, especially if the discovery and treatment of carriers is attended to. Where the malaria rate is high, especially in populous centers situated close to *Anopheles* breeding places, antilarval measures may be indicated. We will discuss certain of these antilarval meas-

ures, keeping in mind their applicability to conditions in irrigated regions.

Drainage.—In northern New Mexico, breeding in some of the ancient river beds can be much reduced by proper ditching, as we demonstrated by practical experience during the summer of 1928. The engineer in charge of such work sometimes meets active opposition from beavers, which dam up his ditches and obstruct drainage. Where swampy pastures can not be abolished by simply turning irrigation water away from them, a little ditching may greatly reduce the mosquito-breeding area. Here one may meet with opposition from the farmers, who prefer their wet pastures to more scientific types of agriculture. The mosquitoes of this region, it appears, do not lack allies.

We have already described the drains dug for the purpose of lowering the level of the soil water, and the system in use in the Salt River Valley of Arizona, where wells are used instead of ditches. Wells may not suffice in some localities, especially where there are impermeable strata in the soil, and ditches may be necessary. Wherever possible, it would seem to be advisable to use underground tiling in place of the ditches. Much loss of land and disfigurement of fields would be prevented and a serious mosquito nuisance avoided.

Mosquito breeding is small in ditches kept free from vegetation. But it is no easy or inexpensive matter to clear out heavy growths of cat-tails, sedges, willows, and other aquatic and amphibious plants; and new vegetation may grow up within a few weeks.

The lowering of the water level in the drains is sometimes necessary for maintaining their agricultural efficiency, or for the better draining of ponds. As a purely antilarval measure the use of dredging machinery would be rather expensive and the result not lasting. According to the engineer in charge of a dredge in use by the city of El Paso, the clearing of a rather narrow drain with the removal of a heavy growth of cat-tails and 2½ feet of mud costs the city about $165 per mile. The object of this work was to lower the level of a pond. As a measure for reducing mosquito breeding in the drain itself, the dredging would have been expensive and only partially successful.

We observed an experiment in the use of copper sulphate for destroying *Myriophyllum* and algæ which were obstructing a drain. The crystals of copper sulphate were placed in bags which were hung in the flowing water of a drain. The chemical destroyed much of the algæ and *Myriophyllum* near the points of application. Part of the vegetation killed by the copper sulphate was removed by hand and part floated downstream. The level of the water fell about 18 inches, and remained at the lower level for many weeks. The effect of the copper sulphate treatment on *Anopheles* was only temporary. Within

six weeks or less after its application much of the aquatic vegetation had grown up again, and larvæ were abundant. The dead floating vegetation formed an excellent nidus for anopheline larvæ soon after the discontinuance of the use of the copper sulphate. Many fish were killed by the treatment. This method, then, would seem to have a very limited use as an anti-*Anopheles* measure in these drains.

Paris green is probably the larvicide of choice in treating drains. The county health officer of Dona Ana County carried on an extensive antilarval campaign by the use of Paris green during the summer of 1928. We observed this work and carried on experiments of our own. It appeared that hand distribution of the dust was most practical for conditions present in the drains. Their steep banks make it difficult to make frequent descents to the edge of the water and high willows and other vegetation are often so thick as to make the water invisible from the top of the bank. The use of dust guns for spreading the dust was hardly practical, especially on windy days and in narrow, crooked drains. So the dust was distributed by hand, using small scoops for throwing it.

Dry sand for mixing with the Paris green is usually available along the banks. The use of some fairly heavy diluent is almost necessary in these drains for projecting the dust over, and sometimes through, the marginal barrier of vegetation and to the surface of the water. The method employed by the county health officer, that of mixing the Paris green with the drainside dust as needed, proved to be a practicable one, since it saved the expense of transporting the diluting dust.

In some experimental work we spread the dust by a slightly different plan. With large metal scoops such as are used for handling sugar, we scooped up a double handful or so of fine sand, then sprinkled a few cubic centimeters of Paris green over it, sometimes stirring it in slightly. The mixture was then thrown into the drain, the sand carrying the Paris green to the water surface, where most of it separated from the sand and formed a green cloud in the canyon between the banks. The mass of Paris green and sand could be projected against an adverse wind to the bottom of the drain, where wind currents were less bothersome.

This method has the obvious advantage of doing away with the need of lugging a bag of diluted Paris green over rather rough traveling. But the method requires some care and knowledge in properly mixing the ingredients and in shooting the mass to the proper place in the drain. As the laborer employed may have a somewhat unadaptive intelligence, it is perhaps best to direct him to make up a dilution beforehand and use plenty of it.

In order to check up on the larvicidal work in Dona Ana County we made counts of the adult *Anopheles* in certain resting places

throughout the summer. We noted a very material reduction in the number of adult *Anopheles*, especially of *maculipennis*. The results were compared with collections made during the late summer of 1927, and it seemed fair to ascribe the reduction in large part to the antilarval work. It is doubtful, however, whether the reduction in either species was early or general enough to effect a satisfactory reduction in the transmission of malaria. Certainly some transmission of malaria occurred during the year, for cases were found in babies born since the summer of 1927 and in other persons with no previous history of malaria. The county health officer was handicapped by a lack of funds, and a single spreading unit had to treat nearly 110 miles of drains besides various other breeding places.

We ascertained by inspection that portions of some of the drains were being inadequately treated, probably through the neglect or ignorance of the laborers in charge of spreading the dust. The time interval between treatments may have been too long during the earlier part of the summer when the weather was very warm; but during August and September it is unlikely that many pupæ were formed in the well-treated places. We made some careful tests and found that very few pupæ appeared in the drains within 15 days after a thorough treatment.

We conducted another Paris-green experiment in northern New Mexico during the summer of 1928. The breeding places within an area of about 2 kilometers radius around an Indian village were systematically treated during the *Anopheles* breeding season. A fairly satisfactory reduction in *Anopheles* was attained, and but few cases of malaria were noted in the village during the summer. But the malaria parasite rate of school children fell to a percentage but little lower than that of the preceding year (September, 1927, 13 per cent; September, 1928, 11 per cent). It would seem, however, that most, if not all, of the children found positive in the fall of 1928 were chronic cases; for nearly all of them were found positive in a survey made in the early summer of 1928 or in the examinations of the preceding year.

We may fairly draw two conclusions from these experiments:

1. Even where a malarious region is bounded by deserts and the *Anopheles* breeding areas are comparatively limited, only thorough larvicidal work is likely to bring about a satisfactory reduction in *Anopheles*.

2. If all transmission of malaria is stopped or materially reduced, the endemic index may remain high for a year or more. The persistence of malaria is more likely in a region where benign tertian is the prevailing type. The great reduction in estivo-autumnal malaria in Dona Ana County during 1928 is encouraging; but further study is necessary to determine how far this reduction is due to the antimosquito work.

Gambusia.—We importe l *Gambusia* from Mississippi into northern New Mexico and assisted the county health officer in distributing them in parts of Dona Ana County in southern New Mexico. These minnows multiply extensively in drains. We found thousands of them in the drains of Imperial Valley, Calif., and in those of El Paso County, Tex., and of the southern part of Dona Ana County, N. Mex., localities where they have been long established. They may develop very rapidly in sluggish, vegetation-filled drains, and in borrow pits and in ponds, but spread more slowly where the water is cold, swiftly flowing, and less rich in vegetation. We observed great variability in the effectiveness of *Gambusia* against *Anopheles* larvæ in the drains. At one extreme was a drain at Vado, broad, sluggish, well stocked with vegetation, and apparently very favorable for *pseudopunctipennis*. We could find but few larvæ in it, although both culicines and anophelines were abundant at the sides of the drain in small pools inaccessible to fish. The drain was alive with *Gambusia*. At the other extreme was a drain in El Paso County, Tex., open to the sun and well stocked with algæ. *Gambusia* were swarming; but in spite of them, larvæ of *pseudopunctipennis* were very plentiful.

There is some evidence that *Gambusia* are more effective against *A. maculipennis* in southern New Mexico and Texas than against *pseudopunctipennis*. In large areas of Dona Ana and of El Paso Counties where *Gambusia* are abundant we found *pseudopunctipennis* plentiful but no *maculipennis*, although the water temperature and character of the vegetation seemed to favor them. The breeding places of *maculipennis* are apparently more accessible to minnows; while mats of algæ growing in the sun, the favored breeding place of *pseudopunctipennis*, may effectually protect larvæ against fish. Again, *maculipennis* in warmer climates are more often found in the permanent waters of drains where *Gambusia* persist from year to year, while temporary rain and seepage pools usually harbor *pseudopunctipennis*. This evidence is by no means conclusive, but is suggestive enough to warrant further observation.

Whatever their shortcomings, we would recommend the wide distribution of *Gambusia* in these regions, at least in the warmer climates. The water of many of the breeding places is permanent, and one thorough distribution of the minnows may suffice materially to reduce both anophelines and culicines.

THE RELATION OF A. PSEUDOPUNCTIPENNIS AND OF A. MACULIPENNIS TO THE TRANSMISSION OF MALARIA

Of the two species of *Anopheles* common in New Mexico, *A. maculipennis* is undoubtedly an important vector of malaria. It is one of the most common malaria carriers of Europe and is considered an

important vector in California. *A. pseudopunctipennis* was regarded by Darling [1] as being of little or no health importance in Panama, and by Herms [2] as an unimportant carrier in California; but in recent years it has been shown to be the principal carrier in Argentina. This conflicting evidence suggests that *A. pseudopunctipennis* may be of more importance as a vector in one locality than in another, a type of variability reported of several species in the Old World.

We will consider some evidence regarding the infectibility of *A. maculipennis* and of *A. pseudopunctipennis* found in New Mexico and of their relative importance as malaria vectors there.

In the laboratory we have infected specimens of both species collected in Dona Ana County with gametocytes of benign tertian malaria. In the single feeding experiment made, *A. maculipennis* gave the larger percentage of infected mosquitoes.

Both species enter dwellings and feed on the blood of persons there. In 1927 we collected 246 adult *Anopheles* in occupied houses of northern New Mexico. Of these, 6.1 per cent were *A. pseudopunctipennis* and 93.9 per cent *A. maculipennis*. Of 128 which we caught in dwellings of Dona Ana County, N. Mex., 5.5 per cent were *A. pseudopunctipennis* and the remainder *A. maculipennis*, although in that county *A. pseudopunctipennis* is by far the most common species generally. From these figures it would appear that *A. maculipennis* is more often a house visitor, or at least is more prone to remain in houses after feeding than *A. pseudopunctipennis*.

We dissected for malaria parasites 787 *Anopheles* caught in various resting places in a region in northern New Mexico where malaria is endemic. Of these, 669 *A. maculipennis* gave only two specimens with oöcysts in the mid-gut, 0.3 per cent, and 118 *A. pseudopunctipennis* gave none infected. Both infected specimens of *A. maculipennis* were found in a single collection made in an occupied house. But for that chance finding, both species would have given similar negative results.

The epidemiological evidence would seem to inculpate *maculipennis* rather than *pseudopunctipennis*. Mentioning only places where *pseudopunctipennis* occurs in abundance, we found no evidence of malaria in the vicinity of Del Rio, Tex., of lower El Paso County, Tex., or of Chaves County, N. Mex. The southern part of Dona Ana County, N. Mex., has reported but few cases of malaria. We examined in September, 1926, 55 negro school children in Vado, and in September, 1928, 81 children of the same school, but found no positives. Negro children usually give a higher malaria parasite rate where malaria is endemic than do white children. We have

[1] Darling, S. T.: Studies in Relation to Malaria. Isthmian Canal Commission. Washington, 1910. P. 22.

[2] Herms, W. B.: Occurrence of Malaria and Anopheline Mosquitoes in Northern California. Pub. Health Rep., vol. 34, No. 29 (July 18, 1919), p. 1587.

several times collected *A. pseudopunctipennis* in the town itself, but have never found *A. maculipennis* there.

On the other hand, we found *A. maculipennis* present and usually plentiful in every locality of New Mexico where we found malaria. During the summer of 1928, cases in Dona Ana County were, as a rule, most plentiful near certain drains where the production of *maculipennis* was abundant. In northern New Mexico, where malaria is still endemic, *A. maculipennis* abounds.

