PUBLIC HEALTH REPORTS

VOL. 44 SEPTEMBER 6, 1929 NO. 36

CHLORO-PHENOL TASTES AND ODORS IN WATER SUPPLIES OF OHIO RIVER CITIES*

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For several years past, and particularly since the war, tastes and odors of such a nature as to identify them with the presence of phenols and allied substances have been experienced, with varying frequencies, in the water supplies of cities located on the inland waterway systems of the middle western and eastern portions of the United States. Tastes of a similar nature have appeared in water supplies located in other areas, both of this country and of Europe. In no instance, however, has this difficulty been more serious or affected larger groups of population than it has in the area adjoining and tributary to the upper portion of the Ohio River, which drains a highly industrialized region serving as a center of the coal, steel, and allied industries.

A search for the specific causes of the tastes and odors above described revealed the fact that during and since the war period the coke-producing industry has been abandoning the use of the older "beehive" ovens for burning coke and has been substituting for them modern by-product plants, from which valuable substances are recovered from the gases which formerly went to waste in the atmosphere. The residues from some of these recovery processes, notably those concerned with the manufacture of benzol and ammonia, have been found to contain very considerable amounts of tar, phenols, cresols, creosotes, and similar substances, which, when discharged into sources of water supplies, produce characteristic "medicinal" tastes and odors in them.[1] Although other classes of wastes, notably those derived from producer-gas plants, have been found to contain phenols and similar taste-producing substances, the total amounts of phenols resulting from the operation of coke by-product plants are so much greater than those produced by any other single industry, and their production takes place in such highly concentrated areas,

*Based on a discussion contributed to a symposium on phenol pollution, held at the annual meeting of the American Public Health Association, Chicago, Ill., October, 1928.

[1] These taste-producing substances will be designated hereafter by the single term, "phenols."

that a large share of the responsibility for the difficulties caused by wastes of this class logically has been attributed to them.

In the upper portion of the Ohio River Basin, and especially along the Ohio River proper, the situation has been aggravated by the fact that, in order to produce bacterially safe effluents for drinking purposes, municipal water purification plants are forced to resort to continuous chlorination of the water in addition to coagulation, sedimentation, and filtration. This condition is due primarily to the large volumes of untreated sewage that is being discharged into this river system at the present time. The addition of chlorine to water containing small amounts of taste-producing phenols has been found to intensify the tastes caused by these substances, probably owing to the formation of chloro-phenol and allied compounds which are known to have exceptional taste-producing properties.

In March, 1924, a report was prepared by Sanitary Engineer H. R. Crohurst, of the Public Health Service, giving the results of a survey which he made of the water supplies affected by tastes of phenol origin and of the industrial plants producing phenol-bearing wastes within the Ohio River Basin. In his report, 17 coke by-product plants were listed at that time as discharging wastes of this character into the Ohio and its tributaries. Later reports submitted by the departments of health of Pennsylvania, Ohio, West Virginia, and Kentucky, at a joint conference held in February, 1926, indicated that about the same number of plants as that above named were actively discharging phenol wastes at that time in this river basin.

Systematic records of the appearance of phenol tastes in Ohio River water supplies have been maintained, since late in the year 1921, by operators of municipal water purification plants located along the river. These records have been collected by the United States Public Health Service from time to time and brought together for comparison. A comparative summary of these records, showing the periods and, roughly, the relative intensities of phenol tastes observed in Ohio River water supplies, is shown graphically in Figure 1, which has been plotted from the records thus collected. In this diagram are shown also the approximate locations, with respect to the various water intakes, of coke by-product plants discharging phenol wastes into the Ohio River and its tributaries at intervals during the period 1924 to 1927, inclusive. It will be noted in this connection that of the 17 plants indicated as discharging phenol wastes in 1924, only four were stated as remaining actual contributors in 1927.[2] The reduction was brought about as the result of joint efforts of the authorities of the Ohio River States and by manufacturers, following conferences held in 1924, 1925, and 1926. The

[2] In a recent paper by Waring (see reference in footnote 3), he indicates that, in the autumn of 1928, this number had been further reduced to two plants, located, respectively, at Wierton and Follansbee, W. Va.

work thus accomplished has been described so fully elsewhere [1] that it is unnecessary here to discuss that phase of the subject.

On referring to Figure 1, it will be noted that up to the end of the year 1925 tastes of phenolic origin were present at frequent intervals and, during some periods, almost continuously, in the water supplies of East Liverpool and Steubenville, located, respectively, 43 and 65 miles downstream from Pittsburgh, and in those of Ironton and Portsmouth, located 326 and 355 miles downstream from the same point. At Ashland and Huntington, located short distances upstream from the Ironton-Portsmouth zone of the river, but about 240 miles downstream from Steubenville, the recorded tastes were considerably less both in frequency and intensity; likewise at Cincinnati, located about 106 miles downstream from Portsmouth. At Louisville, 130 miles downstream from Cincinnati, no tastes of phenolic origin were recorded until December, 1925, and January, 1926, when a wave of these tastes, of unusual intensity, extended down the river to this point.

Following the December-January phenol wave of the winter of 1925–26, a renewed cooperative effort was made by the States of Pennsylvania, Ohio, West Virginia, and Kentucky to bring about the elimination of phenol-bearing wastes from the Ohio River system. The results of this effort, which left only four recognized sources of phenol pollution in the Ohio River at the end of the year 1927, were evidenced, as is shown in Figure 1, by a well-marked diminution in the frequency and intensity of phenol tastes in Ohio River water supplies, the only outbreak of serious proportions during this period occurring in December-January of the winter of 1927–28. The change in the status of such tastes occurring after the winter of 1925–26 is further indicated by the following tabulation showing the months of the years 1924 and 1925, as compared with those of 1926 and 1927, in which tastes of phenolic origin were recorded in the water supplies of various Ohio River cities:

City	Total number of months in which tastes occurred	
	1924–25	1926–27
East Liverpool	11	4
Steubenville	24	3
Huntington	5	2
Ashland	3	3
Ironton	7	3
Portsmouth	13	8
Cincinnati	2	4
Total	65	27

[1] Waring, F. H.: Results Obtained in Phenolic Wastes Disposal under the Ohio River Stream Conservation Agreement. American Journal of Public Health, vol. 19, No. 7, July, 1929, pp. 758–770.

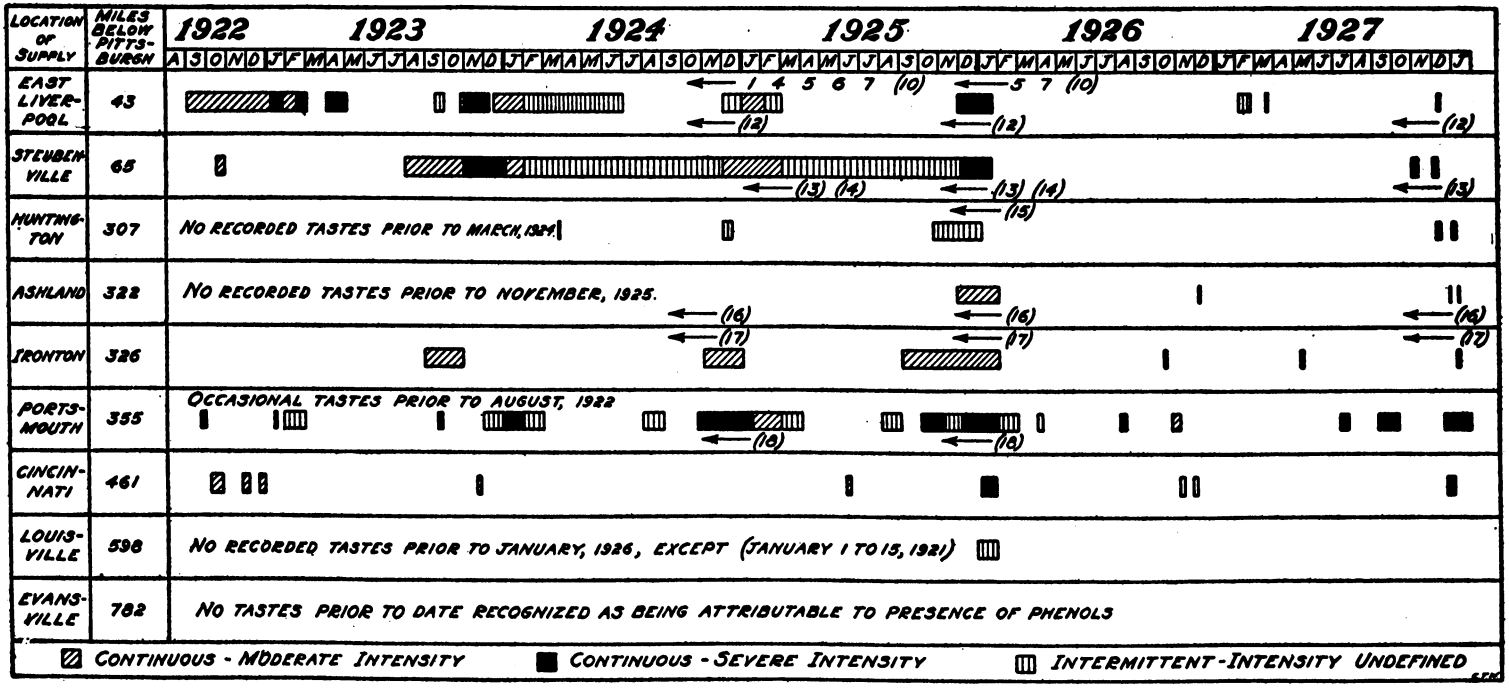
The figures given in the table fail to show the true contrast existing in the prevalence of tastes during the two periods indicated, because they do not take account of the greater intermittency and less intensity of such tastes during the later period. If these factors could be weighted properly, they probably would show that a reduction amounting to fully 90 or 95 per cent has taken place since the end of 1925.