A species of *Anopheles* is not fully exculpated, however, by the fact that malaria may be absent where the species abounds. Malaria may be lacking in the presence of a known carrier. *A. maculipennis* must have been abundant in Dona Ana County long before 1925, the date of the first reported cases of indigenous malaria there. The drains had been in use for years, and had become overgrown with vegetation at the time of our first visit there, September, 1926, and at that time we found *maculipennis* already plentiful. Again, it appears from our surveys in northern New Mexico that malaria may be lacking in localities where *maculipennis* is present. This species is present in northern Utah where there is but little indigenous malaria, if it occurs at all.

In view of its bad reputation in South America, one can not wholly disregard *pseudopunctipennis;* but the presumption that *maculipennis* is the chief carrier in New Mexico is strong enough to justify a concentrated attack on this species, provided resources are lacking for combating all *Anopheles*.

Although *pseudopunctipennis* and *maculipennis* often breed side by side, there are large areas in which *maculipennis* is lacking, and in more southern regions certain breeding places rarely harbor them. We have seen that there is some evidence that *Gambusia* is more effective against this species. In northern New Mexico a "species attack" would be less practicable, for *maculipennis* is very widely distributed.

SUMMARY

It has been shown that *Anopheles* are abundant in many parts of the irrigated regions of the Southwest, and that malaria in considerable amount exists in some localities. Imported cases are general, and so carriers are rarely lacking; and these regions include in their population a class of people likely to be neglectful of treatment.

There are localities in the Rio Grande Valley where indigenous malaria is now absent or the rate is very low, and wholesale antimosquito operations or other expensive measures can hardly be recommended; but health officers should be on their guard against malaria and be prepared to take suitable measures should

an epidemic arise. It is to be remembered that in one locality malaria, apparently of no importance there a few years ago, has increased rapidly and become a serious problem.

The study of malaria in New Mexico has afforded some results applicable to all parts of the United States: (1) Malaria may increase or long persist in well-screened localities where the people do not make a proper use of this protection;[3] (2) even in regions where mosquito-breeding areas are limited by deserts or other natural conditions, antilarval work must be very thoroughly done if a satisfactory diminution of *Anopheles* is to be attained.

SECOND INTERNATIONAL MALARIA CONGRESS TO BE HELD AT ALGIERS IN MAY, 1930

The announcement has recently been made that the Second International Malaria Congress will be held at Algiers, May 19 to 21, 1930.

This international conference on malaria, a disease which still constitutes a public health problem of first importance in many sections of the world, will bring together the leaders in malariology of the different countries for discussions on modern practice and development in malaria prophylaxis and therapy.

The congress will be divided into six sections, as follows:

I. Classification and biology of malaria parasites. Hematozoons in general. Therapeutic malarial infection (from the parasitological standpoint).
II. Classification and biology of mosquitoes.
III. Epidemiology. Endemic and epidemic malaria. Anophelism and malaria statistics.
IV. Pathology (clinical, pathological anatomy, pathologic physiology, diagnostic). Bilious hemoglobinuric fever.
V. Therapeutics. Alkaloids of cinchona. Other products.
VI. Prophylaxis. Antimalaria propaganda. History of malaria and of the prophylaxis of malaria.

There are three classes of delegates to the congress, namely, (*a*) representatives of governments, (*b*) representatives of the institutions of the various countries, and (*c*) unattached delegates (physicians, chemotherapists, biologists, sanitary engineers).

Full information regarding the program of the congress, membership, etc., may be obtained by addressing the secretary general of the Second International Malaria Congress, Pasteur Institute, Algiers, Algeria.

[3] Some Notes on the Limitations of Screens in the Prevention of Malaria. Pub. Health Rep., vol. 44, No. 10 (Mar. 8, 1929), p. 523.
Another paper is in preparation on the *Anopheles* of the irrigated regions of the Southwest.

COURT DECISIONS RELATING TO PUBLIC HEALTH

Garbage removal by city held to be a governmental function.—(Virginia Supreme Court of Appeals; Ashbury *v.* City of Norfolk, 147 S. E. 223; decided March 21, 1929.) An action was brought against the city of Norfolk because of personal injury to plaintiff caused by being struck by a runaway horse which had been hitched to a wagon being used at the time in the removal of garbage. The question which was before the supreme court of appeals was whether, in the removal of garbage, the city was acting in a governmental capacity and was thus relieved from liability for negligence. The holding was that garbage removal by a city was a public governmental function, as contrasted with a corporate or private function, and that the city was not liable. In deciding the matter the court said that "There is some conflict in the cases, but the weight of authority quite certainly is to the effect that the removal of garbage by a municipality is a governmental function, which is designed primarily to promote public health and comfort, and hence that the municipality is not liable therefor in tort when the negligence which is charged occurred in the performance of that particular function, and no nuisance is thereby created."

Ordinance requiring civil-service examination of city health inspector held void.—(South Carolina Supreme Court; Murphy *v.* Cooper, Treasurer, 147 S. E. 438; decided March 14, 1929.) An original proceeding was brought in the supreme court for a writ of mandamus to compel the treasurer of the city of Columbia to pay the petitioner for his services as a city health inspector. The petitioner had been elected health inspector by the city board of health but did not stand examination as prescribed by a section of the city ordinances which read as follows:

> That from and after January 1st, 1911, all inspectors or other employees with police powers employed by or under the supervision of the board of health shall be placed under civil-service rules and stand examination under the Civil Service Commission.

The petitioner's view of the matter was that the said section was void because it was repugnant to the constitution and statutes of the State. The State constitution contained the provision that "It shall be the duty of the general assembly to create boards of health wherever they may be necessary, giving to them power and authority to make such regulations as shall protect the health of the community and abate nuisances." Statutes, applicable to every incorporated city, town, or village, gave local boards of health power and made it their duty to make and enforce needful rules and to do certain other acts in the interest of the public health, and then such statutes went on to provide that "The board may in such cases appoint as many

ward or district physicians and other sanitary agents as they may deem necessary, whose salaries shall be fixed by the town or city council before their appointment * * *." The supreme court agreed with the petitioner that the said section of the city ordinances was void, saying:

Under article 8, section 10, of the constitution, the board of health selects its health inspectors without qualification or restriction upon such right; the city fixes their compensation; the act of the legislature referred to in the petitioner's statement of the case shows their power and duties; ordinances in conflict with the constitution and act of legislature are null and void under the case of Law et al., Spartanburg County Board, *v.* City of Spartanburg, 148 S. C. 229, 146 S. E. 12, and cases therein cited.

DEATHS DURING WEEK ENDED MAY 18, 1929

Summary of information received by telegraph from industrial insurance companies for the week ended May 18, 1929, and corresponding week of 1928. (From the Weekly Health Index, May 22, 1929, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 18, 1929	Corresponding week, 1928
Policies in force	74, 154, 288	71, 199, 412
Number of death claims	14, 371	15, 244
Death claims per 1,000 policies in force, annual rate	10. 1	11. 2

Deaths from all causes in certain large cities of the United States during the week ended May 18, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928. (From the Weekly Health Index, May 22, 1929, issued by the Bureau of the Census, Department of Commerce)

City	Week ended May 18, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended May 18, 1929 [2]
	Total deaths	Death rate [1]		Week ended May 18, 1929	Corresponding week, 1928	
Total (65 cities)	7, 593	13. 3	14. 3	701	896	[3] 59
Akron	50			3	9	31
Albany [4]	38	16. 5	22. 6	1	6	20
Atlanta	86	17. 6	11. 9	9	8	93
White	41			2	4	
Colored	45	([5])	([5])	7	4	
Baltimore [4]	230	14. 5	15. 3	23	29	74
White	172			17	23	68
Colored	58	([5])	([5])	6	6	95
Birmingham	73	17. 2	19. 5	7	8	63
White	33			3	4	45
Colored	40	([5])	([5])	4	4	92
Boston	203	13. 3	17. 9	24	41	66
Bridgeport	32			3	3	52
Buffalo	221	20. 8	15. 1	14	21	60
Cambridge	23	9. 6	8. 7	4	1	72
Camden	32	12. 4	13. 5	6	4	104
Canton	28	12. 5	12. 1	4	5	95
Chicago [4]	775	12. 8	14. 2	68	90	61
Cincinnati	130			7	14	41
Cleveland	333	17. 2	11. 6	19	19	56
Columbus	73	12. 8	15. 9	5	11	47
Dallas	52	12. 5	9. 4	3	7	
White	31			1	6	
Colored	21	([5])	([5])	2	1	

(Footnotes at end of table.)

Deaths from all causes in certain large cities of the United States during the week ended May 18, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928—Continued.

City	Week ended May 18, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended May 18, 1929 [2]
	Total deaths	Death rate [1]		Week ended May 18, 1929	Corresponding week, 1928	
Denver	91	16.2	15.5	7	9	68
Des Moines	31	10.7	11.7	0	2	0
Detroit	353	13.4	13.2	40	52	64
Duluth	31	13.9	12.1	5	0	121
El Paso	33	14.6	15.5	5	10	----
Erie	35	----	----	4	0	82
Fall River [4]	31	12.1	13.6	3	7	56
Flint	32	11.2	9.5	4	7	49
Fort Worth	32	9.8	10.7	4	2	----
White	27	----	----	4	1	----
Colored	5	(3)	(3)	0	1	----
Grand Rapids	27	8.6	13.7	3	4	45
Houston	60	----	----	4	6	----
White	35	----	----	1	5	----
Colored	25	(3)	(3)	3	1	----
Indianapolis	100	13.7	14.8	9	7	72
White	80	----	----	8	7	74
Colored	20	(3)	(3)	1	0	60
Jersey City	73	11.8	15.8	5	10	39
Kansas City, Kans	32	14.1	16.4	2	3	44
White	26	----	----	2	2	50
Colored	6	(3)	(3)	0	1	0
Kansas City, Mo	127	17.0	13.2	7	10	59
Knoxville	25	12.4	10.4	0	2	0
White	23	----	----	0	2	0
Colored	2	(3)	(3)	0	0	0
Los Angeles	269	----	----	20	25	59
Louisville	87	13.8	23.2	7	6	57
White	69	----	----	7	6	65
Colored	18	(3)	(3)	0	0	0
Lowell	17	----	----	2	3	45
Lynn	22	10.9	10.9	3	1	82
Memphis	55	15.1	18.1	6	8	71
White	23	----	----	3	4	57
Colored	32	(3)	(3)	3	4	94
Milwaukee	119	11.4	12.7	15	20	66
Minneapolis	96	11.0	12.5	11	12	68
Nashville	56	21.0	14.2	7	4	113
White	38	----	----	6	3	130
Colored	18	(3)	(3)	1	1	63
New Bedford	25	----	----	4	2	86
New Haven	41	11.4	13.6	4	3	61
New Orleans	122	14.9	20.1	17	16	84
White	66	----	----	7	6	49
Colored	56	(3)	(3)	10	10	168
New York	1,511	13.1	15.5	145	206	59
Bronx Borough	183	10.1	12.2	18	27	53
Brooklyn Borough	505	11.4	13.6	46	63	47
Manhattan Borough	628	18.7	22.3	64	90	78
Queens Borough	148	9.1	10.1	14	24	57
Richmond Borough	47	16.3	17.7	3	2	54
Newark, N. J	110	12.1	13.1	15	11	79
Oakland	58	11.1	12.4	3	5	33
Omaha	32	7.5	13.1	1	7	12
Paterson	32	11.5	19.5	5	6	88
Philadelphia	498	12.6	13.0	40	50	57
Pittsburgh	155	12.0	15.2	16	18	55
Portland, Oreg	73	----	----	5	4	57
Providence	59	10.8	11.1	7	4	62
Richmond	55	14.8	10.8	6	2	84
White	29	----	----	3	2	64
Colored	26	(3)	(3)	3	0	123
Rochester	92	14.7	11.3	8	12	68
St. Louis	220	13.6	12.8	12	19	40
St. Paul	46	----	----	7	3	72
Salt Lake City [4]	45	17.0	9.9	3	5	46
San Antonio	75	18.0	15.8	28	14	----
San Diego	47	20.5	23.2	9	2	172
San Francisco	179	16.0	13.7	3	8	19
Schenectady	13	7.3	12.3	1	3	32
Seattle	72	9.8	9.6	1	9	11

(Footnotes at end of table.)