Aside from the foregoing indications, the conditions illustrated in Figure 1 are of considerable scientific interest in that they afford fairly definite evidence that the concentration of taste-producing phenols in the river has had a marked tendency to become reduced progressively, in passing downstream, to a greater extent than can be accounted for by increased dilution or by any other wholly physical influence. The evidence at hand suggests very strongly, in fact, that a large part of the reduction observed is due to some natural process of purification, similar in its general mode of action to other phenomena commonly associated with the self-purification of streams.

The tendency above noted is indicated, broadly, (*a*) by the sharp reduction in the prevalence of phenol tastes observed in water supplies located at considerable distances downstream from sources of phenol pollution, as compared with their prevalence in supplies located in the more immediate vicinity of such sources of pollution, and (*b*) by the marked seasonal variations in the relative frequency and intensity of phenol tastes occurring in all of the Ohio River water supplies and especially in those further removed from sources of phenol pollution.

On referring to Figure 1 it will be noted that during concurrent periods phenol tastes occurred less frequently at Huntington, Ashland, Cincinnati, and Louisville, all of which were located at distances of more than 100 miles downstream from recognized sources of phenol pollution, than at East Liverpool, Steubenville, Ironton, and Portsmouth, which were located within short distances of such sources of pollution. The reduction observed has been particularly striking between Steubenville and Huntington, a distance of 242 miles, and between Portsmouth and Cincinnati, a distance of 106 miles. In the latter instance the reduction in the frequency of phenol taste prevalence, amounting to over 80 per cent, occurred in a river stretch in which the total amount of dilution water added to the Ohio, mainly through the Scioto River at Portsmouth, ordinarily is less than 10 per cent. In the former case, it likewise could be shown that the reduction experienced in the prevalence of phenol tastes was far greater than would be accounted for in terms of added dilution water.

It further will be noted in Figure 1 that although phenol taste-producing substances penetrated throughout the Ohio River as far as Cincinnati on several occasions during the winter and early spring, they did not appear during the summer or early autumn at any of the cities removed by any considerable river distance from points at which



Key to locations of coke by-products plants:

1. Fairmont, W. Va. 2. Clairton, Pa. 3. Johnstown, Pa. 4. Warren, Ohio. 5, 6, 7. Youngstown, Ohio. 8. Farrell, Pa. 9. Pittsburgh, Pa. 10. Midland, Pa. (11) Woodlawn, Pa. (12) Weirton, W. Va. (13) Follansbee, W. Va. (14) Benwood, W. Va. 15 Canton, Ohio. (16) Ashland, Ky. (17) Ironton, Ohio. (18) Portsmouth, Ohio. Numbers in parentheses refer to plants located directly on the Ohio River; numbers not in parentheses refer to plants located on tributaries.

FIGURE 1.—Graphical record of the appearance of phenol tastes in the water supplies of designated cities located on the Ohio River, with relative locations of coke by-products plants discharging phenol wastes into the Ohio River.

phenol wastes were discharged into the river. If dilution were a dominating factor in these variations, their trend would be expected to be exactly the opposite of that actually observed, since the maximum flow of the Ohio River occurs in the winter and early spring.

Although no data are at hand concerning the seasonal trend of production of phenolic wastes by coke by-product plants, it hardly would appear, from the nature of the industry, that such wastes could be produced in sufficiently greater volumes during the winter-spring season, as compared with the summer-autumn period, to account for the wide seasonal variations above noted.