Deaths from all causes in certain large cities of the United States during the week ended May 18, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928—Continued

City	Week ended May 18, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended May 18, 1929 [2]
	Total deaths	Death rate [1]		Week ended May 18, 1929	Corresponding week, 1928	
Somerville	23	11.7	10.7	1	8	36
Spokane	22	10.5	10.5	2	1	52
Springfield, Mass.	30	10.5	18.1	3	8	50
Syracuse	51	13.4	19.7	3	11	36
Tacoma	24	11.4	7.6	2	1	51
Toledo	69	11.5	13.5	7	7	65
Trenton	33	12.4	15.8	3	6	54
Utica	30	15.1	14.0	3	3	76
Washington, D. C.	138	13.1	13.8	8	7	47
White	88			6	6	51
Colored	50	([5])	([5])	2	1	38
Waterbury	23			2	2	51
Wilmington, Del.	32	13.0	12.2	4	6	104
Worcester	43	11.4	16.1	4	6	50
Yonkers	19	8.2	9.9	2	1	47
Youngstown	43	12.9	10.2	5	5	72

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 71 cities.
[4] Deaths for week ended Friday.
[5] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Reports for Weeks Ended May 18, 1929, and May 19, 1928

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 18, 1929, and May 19, 1928

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 18, 1929	Week ended May 19, 1928	Week ended May 18, 1929	Week ended May 19, 1928	Week ended May 18, 1929	Week ended May 19, 1928	Week ended May 18, 1929	Week ended May 19, 1928
New England States:								
Maine	5	1	6	36	127	19	1	0
New Hampshire	----	2	----	----	----	62	----	0
Vermont	1	----	----	----	4	23	0	0
Masssachusetts	64	55	5	55	581	782	4	2
Rhode Island	7	8	----	----	62	247	0	0
Connecticut	15	23	10	46	253	279	1	2
Middle Atlantic States:								
New York	281	338	[1] 17	[1] 94	1,001	4,129	37	25
New Jersey	128	123	4	46	295	1,952	10	4
Pennsylvania	126	128	----	----	1,933	2,895	9	3
East North Central States:								
Ohio	24	68	11	119	892	983	5	3
Indiana	14	12	----	66	609	680	1	0
Illinois	168	83	27	96	1,882	214	19	19
Michigan	83	86	----	4	1,198	1,129	101	7
Wisconsin	29	16	31	554	1,657	86	6	12
West North Central States:								
Minnesota	10	16	----	3	640	78	6	2
Iowa	5	6	----	----	80	15	1	0
Missouri	58	38	7	34	210	521	19	21
North Dakota	8	1	----	30	205	10	1	0
South Dakota	2	2	----	1	20	21	1	3
Nebraska	12	8	----	1	248	39	0	0
Kansas	10	8	----	----	678	233	4	5
South Atlantic States:								
Delaware	1	----	----	1	17	40	0	0
Maryland [2]	18	40	14	14	39	760	1	2
District of Columbia	7	12	2	2	32	234	0	1
West Virginia	11	7	6	319	372	107	0	1
North Carolina	12	11	----	----	28	1,054	5	3
South Carolina	15	9	225	474	7	247	0	0
Georgia	14	14	20	103	40	103	5	0
Florida	7	6	2	38	89	70	1	0

[1] New York City only.

[2] Week ended Friday.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 18, 1929, and May 19, 1928—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended May 18, 1929	Week ended May 19, 1928	Week ended May 18, 1929	Week ended May 19, 1928	Week ended May 18, 1929	Week ended May 19, 1928	Week ended May 18, 1929	Week ended May 19, 1928
East South Central States:								
Kentucky		4		30	36	194	3	0
Tennessee	6	9	13	222	45	185	2	1
Alabama	5	7	21	352	49	370	1	2
Mississippi	5	8					0	1
West South Central States:								
Arkansas		2	43	227	16	306	2	0
Louisiana	25	13	12	37	77	231	1	1
Oklahoma [3]	6	10	24	180	41	233	2	4
Texas	19	16	7	31	156	103	1	0
Mountain States:								
Montana	1	2	1		81	10	1	1
Idaho		1	15		1	4	1	0
Wyoming					56	12	0	2
Colorado [4]	16	12	1	1	35	139	7	1
New Mexico	5	4			9	149	7	0
Arizona	1				5	5	4	1
Utah [2]		2	4	12	3	3	7	0
Pacific States:								
Washington	4	7			196	88	9	1
Oregon	2	7	16	10	225	29	0	2
California	49	101	57	43	124	120	19	6

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 18, 1929	Week ended May 19, 1928	Week ended May 18, 1929	Week ended May 19, 1928	Week ended May 18, 1929	Week ended May 19, 1928	Week ended May 18, 1929	Week ended May 19, 1928
New England States:								
Maine	0	0	40	24	0	0	4	0
New Hampshire		0		3		0		0
Vermont	0	0	14	6	9	0	0	0
Massachusetts	2	1	215	215	7	1	7	1
Rhode Island	1	0	18	28	0	0	0	2
Connecticut	0	0	61	132	9	4	1	0
Middle Atlantic States:								
New York	3	6	385	601	1	3	14	19
New Jersey	0	3	148	210	0	1	3	6
Pennsylvania	2	1	379	374	0	0	30	3
East North Central States:								
Ohio	9	2	226	195	65	31	5	4
Indiana	0	0	257	70	79	133	11	1
Illinois	1	1	422	301	90	47	10	8
Michigan	1	1	503	265	60	29	2	3
Wisconsin	0	1	153	200	13	14	3	35
West North Central States:								
Minnesota	0	0	100	110	3	2	4	0
Iowa	0	0	108	57	39	38	0	1
Missouri	0	0	75	110	22	70	6	8
North Dakota	0	0	29	28	12	1	1	1
South Dakota	2	1	28	19	30	1	0	0
Nebraska	0	0	111	100	25	91	2	0
Kansas	0	1	139	122	50	69	3	4
South Atlantic States:								
Delaware	0	0	3	2	0	0	0	0
Maryland [3]	1	0	124	75	0	0	6	9
District of Columbia	0	0	16	43	0	0	0	0
West Virginia	0	0	11	21	22	48	18	4
North Carolina	3	0	28	24	18	76	3	4
South Carolina	2	0	5	4	0	13	15	22
Georgia	0	0	18	22	0	0	17	11
Florida	0	0	6	6	0	3	4	7

[2] Week ended Friday.
[3] Figures for 1929 are exclusive of Oklahoma City and Tulsa.
[4] Figures for 1929 are for two weeks ended May 18.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended May 18, 1929, and May 19, 1928—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended May 18, 1929	Week ended May 19, 1928	Week ended May 18, 1929	Week ended May 19, 1928	Week ended May 18, 1929	Week ended May 19, 1928	Week ended May 18, 1929	Week ended May 19, 1928
East South Central States:								
Kentucky	1	0	34	38	7	21	5	3
Tennessee	0	1	16	21	12	18	8	8
Alabama	1	1	5	6	0	10	7	5
Mississippi	0	0	4	14	1	2	3	4
West South Central States:								
Arkansas	0	0	5	31	2	5	7	2
Louisiana	0	0	43	7	4	50	30	11
Oklahoma [3]	0	0	37	36	69	84	6	3
Texas	0	0	31	87	137	48	8	1
Mountain States:								
Montana	0	0	15	19	14	16	1	0
Idaho	0	0	4	6	3	37	0	2
Wyoming	0	0	9	22	6	0	0	0
Colorado [4]	1	0	56	77	38	2	1	2
New Mexico	0	0	2	18	1	7	2	1
Arizona	0	0	0	4	12	2	2	5
Utah [2]	0	0	8	6	6	13	0	0
Pacific States:								
Washington	0	0	22	27	30	36	1	1
Oregon	0	0	15	11	27	46	0	4
California	4	2	379	143	44	30	9	14

Figures for 1929 are exclusive of Oklahoma City and Tulsa.
Figures for 1929 are for two weeks ended May 18

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
January, 1929										
Massachusetts	10	490	7,994	2	2,700		4	1,233	14	9
April, 1929										
Indiana	3	50	61		1,929		2	819	205	27
Louisiana	21	76	104	44	306	62	0	204	23	49
Maine	1	22	13		811		1	123	13	14
Maryland	4	96	82	1	183	0	0	230	0	20
Minnesota	9	87	8		3,070		2	533	13	27
New York	138	1,430		14	4,872		10	2,405	5	63
Ohio	55	252	135	1	8,393		10	1,175	234	38

January, 1929

Massachusetts:	Cases
Anthrax	2
Chicken pox	1,696
German measles	42
Lead poisoning	8
Leprosy	1
Lethargic encephalitis	9
Mumps	461
Ophthalmia neonatorum	165
Septic sore throat	39
Trachoma	5
Trichinosis	1
Whooping cough	649

April, 1929

Anthrax:	Cases
New York	2
Chicken pox:	
Indiana	225
Louisiana	53
Maine	99
Maryland	264
Minnesota	378
New York	2,491
Ohio	1,126
Conjunctivitis:	
Maine	2

Dysentery:	Cases
Indiana (amebic)	2
Louisiana	3
Maryland	5
Minnesota (amebic)	18
German measles:	
Maine	135
Maryland	33
New York	626
Ohio	74
Hookworm disease:	
Louisiana	12
Impetigo contagiosa:	
Maryland	3
Lead poisoning:	
Ohio	11
Lethargic encephalitis:	
Louisiana	2
Maryland	1
Minnesota	1
New York	24
Ohio	11
Mumps:	
Indiana	33
Louisiana	4
Maine	122
Maryland	883
New York	2,126
Ohio	321
Ophthalmia neonatorum:	
New York	6
Ohio	98
Paratyphoid fever:	
Louisiana	2
Maine	6
Minnesota	1
New York	3
Ohio	2
Puerperal fever:	
New York	17
Ohio	12

Rabies in animals:	Cases
Maryland	4
New York [1]	32
Septic sore throat:	
Louisiana	5
Maine	6
Maryland	15
New York	39
Ohio	69
Tetanus:	
Louisiana	1
Maryland	1
New York	1
Ohio	1
Trachoma:	
Indiana	5
Minnesota	1
Ohio	8
Tularaemia:	
Ohio	1
Typhus fever:	
New York	1
Undulant fever:	
Louisiana	4
Maryland	1
Minnesota	7
New York	7
Ohio	3
Vincent's angina:	
Maine	11
Maryland	1
New York	58
Whooping cough:	
Indiana	319
Louisiana	58
Maine	118
Maryland	631
Minnesota	653
New York	1,460
Ohio	2,119

RECIPROCAL NOTIFICATIONS

Notifications regarding communicable diseases sent during the month of April, 1929, by departments of health of certain States to other State health departments

Disease	California	Connecticut	Illinois	Minnesota	New York
Dysentery (amebic)				1	
Measles					6
Paratyphoid fever				1	
Scarlet fever		1			2
Smallpox			2		
Trachoma				1	
Tuberculosis	1			11	
Typhoid fever	1				2

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 94 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 30,885,000. The estimated population of the 87

[1] Exclusive of New York City.

cities reporting deaths is more than 29,315,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended May 11, 1929, and May 12, 1928

	1929	1928	Estimated expectancy
Cases reported			
Diphtheria:			
45 States	1,414	1,362	----
94 cities	831	726	831
Measles:			
44 States	15,947	19,838	----
94 cities	5,149	7,953	----
Meningococcus meningitis:			
44 States	296	131	----
94 cities	137	84	----
Poliomyelitis:			
45 States	18	33	----
Scarlet fever:			
45 States	4,276	4,116	----
94 cities	1,687	1,481	1,145
Smallpox:			
45 States	1,023	1,065	----
94 cities	67	97	78
Typhoid fever:			
45 States	306	226	----
94 cities	66	48	35
Deaths reported			
Influenza and penumonia:			
87 cities	664	1,396	----
Smallpox:			
87 cities	0	0	----

City reports for week ended May 11, 1929

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

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1920 is included. In obtaining the estimated expectancy the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population, July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	78,600	6	1	0	----	0	20	0	2
New Hampshire:									
Concord	(1)	0	0	0	----	0	22	0	1
Manchester	85,700	0	1	0	----	0	2	0	4
Vermont:									
Barre	(1)	0	0	0	----	0	0	0	1

[1] No estimate of population made.