The condition shown in Figure 1 is entirely consistent, on the other hand, with the view that the seasonal and geographic changes in

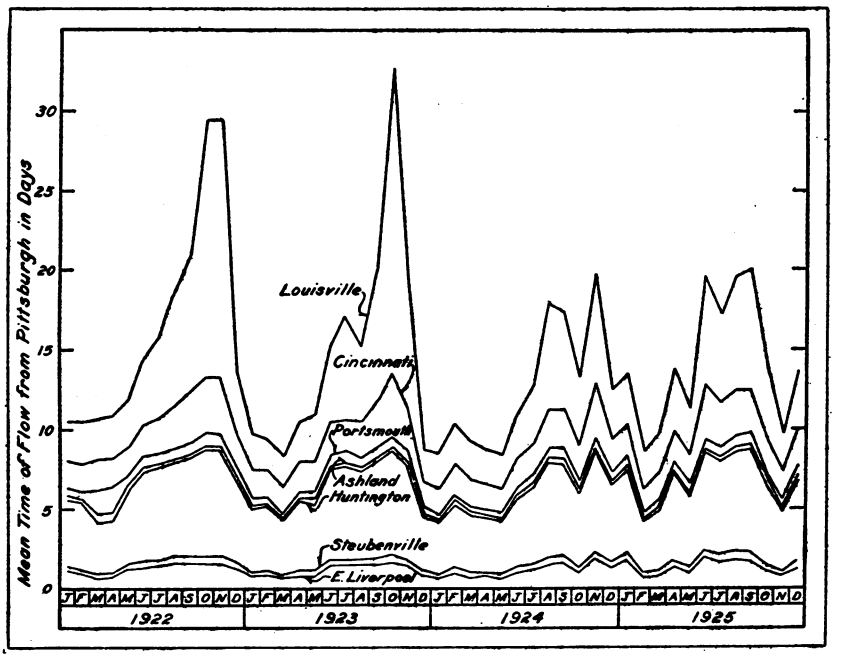


FIGURE 2.—Seasonal variations in times of flow of the Ohio River from Pittsburgh to designated cities downstream

phenol tastes prevalent observed in the various Ohio River water supplies have resulted largely from some natural process of purification which, though limited in its action, like all other processes of stream self-purification, is sufficiently powerful to bring about a marked progressive reduction in the density of phenols in stretches of the river relatively free from increments of pollution of this character. Thus, it is noted that the maximum reduction has occurred during the summer and early autumn seasons when the Ohio River usually reaches its lower stages, and the effect of longer times of flow, as illustrated in Figure 2, is accentuated by that of

higher stream temperatures. In general, the periods in which evidences of phenol pollution, as gauged by the appearance of tastes in water supplies, have penetrated to the downstream points far removed from the sources of such pollution, have occurred coincidentally with shortened times of flow, as indicated in Figure 2, and with relatively low stream temperatures, both of which conditions tend, in general, to bring about reduced natural purification effects in streams.[4]

In the foregoing connection reference may be made to recent studies by Mohlman [5] and his associates, which have shown that the oxidation of phenols, which can be accomplished by ordinary biological processes of sewage treatment when phenolic wastes are mixed in proper proportions with sewage, is essentially a biochemical phenomenon, proceeding along definite time-function curves at rates varying closely with the temperature, being greater at higher temperatures, and vice versa. As the behavior of phenols in the Ohio River has been consistent, except in degree, with their reactions to artificial processes of oxidation, it would seem quite logical to infer that the progressive reductions thus observed under natural conditions may be due to a process of natural biochemical oxidation similar, in its general characteristics, to that which proceeds more intensively under artificial conditions.

If the foregoing theory is correct, its lesson is fairly obvious in so far as its application to problems involving the elimination of sources of phenol pollution of water supplies is concerned. In cases in which water supplies are subject to continuous or frequent pollution by phenols, the important sources of such pollution are more likely to be found in the near vicinity of the supply than at any considerable distance. If, however, they are subject only to occasional pollution, occurring more especially during the colder season or, in streams, coincidently with high river stages, the source of the trouble probably is located at a more distant point. In undertaking any general program of remedial measures looking to the relief of phenol pollution of water supplies, located along an entire stream, the maximum immediate benefit of such measures probably will be attained by eliminating, first, all sources of phenol pollution located directly on the stream in question or in the lower reaches of tributaries discharging into the main stream above the points at which the water supplies affected are located. The history of phenol tastes in Ohio River water supplies, both during and following the institution of progressive remedial measures by the bordering States, has afforded an interesting confirmation of the principle stated, as is indicated in Figure 1.