City reports for week ended May 11, 1929—Continued

Division, State, and city	Population, July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND—con.									
Massachusetts:									
Boston	799,200	49	36	31	1	1	15	37	9
Fall River	134,300	0	3	2		0	0	1	3
Springfield	149,800	10	2	4		0	3	1	1
Worcester	197,600	16	4	1		0	18	5	5
Rhode Island:									
Pawtucket	73,100		1						
Providence	286,300	0	8	6		0	83	0	6
Connecticut:									
Bridgeport	(1)	0	5	1	1	0	14	0	3
Hartford	172,300	5	5	4		0	27	10	3
New Haven	187,900	9	1	2		0	8	4	5
MIDDLE ATLANTIC									
New York:									
Buffalo	555,800	17	10	9		0	78	2	13
New York	6,017,500	245	256	316	18	9	112	0	146
Rochester	328,200	11	9	1		0	28	19	4
Syracuse	199,300	48	6	4		0	3	13	5
New Jersey:									
Camden	135,400		7						
Newark	473,600	55	14	59	2	0	7	71	11
Trenton	139,000	1	3	2		1	16	0	3
Pennsylvania:									
Philadelphia	2,064,200	151	61	21	6	4	72	28	45
Pittsburgh	673,800	33	17	5		2	54	4	22
Reading	115,400	5	2	2		0	9	0	2
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	413,700	13	7	2		2	2	0	6
Cleveland	1,010,300	75	22	11	4	3	621	5	17
Columbus	299,000	8	3	0		0	35	0	2
Toledo	313,200	15	4	1	2	2	47	8	5
Indiana:									
Fort Wayne	105,300	4	2	1		0	31	0	3
Indianapolis	382,100		3						
South Bend	86,100	2	1	2		0	7	0	3
Terre Haute	73,500	0	1	0		0	14	0	0
Illinois:									
Chicago	3,157,400	101	65	157	8	3	1,221	24	53
Springfield	67,200	1	1	0	1	0	5	0	2
Michigan:									
Detroit	1,378,900	110	44	42	5	1	160	54	35
Flint	148,800	26	4	2		1	14	3	10
Grand Rapids	164,200	3	2	1		0	68	0	4
Wisconsin:									
Kenosha	56,500	13	0	0		0	37	0	0
Milwaukee	544,200	94	12	6	1	1	946	11	5
Racine	74,400		2						
Superior	(1)	2	0	0		0	5	5	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	116,800	6	0	0		0	2	29	4
Minneapolis	455,900	20	15	11		0	216	56	7
St. Paul	(1)	15	11	0		0	256	33	8
Iowa:									
Davenport	(1)	3	0	2			6	0	
Des Moines	151,900	0	1	0			0	0	
Sioux City	80,000	18	0	0			4	2	
Waterloo	37,100	1	0	0			3	19	
Missouri:									
Kansas City	391,000	0	5	2		0	86	2	10
St. Joseph	78,500	0	0	0		1	33	0	0
St. Louis	848,100	22	41	32			29	10	
North Dakota:									
Fargo	(1)	0	0	0		0	32	0	0
Grand Forks	(1)	1	0	0			0	0	

[1] No estimate of population made.

City reports for week ended May 11, 1929—Continued

Division, State, and city	Population, July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CENTRAL—continued									
South Dakota:									
Aberdeen	(1)	1	0	0			0	7	
Sioux Falls	(1)	0	0	1			0	0	
Nebraska:									
Omaha	222,800	2	2	8		0	66	3	1
Kansas:									
Topeka	62,800	6	1	0		0		2	2
Wichita	99,300	6	1	1		0	78	36	3
SOUTH ATLANTIC									
Delaware:									
Wilmington	128,500	1	2	2		0	19	0	2
Maryland:									
Baltimore	830,400	40	22	15	9	4	2	170	21
Cumberland	(1)	0	0	0		0	0	3	0
Frederick	(1)	0	0	0		0	0	0	0
District of Columbia:									
Washington	552,000	23	12	5	1	0	31	0	12
Virginia:									
Lynchburg	38,600	8	1	0		0	1	122	2
Norfolk	184,200	22	0	2		0	3	53	2
Richmond	194,400	3	1	3		1	3	4	3
Roanoke	64,600	3	0	0		0	2	2	0
West Virginia:									
Charleston	55,200	7	1	1		0	127	0	3
Wheeling	(1)	3	1	0		2	75	0	4
North Carolina:									
Raleigh	(1)	4	1	1		0	0	0	1
Wilmington	39,100	14	0	0		0	0	0	1
Winston-Salem	80,000	4	0	1		0	0	1	6
South Carolina:									
Charleston	75,900	5	0	0	11	1	0	0	0
Columbia	50,600	2	0	0		0	0	3	2
Greenville	(1)	5	0	0		0	0	1	0
Georgia:									
Atlanta	255,100	7	1	5	8	1	17	2	0
Brunswick	(1)	0	0	0		0	0	0	0
Savannah	99,900	1	0	1		0	0	0	1
Florida:									
Miami	156,700	2	1	1		0	72	0	0
St. Petersburg	53,300		0			0			0
Tampa	113,400	0	1	0	4	0	1	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Covington	59,000	0	0	2		0	1	1	2
Tennessee:									
Memphis	190,200	3	1	1		1	1	0	8
Nashville	139,600	0	1	0		0	0	0	4
Alabama:									
Birmingham	222,400	4	2	1	3	3	2	3	6
Mobile	69,600	0	0	0		1	2	0	0
Montgomery	63,100	11	0	0			0	0	
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	(1)	1	0	0			1	1	
Little Rock	79,200	2	0	1		1	1	2	1
Louisiana:									
New Orleans	429,400	0	6	10	1	2	2	0	10
Shreveport	81,300	2	1	0		0	2	0	2
Oklahoma:									
Tulsa	170,500	13	1	1			9	1	
Texas:									
Dallas	217,800	2	3	6	1	1	80	0	6
Fort Worth	170,600	1	1	1		0	6	1	2
Galveston	50,600	0	0	0		0	0	0	0
Houston	(1)	1	3	4		0	10	0	2
San Antonio	218,100	0	1	2		3	0	0	3

[1] No estimate of population made.

City reports for week ended May 11, 1929—Continued

Division, State, and city	Population, July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MOUNTAIN									
Montana:									
Billings	(1)	8	0	1	-------	0	0	0	2
Great Falls	(1)	5	1	0	-------	0	9	2	1
Helena	(1)	0	0	0	-------	0	1	0	0
Missoula	(1)	0	0	0	-------	0	1	0	0
Idaho:									
Boise	(1)	0	0	0	-------	0	0	1	1
Colorado:									
Denver	294,200	51	10	4	-------	2	9	27	5
Pueblo	44,200	33	1	0	-------	1	5	2	0
New Mexico:									
Albuquerque	(1)	1	1	0	-------	0	1	0	2
Utah:									
Salt Lake City	138,000	17	3	1	-------	0	9	82	1
Nevada:									
Reno	(1)	0	0	0	-------	0	0	0	0
PACIFIC									
Washington:									
Seattle	383,200	40	4	0	-------	-------	6	0	-------
Spokane	109,100	14	2	1	3	-------	105	0	-------
Tacoma	110,500	12	1	0	-------	0	2	3	1
Oregon:									
Portland	(1)	6	5	3	1	0	98	4	2
Salem	(1)	0	0	0	1	0	3	7	1
California:									
Los Angeles	(1)	113	41	9	21	1	44	26	20
Sacramento	75,700	8	2	0	3	1	12	1	4
San Francisco	585,300	26	19	6	-------	2	6	17	5

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	3	10	0	0	0	0	1	2	0	2	15
New Hampshire:											
Concord	1	2	0	0	0	0	0	0	0	0	10
Manchester	2	4	0	0	0	0	0	0	0	0	16
Vermont:											
Barre	1	1	0	0	0	0	0	0	0	1	5
Massachusetts:											
Boston	67	60	0	0	0	13	1	2	0	38	209
Fall River	4	3	0	0	0	1	0	0	0	8	37
Springfield	7	8	0	0	0	1	0	0	0	0	31
Worcester	10	5	0	0	0	2	0	0	0	21	58
Rhode Island:											
Pawtucket	1	-------	0	-------	-------	-------	0	-------	-------	-------	-------
Providence	10	10	0	0	0	1	0	1	0	4	73
Connecticut:											
Bridgeport	11	6	0	1	0	0	0	0	3	1	31
Hartford	5	6	0	0	0	5	0	0	0	7	44
New Haven	7	2	0	0	0	3	1	0	0	3	49
MIDDLE ATLANTIC											
New York:											
Buffalo	22	34	0	0	0	5	0	1	1	14	138
New York	284	266	0	0	0	115	8	4	0	71	1,514
Rochester	13	7	0	0	0	4	0	0	0	12	86
Syracuse	10	9	0	0	0	2	0	0	0	24	54

[1] No estimate of population made.

City reports for week ended May 11, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
MIDDLE ATLANTIC—continued											
New Jersey:											
Camden	7		0				0				
Newark	29	24	0	0	0	13	0	0	0	33	100
Trenton	3	2	0	0	0	0	0	0	0	1	31
Pennsylvania:											
Philadelphia	91	59	0	0	0	23	3	1	0	67	490
Pittsburgh	29	21	0	0	0	13	0	0	0	45	179
Reading	3	9	0	0	0	0	0	0	0	0	22
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	16	62	2	2	0	7	1	0	0	18	136
Cleveland	38	26	0	2	0	19	1	3	0	45	197
Columbus	9	4	2	2	0	6	0	0	0	22	89
Toledo	11	11	0	0	0	2	1	0	0	29	71
Indiana:											
Fort Wayne	4	5	2	0	0	3	0	4	0	4	21
Indianapolis	13		12				0				
South Bend	4	3	0	0	0	1	0	0	0	0	15
Terre Haute	3	1	0	0	0	0	0	0	0	7	18
Illinois:											
Chicago	16	198	2	3	0	48	3	1	0	60	717
Springfield	4	9	1	5	0	3	0	0	0	1	25
Michigan:											
Detroit	97	247	1	2	0	31	2	1	0	104	352
Flint	6	53	2	9	0	3	0	0	1	14	53
Grand Rapids	6	9	0	2	0	1	0	0	0	10	39
Wisconsin:											
Kenosha	2	2	0	0	0	1	0	1	0	6	9
Milwaukee	27	27	1	0	0	3	0	0	0	66	110
Racine	5		1				0				
Superior	2	0	1	0	0	0	0	0	0	12	5
WEST NORTH CENTRAL											
Minnesota:											
Duluth	7	2	1	0	0	1	0	0	0	4	21
Minneapolis	40	18	1	0	0	3	1	0	0	48	87
St. Paul	22	16	0	0	0	2	0	1	0	29	53
Iowa:											
Davenport	1	2	2	6			0	0		0	
Des Moines	4	32	2	1			0	0		0	34
Sioux City	2	0	1	0			0	0		5	
Waterloo	1	16	0	1			0	0		7	
Missouri:											
Kansas City	12	21	3	0	0	1	0	0	0	10	86
St. Joseph	3	1	0	1	0	0	0	14	0	3	42
St. Louis	32	14	3	7	0	10	1	0	0	64	197
North Dakota:											
Fargo	2	0	0	0	0	0	0	1	0	1	3
Grand Forks	2	1	0	0			0	0		0	
South Dakota:											
Aberdeen	0	1	0	0			0	0		0	
Sioux Falls	2	1	0	1			0	0		0	
Nebraska:											
Omaha	4	24	5	4	0	5	0	0	0	5	59
Kansas:											
Topeka	3	2	0	0	0	0	0	0	0	6	13
Wichita	3	30	1	1	0	3	0	0	0	8	33
SOUTH ATLANTIC											
Delaware:											
Wilmington	5	1	0	0	0	0	0	1	0	6	32
Maryland:											
Baltimore	30	94	0	0	0	19	2	0	0	95	203
Cumberland	0	1	0	0	0	0	0	0	0	0	16
Frederick	2	0	0	0	0	0	0	0	0	0	2