[4] See Public Health Bulletin No. 143, pp. 298-335; Public Health Bulletin No. 171, pp. 179-199; Public Health Reports, Reprint No. 1063, pp. 31 and 45; also Reprint No. 1232, pp. 9-13.

[5] Mohlman, F. W.: The Biochemical Oxidation of Phenolic Wastes. Am. Jour. of Pub. Health, Vol. 19, No. 2, February, 1929, pp. 145-154.

The effectiveness with which the pollution of Ohio River water supplies by phenol wastes has been brought under a large measure of control within the comparatively short period of time intervening since the year 1925, constitutes one of the brightest pages in recent sanitary history. Accomplished, as it has been, without any coercive legislation, but through cooperative effort by the Federal and State Governments and the industries concerned, it augurs well for the future solution of some of the larger problems of stream pollution now confronting the Nation. Although pollution of the Ohio River system by phenol wastes has not been completely eliminated, as evidenced by occasional "spills" which have occurred during the past year or two, it has been curbed to an extent such as to justify the expectation that in the near future it will cease to be a major problem along this important waterway. A generous measure of credit is due to those whose joint efforts have brought about this fortunate result.

THE MALARIA-PARASITE INDEX OF SCHOOL CHILDREN IN LEFLORE COUNTY, MISS.

By M. A. Barber, *Special Expert*, and W. H. W. Komp, *Sanitary Engineer*, *United States Public Health Service*

Leflore County lies wholly within the Yazoo-Mississippi Delta, the level alluvial plain situated between the Mississippi and Yazoo Rivers. As regards topography and character of population, this county is fairly representative of the whole Delta region. Only about 20 per cent of the county was inundated during the flood of 1927.

All the malaria parasite surveys described in this paper were made in Leflore County, except that of Greenville, Miss., which was included as an additional representative of the rates obtaining in the larger towns of the Delta region. Our surveys were not made primarily for the purpose of obtaining a county-wide index, but their number and distribution over the county are such that they afford a fair basis for estimating the amount of endemic malaria. We used thick films in all surveys and examined all the preparations ourselves.

The results of our surveys are given in Table 1, where they are classified according to locality, race, and time of survey. We have arranged the surveys of 1925, 1926, and 1927 in one column, since there were not enough in 1926 or 1927 to warrant a separate classification. Those of 1926 (727 persons examined) gave a total percentage positive of 4.5. All the spring surveys were made in March, April, or May, and those of the autumn in October and November. In many of the schools the examination was repeated at different years or seasons; the personnel of the schools, however, was changing from year to year.

TABLE 1.—*Malaria-parasite index of certain schools in Leflore County, Miss.*

Group and school	1925, 1926, and 1927				Spring, 1928				Autumn, 1928				Spring, 1929			
	Date	Number examined	Number positive	Per cent positive	Date	Number examined	Number positive	Per cent positive	Date	Number examined	Number positive	Per cent positive	Date	Number examined	Number positive	Per cent positive
Rural white:																
Swiftown	February, 1926	69	2	3.0	April	66	1	1.5	October	84	6	7.1	March	77	3	3.9
	April, 1926	59	2	3.4												
	October, 1926	40	0	0.												
Itta Bena	April, 1925	19	1	5.3	May	65	3	4.6	October	75	1	1.3	May	50	1	2.0
Sidon					do	40	8	20.0	do	53	3	5.7	do	63	2	3.2
Money	February, 1925	26	0	0.	do	69	3	4.3	do	58	4	6.9	do	55	6	10.9
Morgan City	March, 1926	45	0	0.												
	October, 1926	52	1	1.9												
Minter City													May	59	5	5.1
Total rural white		310	6	1.9		240	15	6.3		270	14	5.2		304	15	4.9
Rural colored:																
Swiftown	March, 1926	75	7	9.3	April	58	9	15.5	November	83	11	13.3	March	99	5	5.0
Browning									October	35	2	5.7				
									November	46	4	8.7				
Morgan City									do	51	6	11.8				
Star West	April, 1925	50	5	10.0	April	117	17	14.5					April	77	7	9.1
Oakwood	March, 1926	62	6	10.0	do	53	13	24.5	November	61	18	29.5	March	68	7	10.1
Sidon	April, 1925	46	1	2.1	do	77	20	26.0	do	102	14	13.7	do	105	13	12.4
Union Chapel	November, 1927	9	3	33.3	March	8	1	12.5					April	10	4	40.0
Hog Bayou	do	39	15	38.5	do	52	19	36.5	November	52	17	32.7	March	64	14	21.9
Esther Chapel	do	8	5	62.5					do	8	1	12.5	April	17	3	17.6
Gin Bayou	March, 1927	22	2	9.1												
Boyd's Bayou	November, 1927	16	0	0.												
Hotellum	March, 1927	32	2	6.3												
Total rural colored		359	46	12.8		365	79	21.6		438	73	15.1		440	53	12.0
Urban white:																
Greenwood	April, 1926	29	0	0.												
	October, 1926	105	4	3.8												
Urban colored:																
Greenwood	do	101	3	3.0	April	98	4	4.1	October	100	2	2.0	May	64	3	4.7
Greenville	do	50	1	2.0	do	100	6	6.0								
Leflore County training school (colored)	April, 1925	50	4	8.0	do	159	12	7.5					May	65	4	6.2
	March, 1926	50	7	14.0												
Grand total		1,054	71	6.7		962	116	12.0		808	89	11.0		873	75	8.5