City reports for week ended May 11, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
SOUTH ATLANTIC—continued											
District of Columbia:											
Washington	23	19	1	0	0	15	1	0	0	26	119
Virginia:											
Lynchburg	0	0	0	0	0	1	0	0	0	25	11
Norfolk	2	1	1	0	0	2	0	0	0	43	
Richmond	3	2	0	0	0	4	0	2	0	10	57
Roanoke	0	3	1	0	0	2	0	0	0	0	21
West Virginia:											
Charleston	1	1	0	0	0	0	0	[1]1	[1]1	6	25
Wheeling	2	1	0	0	0	2	0	0	0	1	28
North Carolina:											
Raleigh	0	0	1	0	0	5	0	0	0	2	19
Wilmington	0	0	0	0	0	1	0	0	0	0	11
Winston-Salem	0	0	2	0	0	2	0	0	0	37	25
South Carolina:											
Charleston	0	3	1	0	0	3	0	0	0	7	26
Columbia	0	2	0	0	0	1	0	0	0	2	17
Greenville	1	0	1	0	0	0	0	0	0	3	
Georgia:											
Atlanta	3	3	4	0	0	2	0	2	0	29	79
Brunswick	0	0	0	0	0	1	0	0	0	0	4
Savannah	0	0	0	0	0	4	0	1	0	0	31
Florida:											
Miami	0	0	2	0	0	1	1	0	0	20	22
St. Petersburg	0		0		0	0	0		0		7
Tampa	0	0	0	0	0	2	1	1	0	8	17
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	4	0	4	0	1	0	0	0	0	20
Tennessee:											
Memphis	4	7	4	0	0	7	1	2	0	11	76
Nashville	2	6	0	0	0	7	1	1	1	4	45
Alabama:											
Birmingham	1	2	6	0	0	3	1	1	0	13	56
Mobile	0	0	0		0	0	0	0	0	0	20
Montgomery	0	0	0	0			0	0		2	
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	0	0	0			0	0		0	
Little Rock	1	3	0	0	0	1	0	[1]3	0	0	
Louisiana:											
New Orleans	5	64	0	0	0	18	2	9	1	1	155
Shreveport	0	2	1	0	0	0	0	0	1	0	26
Oklahoma:											
Tulsa	1	0	2	3			0	0		8	
Texas:											
Dallas	2	10	2	1	0	4	0	0	0	0	42
Fort Worth	2	6	5	3	0	3	1	0	0	0	46
Galveston	0	0	1	0	0	2	1	0	1	0	20
Houston	2	2	1	0	0	3	0	1	1	0	58
San Antonio	1	0	0	1	0	11	0	1	0	0	96
MOUNTAIN											
Montana:											
Billings	0	0	1	0	0	0	0	0	0	0	9
Great Falls	1	0	1	0	0	0	0	0	0	1	8
Helena	2	0	0	0	0	0	0	0	0	0	1
Missoula	1	0	0	0	0	1	0	0	0	0	8
Idaho:											
Boise	0	0	0	1	0	0	0	0	0	1	6
Colorado:											
Denver	12	5	1	0	0	9	0	0	0	5	86
Pueblo	1	0	0	0	0	1	0	0	0	0	9

[1] Nonresident.

City reports for week ended May 11, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
MOUNTAIN—con.											
New Mexico:											
Albuquerque	0	1	0	0	0	6	0	0	0	0	15
Utah:											
Salt Lake City	2	1	2	2	0	0	0	0	0	11	25
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	7
PACIFIC											
Washington:											
Seattle	8	7	4	3	----	----	0	1	----	58	----
Spokane	4	4	6	1	----	----	0	0	----	11	----
Tacoma	2	3	3	7	0	2	0	0	0	5	21
Oregon:											
Portland	6	5	7	6	0	1	0	0	0	0	----
Salem	0	0	0	1	0	0	0	0	0	0	----
California:											
Los Angeles	26	35	6	3	0	30	1	2	0	25	282
Sacramento	1	13	0	0	0	2	0	0	0	11	31
San Francisco	16	55	1	2	0	17	1	0	0	16	138

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	1	1	0	0	0	0	0	0	0
Worcester	0	0	0	0	0	1	0	0	0
Rhode Island:									
Providence	1	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	21	12	5	1	0	0	1	2	0
New Jersey:									
Newark	1	0	0	0	0	0	1	0	0
Pennsylvania:									
Philadelphia	2	2	0	0	0	0	0	0	0
Pittsburgh	1	1	1	2	0	0	0	0	1
EAST NORTH CENTRAL									
Ohio:									
Cleveland	3	1	1	2	0	0	0	0	0
Columbus	1	1	0	0	0	0	0	0	0
Toledo	0	2	1	1	0	0	0	0	0
Illinois:									
Chicago	15	6	1	0	0	0	0	1	0
Springfield	1	0	0	0	0	0	0	0	0
Michigan:									
Detroit	40	16	0	2	0	0	1	0	0
Flint	5	4	0	0	0	0	0	0	0
Wisconsin:									
Milwaukee	6	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	1	0	0	0	0	0	0	0	0
Missouri:									
Kansas City	4	5	0	0	0	0	0	0	0
St. Louis	8	3	0	0	0	0	0	0	0
Kansas:									
Wichita	1	0	0	0	0	0	0	0	0

City reports for week ended May 11, 1929—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
SOUTH ATLANTIC									
Virginia:									
Norfolk	0	0	0	1	0	0	0	0	0
Richmond	1	0	0	0	0	0	0	0	0
North Carolina:									
Wilmington	1	0	0	0	0	0	0	0	0
Winston-Salem	0	0	0	0	1	1	0	0	0
South Carolina:									
Columbia	0	0	0	0	0	1	0	0	0
Georgia:									
Atlanta	5	3	0	0	0	0	0	0	0
Savannah [1]	0	0	0	0	2	0	0	0	0
Florida:									
Tampa [1]	0	0	1	0	0	0	0	1	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	0	0	1	0	0	0	0	0	0
Nashville	0	0	0	0	1	0	0	0	0
Alabama:									
Birmingham	0	0	0	0	1	2	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	1	1	0	0	5	0	0	0	0
Shreveport	0	0	0	0	0	3	0	0	0
Oklahoma:									
Tulsa	1	0	0	0	0	0	0	0	0
Texas:									
Dallas	0	0	0	0	1	2	0	0	0
MOUNTAIN									
Montana:									
Great Falls	1	0	0	0	0	0	0	0	0
Colorado:									
Denver	3	0	0	0	0	0	0	1	0
New Mexico:									
Albuquerque	2	1	0	0	0	0	0	0	0
Utah:									
Salt Lake City	2	1	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	5	0	0	0	0	0	0	0	0
California:									
Los Angeles	2	3	0	0	0	0	1	1	0
San Francisco	4	4	0	0	0	0	0	0	0

[1] Typhus fever: 2 cases; 1 case at Savannah, Ga., and 1 case at Tampa, Fla.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended May 11, 1929, compared with those for a like period ended May 12, 1928. The population figures used in computing the rates are approximate estimates, authoritative figures for many of the cities not being available. The 98 cities reporting cases have estimated aggregate populations of more than 31,000,000. The 91 cities reporting deaths have nearly 30,000,000 estimated population. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, April 7 to May 11, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Apr. 13, 1929	Apr. 14, 1928	Apr. 20, 1929	Apr. 21, 1928	Apr. 27, 1929	Apr. 28, 1928	May 4, 1929	May 5, 1928	May 11, 1929	May 12, 1928
98 cities	124	146	135	139	136	130	[2] 136	125	[3] 140	123
New England	118	168	143	131	111	133	81	133	[4] 119	113
Middle Atlantic	166	210	198	204	194	172	190	171	[5] 205	178
East North Central	126	116	122	116	143	131	159	107	[6] 151	109
West North Central	83	102	112	80	85	84	77	78	104	55
South Atlantic	71	90	66	88	58	94	69	96	64	90
East South Central	75	42	7	42	54	56	20	35	27	42
West South Central	126	162	103	126	130	101	103	81	91	93
Mountain	61	133	70	80	78	133	[2] 65	80	52	71
Pacific	67	74	60	102	60	56	75	125	40	102

MEASLES CASE RATES

98 cities	827	1,336	900	1,361	842	1,284	[2] 932	1,421	[3] 869	1,379
New England	642	1,727	502	1,743	566	1,593	500	1,322	[4] 491	1,120
Middle Atlantic	160	1,744	146	1,829	153	1,868	165	2,273	[5] 185	2,261
East North Central	1,943	997	2,025	816	1,962	727	2,319	793	[6] 2,140	787
West North Central	1,655	864	2,123	990	1,711	1,021	1,775	892	1,548	941
South Atlantic	465	2,173	761	2,455	536	1,810	435	2,235	521	1,781
East South Central	129	814	54	1,480	20	1,297	129	610	41	814
West South Central	241	434	182	385	289	401	356	397	379	340
Mountain	192	744	209	762	366	842	[2] 472	753	296	1,143
Pacific	329	525	389	394	389	386	297	266	436	328

SCARLET FEVER CASE RATES

98 cities	271	223	269	252	296	267	[2] 301	255	[3] 285	254
New England	319	301	244	284	294	329	280	345	[4] 264	347
Middle Atlantic	224	274	224	288	246	313	245	303	[5] 211	285
East North Central	372	193	417	271	451	281	467	254	[6] 437	265
West North Central	242	278	215	289	281	276	261	219	277	243
South Atlantic	122	161	90	168	97	222	114	186	244	172
East South Central	183	42	143	112	109	161	224	147	129	126
West South Central	237	130	233	166	225	109	285	150	320	186
Mountain	165	239	70	213	122	204	[2] 83	275	52	115
Pacific	387	123	384	151	407	110	357	154	292	205

SMALLPOX CASE RATES

98 cities	12	20	9	22	13	25	[2] 12	14	[3] 11	18
New England	2	0	0	0	0	0	0	0	[4] 2	0
Middle Atlantic	0	0	0	0	0	0	0	0	[5] 0	0
East North Central	20	24	11	31	17	28	15	15	[6] 18	20
West North Central	8	49	10	61	13	68	13	31	27	43
South Atlantic	4	11	2	11	2	33	0	15	0	17
East South Central	7	28	0	21	0	98	20	14	27	63
West South Central	79	16	12	8	24	28	43	36	8	8
Mountain	78	151	44	168	26	151	[2] 120	106	26	159
Pacific	10	74	62	59	82	43	40	31	40	36

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1929, and 1928, respectively.
[2] Helena, Mont., and Boise, Idaho, not included.
[3] Pawtucket, R. I., Camden, N. J., Indianapolis, Ind., and Racine, Wis., not included.
[4] Pawtucket, R. I., not included.
[5] Camden, N. J., not included.
[6] Indianapolis, Ind., and Racine, Wis., not included.

Summary of weekly reports from cities, April 7 to May 11, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Apr. 13, 1929	Apr. 14, 1928	Apr. 20, 1929	Apr. 21, 1928	Apr. 27, 1929	Apr. 28, 1928	May 4, 1929	May 5, 1928	May 11, 1929	May 12, 1928
98 cities	12	5	10	6	8	4	[2] 8	6	[3] 11	8
New England	9	9	7	7	5	5	7	2	[4] 12	5
Middle Atlantic	7	5	8	6	4	3	5	4	[5] 3	2
East North Central	11	1	4	3	4	2	3	3	[6] 7	3
West North Central	25	8	10	6	12	6	10	2	31	8
South Atlantic	13	4	24	10	17	6	11	15	15	21
East South Central	20	21	7	21	20	7	27	0	27	28
West South Central	43	20	43	20	36	24	32	28	55	16
Mountain	0	0	0	0	0	0	[2] 9	0	0	18
Pacific	7	3	10	3	7	0	10	15	7	31

INFLUENZA DEATH RATES

91 cities	15	31	15	29	13	33	[2] 8	33	[3] 10	34
New England	7	9	9	7	7	14	2	21	[4] 2	16
Middle Atlantic	14	27	11	26	12	34	6	28	[5] 8	31
East North Central	15	27	14	28	6	35	5	36	[6] 7	42
West North Central	6	37	18	61	12	46	18	80	3	64
South Atlantic	17	33	21	17	13	33	11	23	17	10
East South Central	30	123	15	92	30	54	30	115	37	107
West South Central	32	92	53	46	45	37	8	25	28	37
Mountain	17	53	9	53	52	44	[2] 19	35	26	27
Pacific	23	13	13	13	13	17	16	7	13	17

PNEUMONIA DEATH RATES

91 cities	139	213	127	204	118	204	[2] 124	213	[3] 108	219
New England	127	177	115	166	145	138	106	189	[4] 91	258
Middle Atlantic	161	243	134	243	130	246	136	265	[5] 123	268
East North Central	126	199	119	191	99	214	125	211	[6] 95	232
West North Central	114	263	108	233	111	135	126	193	105	181
South Atlantic	165	212	146	187	127	178	109	189	109	86
East South Central	163	176	155	238	96	222	170	230	148	245
West South Central	93	241	81	200	93	191	93	92	97	166
Mountain	113	186	122	106	87	106	[2] 167	159	87	133
Pacific	98	88	157	81	125	125	75	74	98	98

[2] Helena, Mont., and Boise, Idaho, not included.
[3] Pawtucket, R. I., Camden, N. J., Indianapolis, Ind., and Racine, Wis., not included.
[4] Pawtucket, R. I., not included.
[5] Camden, N. J., not included.
[6] Indianapolis, Ind., and Racine, Wis., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities of each group, approximated as of July 1, 1929 and 1928, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1929	1928	1929	1928
Total	98	91	31,568,400	31,052,700	29,995,100	29,498,600
New England	12	12	2,305,100	2,273,900	2,305,100	2,273,900
Middle Atlantic	10	10	10,809,700	10,702,200	10,809,700	10,702,200
East North Central	16	16	8,181,900	8,001,300	8,181,900	8,001,300
West North Central	12	9	2,712,100	2,673,300	1,736,900	1,708,100
South Atlantic	19	19	2,783,200	2,732,900	2,783,200	2,732,900
East South Central	6	5	767,900	745,500	704,200	682,400
West South Central	8	7	1,319,100	1,289,900	1,285,000	1,256,400
Mountain	9	9	598,800	590,200	598,800	590,200
Pacific	6	4	2,090,600	2,043,500	1,590,300	1,551,200

FOREIGN AND INSULAR

MENINGITIS ON VESSEL

Steamship President Lincoln.—The S. S. *President Lincoln*, which left Manila April 6, 1929, for San Francisco, stopping at Chinese and Japanese ports and Hawaii, reported 21 cases of meningitis, 3 fatal, among steerage passengers between Yokohama and Honolulu. The remaining 18 patients were put ashore at Honolulu, in addition to 20 passengers with elevated temperatures who were regarded as intimate contacts of meningitis cases. The ship arrived at San Francisco May 1, with one fatal case of meningitis on board. One case of meningitis developed May 2 among passengers detained at the quarantine station.

CANADA

Provinces—Communicable diseases—Week ended May 4, 1929.—The Department of Pensions and National Health reports cases of certain communicable diseases from eight Provinces of Canada for the week ended May 4, 1929, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis	5			4	1		2		12
Influenza			3	10					13
Lethargic encephalitis					1				1
Poliomyelitis					1				1
Smallpox			4	40	1	1	3	7	56
Typhoid fever		1	8	3			1		13

Quebec Province—Communicable diseases—Week ended May 11, 1929.—The Bureau of Health of the Province of Quebec reports cases of certain communicable diseases for the week ended May 11, 1929, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	4	Mumps	23
Chicken pox	23	Scarlet fever	87
Diphtheria	37	Smallpox	3
German measles	19	Tuberculosis	84
Influenza	5	Typhoid fever	8
Measles	158	Whooping cough	20

CHINA

Meningitis.—During the week ended May 11, 1929, 12 cases of meningitis, with 11 deaths, were reported at Canton, China. During the same week 1 case and 1 death occurred at Hong Kong. At Shanghai, during the week ended May 18, there were 18 admissions to the hospital and 19 deaths from meningitis.

ITALY

Communicable diseases—Four weeks ended January 13, 1929.—During the four weeks ended January 13, 1929, communicable diseases were reported in the Kingdom of Italy as follows:

Disease	Dec. 17-23, 1928		Dec. 24-30, 1928		Dec. 31, 1928–Jan. 6, 1929		Jan. 7-13, 1929	
	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected
Anthrax	22	14	22	21	22	21	26	22
Cerebrospinal meningitis	3	2	9	9	4	3	9	8
Chicken pox	224	83	297	90	224	99	310	97
Diphtheria	392	234	499	259	375	229	368	225
Dysentery	1	1						
Lethargic encephalitis	6	6	3	3	4	4	6	6
Measles	1,027	184	1,867	217	1,137	181	1,433	229
Poliomyelitis	7	7	6	6	6	5	1	1
Scarlet fever	297	120	336	147	250	119	297	132
Smallpox	2	2	2	2				
Typhoid fever	344	187	402	219	275	172	294	173

LATVIA

Communicable diseases—March, 1929.—During the month of March, 1929, communicable diseases were reported in Latvia as follows:

Disease	Cases	Disease	Cases
Anthrax	1	Poliomyelitis	1
Diphtheria	44	Puerperal fever	3
Erysipelas	31	Scarlet fever	115
Influenza	1,933	Trachoma	55
Measles	100	Typhoid fever	41
Meningococcus meningitis	12	Typhus fever	1
Mumps	337	Whooping cough	142

LIBERIA

Monrovia—Yellow fever.—According to a dispatch from the American minister at Monrovia, Liberia, dated April 17, 1929, deaths from yellow fever during the present outbreak in Monrovia have occurred in both natives and foreigners. Steps have been taken by the Government to combat the *Aëdes aegypti* (*Stegomyia*) mosquito, and screening protection is being provided. Several Americans have accepted accommodations at the headquarters of a rubber company on their plantation about 45 miles from Monrovia, and have received injections of an immunizing vaccine.

MEXICO

Tampico—Communicable diseases—April, 1929.—During the month of April, 1929, certain communicable diseases were reported in Tampico, Mexico, as follows:

Disease	Cases	Deaths	Diseases	Cases	Deaths
Chicken pox	1		Measles	4	1
Diphtheria	5	1	Tuberculosis	34	22
Enteritis (various)		101	Typhoid fever	3	2
Influenza	1		Whooping cough	4	
Malaria	18	11			

PHILIPPINE ISLANDS

Meningitis.—One fatal case of meningitis, occurring in an American soldier, was reported at Manila during the week ended May 18, 1929.

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

From medical officers of the Public Health Service, American consuls, health section of the League of Nations, and other sources. The reports contained in the following table must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given:

CHOLERA

[C indicates cases; D, deaths; P, present]

Place		Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Week ended— February, 1929		March, 1929					April, 1929				May, 1929	
					16	23	2	9	16	23	30	6	13	20	27	4	11
Ceylon	C	------	7	------	------	------	2	2	------	------	------	------	------	------	------	------	------
	D	------	4	------	------	------	2	2	------	------	------	------	------	------	------	------	------
Colombo	C	------	3	2	------	------	------	------	------	------	------	------	------	------	------	1	------
	D	------	1	------	------	------	------	------	------	------	------	------	------	------	------	------	1
China: Canton	C	------	3	------	------	------	------	------	1	1	1	------	1	------	1	------	1
	D	------	1	------	------	------	------	------	------	------	------	------	1	------	1	1	1
India	C	23,528	17,038	12,566	2,193	1,881	1,766	1,787	1,905	------	------	------	------	------	------	------	------
	D	14,950	10,507	7,912	1,280	1,092	1,007	1,046	993	------	------	------	------	------	------	------	------
Bassein	D	1	------	6	2	1	1	2	1	3	12	29	26	47	23	22	------
Bombay	C	4	------	1	------	------	------	------	1	------	4	1	------	------	------	------	------
	D	4	------	------	------	------	------	1	------	------	1	1	------	------	------	------	1
Calcutta	C	247	103	129	43	56	72	90	108	155	154	135	154	------	------	------	------
	D	155	61	85	30	31	40	43	56	83	79	89	96	97	109	159	------
Madras	C	102	16	4	2	3	1	3	------	------	------	------	------	------	------	------	------
	D	42	17	5	1	------	3	------	------	------	------	------	------	------	------	------	------
Madras Presidency	C	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	D	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Moulmein	D	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Negapatam	C	1	6	18	1	1	1	1	4	1	1	1	------	4	1	1	------
	D	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Rangoon	C	5	6	15	1	4	5	3	3	6	5	1	------	------	------	------	------
	D	3	5	9	------	1	4	1	2	6	28	1	4	2	2	2	------
Tuticorin	C	2	115	85	5	1	------	------	------	------	------	------	------	------	------	------	------
	D	------	61	52	2	2	------	------	------	------	------	------	------	------	------	------	------
India (French):																	
Chandernagor	C	25	4	------	------	------	------	------	1	1	1	------	1	------	2	------	------
	D	10	4	------	------	------	------	------	1	1	1	------	1	------	------	------	------
Karikal	C	7	54	150	28	10	28	22	14	6	------	------	3	------	------	------	------
	D	4	41	128	21	8	21	21	12	3	------	------	3	------	------	------	------
Pondicherry Province	C	37	92	139	29	18	29	10	30	12	4	------	------	------	------	------	------
	D	30	55	104	24	18	24	8	24	10	4	------	------	------	------	------	------

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

CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place		Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Week ended— February, 1929		March, 1929					April, 1929				May, 1929	
					16	23	2	9	16	23	30	6	13	20	27	4	11
Indo-China (see also table below):																	
Pnompenh	C	1	6	2	7	22	12	1	------	2	3	1	3	8	3	1	------
	D	1	1	1	5	20	10	1	------	1	3	1	1	5	2	1	------
Saigon	C	------	6	6	------	------	------	------	2	5	5	------	3	3	3	4	------
	D	------	4	3	------	------	------	------	------	1	------	1	2	1	3	2	------
Kwangchow-Wan (see table below).																	
Siam	C	104	224	195	39	43	41	42	50	74	117	156	175	85	114	245	------
	D	68	150	138	26	32	22	37	33	59	73	104	119	61	86	138	------
Anthoang	C	------	4	1	3	------	------	------	------	------	------	------	------	------	------	------	------
	D	------	1	1	2	------	------	------	------	------	------	------	------	------	------	------	------
Ayudhaya	C	2	16	4	------	------	4	------	------	------	1	------	2	------	3	24	------
	D	2	14	4	------	------	4	------	------	------	1	------	2	1	3	13	------
Bangkok	C	18	22	50	17	19	12	13	10	14	3	11	15	16	41	29	------
	D	12	6	43	12	7	5	12	7	9	1	4	10	13	31	20	------
Chaxoengsao	C	------	------	9	------	1	------	------	------	------	------	------	------	------	------	------	------
	D	------	------	9	------	1	------	------	------	------	------	------	------	------	------	------	------
Dhannapuri	C	6	16	3	1	1	1	------	------	------	------	------	2	------	------	15	------
	D	5	10	2	------	1	------	------	------	------	------	------	1	------	------	6	------
Lobpuri	C	------	74	------	2	------	------	1	------	------	------	------	1	------	------	------	------
	D	------	61	------	1	------	------	------	------	------	------	------	1	------	------	------	------
Nagara Pathom	C	------	------	------	------	------	------	2	------	------	------	------	------	------	------	36	------
	D	------	------	------	------	------	------	2	------	------	------	------	------	------	------	20	------
Nondpuri	C	1	4	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	D	1	2	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Pradhumdham	C	------	------	1	------	------	------	------	------	------	------	------	------	------	------	------	------
	D	------	------	1	------	------	------	------	------	------	------	------	------	------	------	------	------
Singhapuri	C	------	17	6	1	------	------	------	------	------	------	------	------	------	------	------	------
	D	------	12	7	1	------	------	------	------	------	------	------	------	------	------	------	------
Smud Prakar	C	37	30	10	1	------	------	------	------	------	------	------	------	------	------	------	------
	D	28	10	8	------	------	------	------	------	------	------	------	------	------	------	------	------
Smud Sagara	C	34	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	D	16	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

Place		Oct. 1928	Nov. 1928	Dec. 1928	Jan. 1-10	Jan. 11-20	Jan. 21-31	Feb. 1-10	Feb. 11-20	Feb. 21-28	Mar. 1-10	Mar. 11-20	Mar. 21-31	Apr. 1-10	Apr. 11-20
On vessel:															
S. S. Ekma at Penang from Singapore	C							P							
S. S. Media, at Colombo from Calcutta	C													1	
S. S. Tilawa at Penang from Singapore	C								P						
S. S. Elephanta at Penang from Calcutta	C									P					
Indo-China (French) (see also table above):															
Annam	C	11	5									3	3		13
Cambodia	C	25	21	25	26	25	28	29	40			26	3		40
Cochin-China	C	52	156	697	232	202	226	107	115			13	170		51
Kwangchow-Wan	C		1												

Place		Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Week ended Feb. 16, 1929	Feb. 23, 1929	Mar. 2, 1929	Mar. 9, 1929	Mar. 16, 1929	Mar. 23, 1929	Mar. 30, 1929	Apr. 6, 1929	Apr. 13, 1929	Apr. 20, 1929	Apr. 27, 1929	May 4, 1929	May 11, 1929	May 18, 1929
Argentina: [1]																		
Buenos Aires [2]	C										1	1						
	D										1	1						
Catamarca Province—Recreo	C	9																
Cordoba Province—Laborde	C		1															
Jujuy Province—Perico	C		1	3														
Rosario	C	4	2	1						[3] 20								
Tucuman Province—El Mollar	C	5																
Azores: St. Michaels Island	C		2	1						1								
Belgian Congo:																		
Djugu	C			1	3			1										
	D			1				1										
Lenza	C	1	1															

[1] During the period from Nov. 10 to Dec. 11, 1928, 13 cases of plague were reported at El Mollar, Tucuman Province, Argentina. During the same period 1 case of plague was reported at Chipion and 1 at Ucacha, both in Cordoba Province, Argentina.
[2] 18 plague-infected rats were reported at Buenos Aires, Argentina, from July 1 to Dec. 31, 1928.
[3] Unofficial report.