We have classified as "rural" in Table 1 certain schools situated in towns of a few hundred inhabitants. Itta Bena, a town of about 3,000, might be counted as urban; but there, as in all the smaller towns, a large proportion of the children examined came from country homes. Leflore County Training School (colored) is located in Itta Bena, but receives pupils from various localities and was therefore placed in a separate category. In Sion we examined only "transfer" children; that is, those brought by bus to a consolidated school from country neighborhoods. Greenwood and Greenville, cities of 10,000 inhabitants or more, are distinctly urban in character.

If all years and localities are taken together, the children of white rural, white urban, and colored urban schools show approximately the same rate. The colored rural, however, give a rate nearly four times as high as the others. Very high rates appear in some of the colored rural neighborhoods. Considering only schools in which the numbers examined were large enough to be significant, we find Hog Bayou with a parasite rate of 31.4 and Oakwood with 18, in both cases the average of four semiannual examinations. These rates are comparable with those we recently obtained among West Indian negroes in the coastal region of Panama. Other schools, notably Browning, a strictly rural neighborhood located not far from Hog Bayou, show comparatively low rates. As a rule, anopheline intensity was relatively high in the neighborhoods which had the higher parasite rates—it was particularly so in Hog Bayou; but it is difficult to explain all the variations by this factor alone.

Some noteworthy variations appear in the same school at different times. Sidon white (rural children only) gave 20 per cent positive in May, 1928, and only 3.2 a year later. Sidon, colored, gave only 2.1 per cent in April, 1925, and 26 per cent in April, 1928. Variations of less magnitude will be noted in other schools. There is much shifting of the population in the country, a factor which might influence the parasite rate of smaller schools. In general, however, the more marked seasonal variations were probably due to local epidemics. During 1927 and 1928 many houses in the southern part of the county were screened under the direction of Acting Assistant Surgeon C. P. Coogle of the Public Health Service. None of the neighborhoods we surveyed lies wholly within the screened area, however, and the screening work is too recent to affect greatly parasite rates. The flood of 1927, which visited the southern part of the county, does not seem to have left any appreciable mark on the malaria-parasite rate there.

No great difference appears between the spring and autumn rates of the same year. In the rural populations of the county thorough treatment of cases is the exception, and a large proportion of those found positive in the autumn carry their parasites over to the next spring.

Taken in the aggregate there seems to have been a measurable rise in the malaria parasite rate of the county between 1926, when the rate was only 4.5 per cent, and the spring of 1928, when it had reached 12.1. The groups surveyed at these two times are not exactly comparable, but the difference in the total is great enough to be significant. Subsequent to the spring of 1928 there seems to have been a slight decline.

The total number of examinations, including those of all localities and seasons, is 3,697, with a percentage positive of 9.5. The numbers examined and the percentage positive of the different groups are as follows: White rural, 1,124, 4.9 per cent; colored rural, 1,602, 15.6 per cent; white urban, 134, 4.0 per cent; colored urban, 513, 3.8 per cent; Leflore County Training School (colored), 324, 8.5 per cent. The population of the county is at the present time about 37,000, of which nearly 25,000 are rural according to the classification used in Table 1. About three-fourths of the rural population are negroes, so that rural negro children represent nearly one-half of the population of the county. The percentage positive of the remainder of the population, as represented by the rural and urban white, and negro urban groups, is 4.8. The average of this percentage and that of the rural negro children, 15.6, gives 10.2 as the children's parasite rate for all localities and seasons. This percentage is, of course, only an approximation, but may roughly represent the average rate obtaining during the past four years. The percentage obtained in the spring of 1929, 8.5, is but little lower.

A single survey of a group can reveal but a fraction of the people actually infected. If one repeats the examination of a group after an interval of a few days he usually finds positives among those apparently negative at the first examination. In order to get some idea of the relation of the index obtainable at a single survey to the actual number of carriers of parasites, we undertook a special experiment. We selected from four different schools a group of 51 negro school children, all positive in March or April, 1928, and reexamined them monthly, beginning with June, 1928, continuing the reexamination until April, 1929. The group received no special treatment for malaria during this time. The June reexamination gave only 41.3 positive among 46 children examined. However, a large proportion of those found negative in June showed parasites at some subsequent examination. If such positives be credited to the June examination the percentage positive of that month is raised from 41.3 to 87.0 per cent. They could be included there only on the supposition that the children were carrying parasites in June, but in numbers too few to be detectible in the peripheral blood. It is possible, however, that some of these children were reinfected during the summer of 1928. We may virtually eliminate this source of error by taking the December rate as a standard instead of that of June, because new infections

during the winter and early spring are unlikely. If we add to the December positives all the negatives of that month which became positive during the subsequent examinations of February, March, and April, the December index is raised from 27.5 to 48.3.

MacDonald [1] examined a group of 86 school children of Sierra Leone, West Africa, and obtained a parasite index of 47 per cent at a single examination. The negatives were reexamined daily, those remaining negative finally receiving seven examinations. The reexaminations increased the positive percentage to 85 per cent.

It appears that the number of carriers in these two groups is about twice that found positive at a single examination. It would not be justifiable, of course, to apply this or any other multiplier to all populations. In our experiment we dealt with a group of children who received but little treatment. A single examination of a group of persons who take quinine whenever they are ill might reveal much less than half of the carriers, for a treatment sufficient to "cure" an attack may merely reduce the number of parasites to such an extent that they are no longer detectible in the peripheral blood. The value of a single survey of a group is great, since it gives us a standard by which to compare population with population; but it must be realized that its value is relative, not absolute.

The clinical history of a group of carriers is a matter of interest. The 51 negro children employed in the experiment just described were visited twelve times at monthly intervals. Not every child could be seen at every visit, but the total number of individual examinations was 471, of which 196, or 41.6 per cent, were positive. Among these positives 77 per cent were of the estivo-autumnal type of malaria, the others nearly all benign tertian (*P. vivax*). In only 11 instances were children found ill with malaria at the time of a visit. Two children were twice found ill, so that the number of persons ill was only 9 out of the 51. No case was counted as malaria unless parasites were found in the blood.

About 55 per cent of the 51 children gave histories of attacks during the year. It was not always possible, of course, to determine whether an attack was due to malaria or to some other disease; and doubtless minor malaria attacks occurred which were never reported. One or two children were described by their parents as "puny." These were positive at nearly every visit.

Twelve persons were negative at five successive examinations and showed no parasites subsequently. There was no evidence that these "cures" were the result of any special treatment. It appeared from the testimony of the children and their parents that all the

[1] MacDonald, G.: Malaria in the Children of Freetown, Sierra Leone, Ann. Trop. Med. and Parasitol., 1926, XX, No. 3, pp. 239-262.

treatment the children received for malaria consisted of occasional doses of quinine, usually in the form of chill tonics. Few apparently ever consulted a physician, and doubtless the majority just "wore their chills out." Among the children from one neighborhood, Swiftown, not a positive was found after October, 1928; in another, Hog Bayou, the positive percentage diminished but remained high. It will be seen in Table 1 that the general school index of both these neighborhoods declined between the autumn of 1928 and the spring of 1929.

The great majority of these negro children seemed to be in usual health in spite of their parasites. A similar group of white children would probably have shown much more illness. In our visits to schools in the Delta we occasionally find a white child lying on a bench in the schoolroom ill with malaria. We have very rarely or never found a negro school child thus disabled, although positives among negro children are about three times as common as among the white. It seems that negroes in this region can "carry" their parasites better than white people.