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

PLAGUE

[C indicates cases; D, deaths; P, present]

Place		Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Week ended— February, 1929		March, 1929					April, 1929				May, 1929		
					16	23	2	9	16	23	30	6	13	20	27	4	11	18
Brazil:																		
Para	C			1														
Santos	C	2																
British East Africa (see also table below):																		
Uganda	C	124	155	152	36	27	22	27	18	20	34	58						
	D	121	152	149	35	27	20	26	17	19	31	57						
Canary Islands:																		
Teneriffe	C	1																
Laguna	C			1														
Ceylon:																		
Colombo	C	4	8	6	2			2		2	2		2	2	1			
	D	4	8	5	2			1				1	1	2	1			
Plague-infected rats		5		2	2				2				1					
China:																		
Hainan	C			P		1	P											
Suyuan Province	C			P		1	P											
Dutch East Indies:																		
Celebes—Makassar	D		1															
Plague-infected rats				1														
Java—																		
Batavia and West Java	C	43	54	74	16	16	24	14	21	17	13		1					
	D	42	53	73	16	16	23	14	21	16	14							
Plague-infected rats		1					2	2		2		3	5	3				
East Java and Madura	C								1	1								
	D								1	1								
Surabaya	C	1		6														
	D			6														
Kediri Residency	C			P														
Ecuador (see table below).																		
Egypt:																		
Alexandria	C			3													1	
	D			1														
Beni-Suef	C	4	9	3				4	2				1	5		1		
	D	1	2	3				1	1	1				1		1		

Daqahliya	C																		
Girga	C	1																	
Kena Province	C	4															1	1	1
Port Said	C																	1	
Suez	C						1			1	1								
Greece (see also table below):																			
Corfu	C	1																	
India	C	7,767	7,841	12,600	3,767	4,030	4,970	3,803	4,259										
	D	4,863	5,234	9,815	2,896	2,867	3,528	2,773	3,021										
Bassein	D		1	4	2	1			1	2	2	1		2		1			
Bombay	C	4		2		2	2		1	3	2	2							
	D	6		4	1	1	1	1	1	3	1	1	3	1		1			
Plague-infected rats		32	35	38		8	12	18	9	17	18	13	18	20	26	17			
Cochin	D		10																
Madras Presidency	C	686	500	434	103	90	87	53	50	43	32								
	D	307	231	235	49	58	52	30	32	27	18								
Rangoon	C	1	1	4	1	1	2			3	5	4							
	D	1	2	5	1	1	2			3	3	3	6	4		3			
Plague-infected rats				5	1	4	3	3	2	2	6	5	3	1	2	4			
Indo-China (see also table below):																			
Pnompenh	C	4	8	10	2		1	2	3	2	4	1		3	5				
	D	4	6	9	1		1	1	3	2	4	1		3	5				
Saigon	C					1													
Tourane	C				5														
Iraq:																			
Baghdad	C	10	9	6		1	6	3	4	5	2		1	1	2	4	5		
	D	5	8	3			3			2	1		1	1	2	3	2		
Plague-infected rats				6	6	6	5	5	3	2	2	7	2						
Naudham	C			2															
	D			1															
Plague-infected rats				1															
Madagascar (see also table below): Tamatave	C		2	1															
	D	1						2											
Morocco	C									22	59	25		19					
	D									14	43	16		12					
Nigeria:																			
Lagos	C	43	12	14	2	4	5		1	1	1			1	1				
	D	41	11	12	2	4	5		1	1	1	1		1	1				
Plague-infected rats		30	28	48	10	16	15	9	13		3								
Peru (see table below).																			
Senegal (see table below).																			
Siam	C	9	4	45	3	4	1	1		2	4	1	5	1					
	D	8	3	17	2	5	1	1		2	4		3						
Bangkok	C		4	1		1											1		
	D		1	2		1											1		
Nagara Pathom	C					2	1				4		1		1				
	D					1	1				4		1		1				
Panknampo	C																		
	D	8													1				
Straits Settlements: Singapore	C					1									1				
	D					1													

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

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Week ended—													
					February, 1929		March, 1929					April, 1929				May, 1929		
					16	23	2	9	16	23	30	6	13	20	27	4	11	18
Syria (see table below).																		
Union of South Africa:																		
Cape Province	C	1	4								1							
Orange Free State	C		1	6	1	1			P	1	2							
	D			1							2							
Transvaal	C		3							5	3							
	D									5	3							
Uruguay:																		
Montevideo	C										4							
Rivera	C		1															
On vessel:																		
S. S. Chenonceaux, at Singapore, from Colombo	C									1								
	D									1								
S. S. Halydan, at Bangkok, from Singapore	C		1															
S. S. Soudades, at Hamburg, from Rosario, Argentina—Plague-infected rats													2					
S. S. Sjomand, at Alexandria, from Batoum	C			1														
S. S. Sumatra, at Osaka from Bombay	C													1				

Place		November, 1928	December, 1928	January, 1929	February, 1929	March, 1929	April, 1929
British East Africa (see also table above):							
Kenya	C	16	15	7	4	10	------
Uganda	C	------	------	------	------	121	------
	D	------	------	------	------	113	------
Ecuador: Guayaquil	C	21	20	25	54	26	------
	D	8	7	12	22	4	------
Plague-infected rats		29	75	29	27	14	------
Greece (see also table above)	C	1	2	3	------	------	------
	D	1	1	1	------	------	------
Indo-China (see also table above)	C	------	------	11	------	3	2
Madagascar (see also table above)	C	------	282	233	348	196	------
	D	------	263	224	335	194	------
Ambositra Province	C	14	79	169	164	------	------
	D	14	74	159	164	------	------
Antisirabe Province	C	6	4	15	21	------	------
	D	6	4	15	21	------	------
Itasy Province	C	6	11	3	10	------	------
	D	6	11	3	10	------	------
Moramanga Province	C	32	28	22	7	------	------
	D	32	27	21	4	------	------
Tamatave	C	2	2	4	------	------	------
	D	2	2	4	------	------	------

Place		November, 1928	December, 1928	January, 1929	February, 1929	March, 1929	April, 1929
Madagascar—Continued							
Tananarive Province	C	159	158	208	146	------	------
	D	141	144	192	136	------	------
Peru	C	18	26	37	------	------	------
	D	6	6	9	------	------	------
Senegal:							
Baol [1]	C	18	4	------	------	6	------
	D	6	2	------	------	3	------
Cayor [1]	C	------	14	------	------	------	------
	D	------	10	------	------	------	------
Dakar [1]	C	------	------	------	------	------	5
	D	------	------	------	------	------	4
Louga [1]	C	2	------	------	------	------	------
	D	1	------	------	------	------	------
Rufisque [1]	C	8	------	------	------	------	------
	D	4	------	------	------	------	------
Thies [1]	C	11	------	------	8	4	20
	D	------	------	------	7	3	20
Tivaouane [1]	C	------	------	------	12	------	------
	D	------	------	------	2	------	------
Syria: Beirut	C	3	------	------	------	------	------

[1] Reports incomplete.

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

SMALLPOX

[C indicates cases; D, deaths; P, present]

Place		Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Week ended— February, 1929		March, 1929					April, 1929				May, 1929		
					16	23	2	9	16	23	30	6	13	20	27	4	11	18
Algeria:																		
Algiers	C	1										3		4				
Cherchell	C					4	11	6	11	19	12		1					
Oran	C	7					1			1			1	1				
Arabia: Aden	C	1	1	2					1	11	9	9	28	17	19	5		
	D									1	4	3	6	4	6	4		
Brazil (see table below).																		
British East Africa (see also table below), Kenya—Mombasa	C		3															
British South Africa:																		
Northern Rhodesia	C	67	173															
	D	8	23															
Southern Rhodesia	C	5		1	1	16				68	1							
Tanganyika	C			13	1		1	1										
Canada:																		
Alberta	C	21	3	3		2	2	1			7			5		3		
Calgary	C							1								2		
Edmonton	C		14	2		2			2			10		4		1		
British Columbia—Vancouver	C	25	51	66	17	14	21	18	22	17	18	7	12	19	8	7		
Manitoba	C	29	23	21	2	5	3	5			3				1	1		
Winnipeg and vicinity	C	17	2															
New Brunswick	C										3							
Nova Scotia	C		5	2									1					
Ontario	C	15	36	83	38	23	15	7	12	21	14	10	15	37	21	40		
Niagara Falls	C									1								
North Bay	C	1			1	2		1							2	1	1	
Ottawa	C	2				1												
Toronto	C			1						1		1	1					
Windsor	C														3		3	
Prince Edward Island	C			2				2										
Quebec	C	125	37	24	6	14	3	5	4	3	2	5	11	8	11	4	3	
Montreal	C	3	8	10	3	10	2	1	3		1				3	1		
Quebec	C	6	4	8						1		2	1					
Riviere du Loup	C												1					

Saskatchewan	C	52	14	35	13	22	31	4		13				9	3	1			
Moose Jaw	C	1								1									
Regina	C	2	1	6															
Saskatoon	C			4						1									
China:																			
Amoy	C	2	5	P	1	1	1	2	1	1	1								
Canton	C	14	18	87	17	25	15	29	22	42	38	33	29	21	19	16	25		
	D		2	2	3	1	2	9	3	4	4	4	2	3	5	2	2		
Chefoo	C	P																	
Foochow	C	P	P	P	P	P	P	P	P	P		P							
Hong Kong	C	202	319	307	47	54	51	37	26	31	22	13	21	16	11	5	8		
	D	78	152	286	61	59	84	42	51	47	29	10	39	36	15	7	6		
Manchuria—																			
Changshun	C			3		2							1						
Fushun	C			5															
Harbin	C	4	2	5															
Kwantung—Dairen	C	5		2	1	4	3	1				1	6	2	2				
	D			2	1		2						3		1				
Mukden	C		1	3								1							
	D			1															
Shanghai—																			
Foreigners only	C	6	23	23	3	4	1	3	1	1	1	1	1						
Including natives	D	32	64	60	9	9	10	12	3	8	5	9	7		5	2			
Swatow	C						5	4	12	7	6	8	22	32	20				
Tientsin	C	2	6	3		1		1	2		2	4	2						
Tsingtao	C				P	P	P		P		P	P	P						
Yunnanfu	C								P	P	P	P							
Colombia: Cartagena	D	7				7													
Curacao (alastrim)	C													1					
Dominican Republic	C			1															
Dutch East Indies:																			
Balikpapan	C					1			1	4					3				
Belawan Deli	C	6	7	26	4	3	1	1	2	2	2	1	1		3				
	D	2	3	6	3	2	1			1	1								
Borneo	C			30		13		13											
Samarinda	C	27	11	4		17	3	27	1			1		1					
	D	4	3			3	1			3									
Celebes—Makassar	C	1									4	2	6	9	10				
	D											2	5	4	7				
Java—																			
Batavia and West Java	C	1																	
Surabaya	C	2																	
Palembang	C				1		8												
	D				1		1												
Sumatra—																			
Baros	C		96	106	3	19	13	1		9									
	D		30	26	1	3	1												
Medan	C	3	9	11	4	3	1	1	2	2	2	1							
	D	1	5	5	3	2	1		1	1	1								

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

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Week ended— February, 1929		March, 1929					April, 1929				May, 1929		
					16	23	2	9	16	23	30	6	13	20	27	4	11	18
Ecuador (see table below).																		
Egypt:																		
Gharbieh	C				1													
Port Said	C			1														
Suez	C	1												1	4			
France (see table below).																		
Great Britain:																		
England and Wales	C	719	733	890	231	275	288	289	272	288	323	273	339	374	354			
Bradford	C	1		1		1		1		3				1				
Bristol	C			1														
Cardiff	C	1		4								1	1					
Castleford	C	8	16	48	22	31	12	20	13	17	17	9	5	14	5			
Hull	C	1		2														
Leeds	C	2	1	3	1	1	3	1	1	3	3	1	1	1	1			
Liverpool	C			1								1						
London	C	14	36	40	9	17	10	18	11	13	19	15	29	49	56			
London and Great Towns	C			433	92	102	107	124	123	131	193	151	206	250	203			
	D		1						2			1	1	2	2			
Newcastle-on-Tyne	C	3		6	2		3	1	2			14	1					
Nottingham	C	3	3	1					2									
Stoke-on-Trent	C	11	4	14	5	4	4	5	4	28	20	20	42	30	27			
Scotland—																		
Aberdeen	C													1	1			
Dundee	C	1																
Glasgow	C											1	12	6	1			
Greece (see table below).																		
Hedjaz	C		48	153	29	42	37			24	30	30	23	22	13	9	23	
	D		15	56	13	15	12			10	21	21	16	14	10	12	13	
India	C	5,902	7,877	12,531	3,528	3,520	3,937	3,905	4,205									
	D	1,602	2,143	3,045	860	788	847	790	873									
Bombay	C	11	34	158	44	93	112	148	142	119	94	86	104	57	85	69		
	D	4	21	78	32	37	49	70	58	52	51	45	46	30	48	51		

Calcutta	C	13	10	32	13	9	11	71	35	32	22	28	34	24	25	18		
	D	7	6	16	6	7	7	9	24	21	13	19	26	16	16	16		
Karachi	C		6	5	28	24	49	46	43	57	58	48	29	57	33	25		
	D			223	7	4	11	22	14	13	10	33	8	22	17	12		
Madras	C	58	94	35	60	56	68	76	88	96	104	104	107	87	70	63		
	D	16	25	6	13	6	18	24	11	23	23	26	20	26	22	16		
Moulmein	C	5	3	2	4		5	5	5	3	5	5		1	3	3		
	D	1	1					4	2		1	1		1	3	2		
Negapatam	C	33	8	26	2	2		1	4	3		2	1		3	3		
	D	5		6	2	1		1				1						
Rangoon	C	1	1	8	4	6	2	5	3	2	4	3	2		1			
	D			1	1	1	2	2	1	2		1			1			
Tuticorin	C			2		1									1			
Vizagapatam	C		2	8	12	4	17	19	8	3	15		9	4	11	4		
	D				2		3	4	1	2	2		1	4		3		
India (French): Pondicherry Province	C	48	75	59	18	26	16	19	6	21	23	20	21	11	12			
	D	46	62	51	14	22	12	13	6	17	18	19	19	8	11			
Indo-China (see also table below):																		
Pnompenh	C	44	38	77	19	15	18	10	13	19	27	9	9	19	9	3		
	D	20	21	42	10	8	11	7	5	10	14	4	5	13	4	2		
Saigon	C		12	5		1	1		1		1	1	1			1		
	D		6	1														
Iraq:																		
Baghdad	C	46	20	17	4	2	1		2	3		1	2	1	1	2		
	D	45	29	3	4	1				1								
Basra	C	35	11	18	4	2		1	2	1	1	5	2	1		2	2	
	D	26	7	10	3	1		1			1	1		1		2	1	
Hillah Liwa	C		54	20														
	D		14	9														
Kirkuk Liwa	C	173	86		9	9												
	D	38	17		2	2												
Mossoul	C	294	55	30	14	14												
	D	110	39	17	2	2												
Sinjar	C		53	61														
	D		5	15														
Italy:																		
Palermo	C	3	3															
Rome and vicinity	C		1	2														
Turin	C				1													
Ivory Coast (see table below).																		
Jamaica (outside Kingston) (alastrim)	C		1											1			1	
Kingston (alastrim)	C	1																
Japan:																		
Kobe	C						1											
Nagasaki	C			3														
	D			2														
Osaka	C						1											
Shimane Province	C										16							
Macao	D		9	24	24	24	12	15	6	3	14	9	9	6	3	2		

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

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Week ended— February, 1929		March, 1929					April, 1929				May, 1929		
					16	23	2	9	16	23	30	6	13	20	27	4	11	18
Mexico:																		
Aguascalientes	D	2	1	3		3				2		5	1	6		2		
Chiapas Province	C										P							
Chihuahua	D			1														
Jalisco (State): Guadalajara	D	4	1	8	4	2	1	1		2	4	7	3	1				
Juarez	D		5	1			1		3									
Mexico City and surrounding territory	C		7	2		2			1									
Oaxaca-Zacatepec	C													P				
Palomas	C						1											
Tampico	C					1				2								
Vera Cruz	D									2								
Morocco (see table below).																		
Nicaragua: Managua	C												P					
Nigeria:																		
Lagos	C								1									
Southern Provinces	C			162														
	D			31														
Norway: Stavanger	C												2					
Panama Canal Zone	C										P							
Poland	C	3	1	41									2					
	D			3														
Portugal (see also table below).																		
Lisbon	C		2	4					3				2		2			
Oporto	C										1			1		1		
Senegal (see table below).																		
Siam	C	8	19	2		3	1									47		
	D		2													6		
Bangkok	C	1																
Spain: Valencia	C					1	1			4	1							
Straits Settlements: Singapore	C		1	5	2		1				1							
Sudan (Anglo-Egyptian)	C	220	491	265	49	71	13	55	30	22	37	156	127	138	12	100	162	264
	D	42	57	34	13	14	11	16	6	2	6	15	17	3	3	3	5	48

Sudan (French) (see table below).																		
Sweden: Stockholm	C	1																
Syria (see table below).																		
Tunisia: Tunis	C	2	14				3	2						2				
Union of South Africa:																		
Cape Province	C	P																
Natal	C		1															
Transvaal	C											P						
Upper Volta	C			3	2		2				3	1	7					
On vessel:																		
S. S. Le Panto at Suez, Egypt	C															4		
S. S. Lopez-Lopez, at Suez	C												1					
S. S. Malwa, at Suez	C													1				
S. S. Mancar, at Suez, from Calcutta	C												1					
Tantalus (motor ship), at Amsterdam	C					3												
S. S. Tuscania, at Glasgow, from Bombay	C											P						

Place		October, 1928	November, 1928	December, 1928	January, 1929			February, 1929			March, 1929			April, 1929	
					1-10	11-20	21-31	1-10	11-20	21-28	1-10	11-20	21-31	1-10	11-20
Indo-China (see also table above)	C	100	144	243	74	130	107	128	236			200	361	500	155
Ivory Coast	C	1											4		
Senegal	C	2						80			17	8	45	50	7
	D							8			1	3	7	15	
Sudan (French)	C	32		2								26		10	9
	D	2										3			
Syria: Beirut	C	1	2	1		1		21	24	3		10	2	2	

Place		November, 1928	December, 1928	January, 1929	February, 1929	March, 1929	April, 1929
Angola	C			1			
Brazil: Porto Alegre	C	3					
British East Africa (see also table above):							
Kenya	C	37	31			23	1
Chosen: Chinampo	C				1		
Ecuador: Guayaquil	C	6	13	12	4	2	
	D	1	1	1	1		

Place		November, 1928	December, 1928	January, 1929	February, 1929	March, 1929	April, 1929
France	C		18	9	3	5	
Greece	C	6	6	8	5	2	
	D			1	1		
Morocco	C	2		7	11	8	
Persia	D		119	68	23	8	
Turkey	C			16	7		1
	D			6			

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

TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

Place		Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Week ended— February, 1929		March, 1929					April, 1929				May, 1929		
					16	23	2	9	16	23	30	6	13	20	27	4	11	18
Algeria:																		
Algiers	C								3	1		2	4	2	3			
Constantine Department	C			2	2			11	P	2								
Oran	C			5				2						2	1			
Bulgaria	C	9	5	7	3		19	17	7	18	10	5	5	16				
	D							2	1	3		1	1	1				
Sofia	C			1														
Chile: Valparaiso	C	1																
China:																		
Canton	C			2														
	D			2														
Hong Kong	C			1														
Manchuria—																		
Harbin	C	2																
Kwantung	C							1										
Chosen (see table below).																		
Czechoslovakia (see table below).																		
Egypt:																		
Alexandria	C								1						1			
Assouan Province	C				2													
	D				2													
Beheira Province	C				6	7						67	50					84
	D											9	9					18
Daqahliya Province	C	15	11						34									
	D	1	2															
Gharbieh	C			1		2												
	D					1												
Menoufieh Province	C													35				
Port Said	C																	1
Greece (see table below).																		

Ireland (Irish Free State):																		
Cork County	C						1											
Donegal County—Inishowen	C															1		
Dublin	C			1														
	D			1														
Kerry County—																		
Dingle	C								2						1	1		
Killarney	C							1					2					
Lithuania (see table below).																		
Mexico (see also table below):																		
Aguascalientes	D	2							3		2							
Chihuahua	D		1															
Mexico City, including municipalities in Federal District	C	12	9	11	1	3	1	2	1	1	2		3					
	D	1	2	3	1			1					1					
San Luis Potosi	D		1															
Morocco	C	16	4	20	6	10	1		7		6	6		8	8			
Palestine	C	12	2	3		2					2		1					2
Peru (see table below).																		
Poland	C	117	203	222	47	57	47	51	91	55	69	80	67	69				
	D	11	16	15	6	2	4	6	5	3	7	5	2	3				
Portugal: Oporto	C	1																
Rumania	C	42	167	173	42	32	70	67	62	60	49							
	D	1	11	23	3	7	8	10	7	5	9							
Tunisia	C	6		2	3				9		9	2	7	2	8			
Turkey (see table below).																		
Union of South Africa:																		
Cape Province	C	P	P	P	P	P	P	P	P	P	P	P						
Natal	C	P	2			2			P	P		P						
Orange Free State	C	P	P	P	P	P												
Transvaal	C		P	1								P						
Yugoslavia (see table below).																		

Place		November, 1928	December, 1928	January, 1929	February, 1929	March, 1929	April, 1929
Chosen:							
Chomulpo	C	1					
Seoul	C		3	4			
Czechoslovakia	C			6	7	41	
	D				1	1	
Greece: Athens	C	4	1	13	4		
	D			5			
Indo-China: Tonkin	C						2
Lithuania	C	4	11	32	24	62	101
	D			3	3	1	7
Mexico: Sonora (see also table above)	D			1			
Peru	C	8					
Turkey	C		19	1	3	11	3
	D				1		
Yugoslavia	C	17	7	15	13	7	
	D				2		

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

YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place		Nov. 18–Dec. 15, 1928	Dec. 16, 1928–Jan. 12, 1929	Jan. 13–Feb. 9, 1929	Week ended— February, 1929 16	23	March, 1929 2	9	16	23	30	April, 1929 6	13	20	27	May, 1929 4	11	18
Belgian Congo: Tumba	C														1			
Brazil:																		
Bahia	C		2								1							
	D		1								1							
Guaratingueta	C						[2] 1											
	D						[2] 1											
Para	D		2	1								5						
Pernambuco	C											4						
Rio de Janeiro [1]	C	2	2	16	13	11	21	47		59	61	66	57	51	39	33	24	22
	D		2	17	9	6	18	27		30	38	32	34	23	20	17	18	11
Sao Paulo	C			1														
	D			1														
Dahomey: Ouidah Military Camp	C	1																
Gambia: Bathurst	C	3																
	D	2																
Liberia: Monrovia	C			[2] 3			4	3	1	3	3	3	2					
	D			2			2	2	1		2	1						
On vessel:																		
S. S. Victoria, at Manaos, from Para, Brazil	C		1															
	D		1															

[1] 29 cases of yellow fever with 14 deaths were reported at Rio de Janeiro during January, 1929, mostly suburban.
[2] Imported.
[3] Suspected cases.