In Leflore County and elsewhere we have found many examples of "family malaria;" that is, instances where the parasite index of certain families was much greater than that of the population in general. This family infection may persist in a given family from year to year, and may exhibit two or more types of malaria parasite. It did not appear that these malaria families were more exposed to *Anopheles* than were their neighbors; it seemed rather that the family, or some members of it, received less treatment or were less resistant to malaria than other people. Apparently families, like individuals, may be "puny" with respect to malaria infection.

Our survey of Leflore County illustrates the value of school surveys in showing definitely the localities where the higher malaria rates obtain. If the resources of the health officer are limited, as is frequently the case, it would seem advisable for him to attack the worst strongholds of the disease first. Families migrate from one plantation to another, and the improvement of a highly infected neighborhood would have good general results. Again we have seen how much the parasite index of an untreated neighborhood may vary from year to year or even between spring and autumn of the same year. Therefore one must take natural fluctuations in account in judging the results of a malaria control measure.

SUMMARY

Malaria parasite surveys in Leflore County, Miss., indicate a parasite index among colored rural school children of about 15.6 per cent. White rural, white urban, and colored urban show about 4.0 per cent.

There is considerable variation in the rates obtained during different years and in different localities. The number of parasite carriers among negro rural children is approximately double that detected at a single examination. Many malaria carriers, especially negro carriers, remain long periods of time without exhibiting severe illness, but cases of individual and family susceptibility to parasites are not uncommon.

CURRENT WORLD PREVALENCE OF COMMUNICABLE DISEASES [1]

The United States, June 30–August 3, 1929

The prevalence of certain important communicable diseases as indicated by weekly telegraphic reports from State health departments [2] to the Public Health Service is summarized below. This summary is prepared from the data published weekly in the Public Health Reports under the section entitled "Prevalence of Disease."

Meningococcus meningitis.—Although still relatively higher than in recent years, the meningococcus meningitis rate decreased considerably through the month of July. The number of cases reported in July was approximately 350 less than that reported in June—a decline of about one-third. Only Michigan failed to show a downward trend. There the number of cases had dropped to 12 in one week, but rose to 45 during the week ended August 3. In Illinois and Missouri, where the disease had been unusually prevalent, the incidence dropped slightly below a normal prevalence.

Poliomyelitis.—During the month of July, 49 cases of poliomyelitis were reported in Virginia, 38 in North Carolina, 26 in Tennessee, 50 in New York, 20 in California, and 12 in Michigan. The remaining cases, (77), were widely scattered over the various geographic divisions of the country, ranging from 1 to 7 in a State. It was apparent that the usual seasonal rise had begun, but the increase was not as rapid as in either of the two preceding years. The rate was practically on a level with the rate in 1926 for the same period.

Typhoid fever.—The seasonal increase of typhoid fever which began in June continued through the month of July. With the exception of a few Mountain States, (Arizona, Montana, and Wyoming), practically every State shared in the increase. The largest number of cases continued to be reported from the South Atlantic and East and West South Central States. The total number of cases, (2,864),

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

[2] The numbers of States reporting for the various diseases are as follows: Typhoid fever, 41; poliomyelitis, 43; meningococcus meningitis, 42; smallpox, 42; measles, 38; diphtheria, 42; scarlet fever, 41; influenza, 31.

compared very favorably with the number reported in July, 1928, and was approximately 1,600 and 1,750 less than was reported in 1927 and 1926, respectively.

Scarlet fever.—The incidence of scarlet fever continued to decrease during the month of July. The number of cases reported, (5,374), was approximately 500 below the average for the preceding three years.

Diphtheria.—The diphtheria incidence rate for the month of July closely approximated the rate for 1928, and was considerably below the rates for the years 1926 and 1927. There were 4,128 cases reported for the month.

Measles.—As usual, measles became much less prevalent during July. The total number of cases reported, (13,889), was approximately 3,600 less than occurred during the corresponding period in 1928. The incidence was, however, following the average for recent years very closely.

Influenza.—Influenza was less prevalent in July than during that month of any recent year. The cases reported were from widely separated geographic divisions, the majority being reported from the Great Lake States, States along the south Atlantic coast, and the West South Central States. Very few cases were reported from any other section of the country.

Smallpox.—As expected, the smallpox incidence declined very rapidly through the month of July, although the disease was considerably more prevalent than during the corresponding month of any of the three preceding years. The total number of cases for the month was 1,883. The lowest incidence of smallpox is usually recorded during the fall months.

Mortality from all causes.—The weekly mortality rate for large cities during July, as shown by the Bureau of the Census, averaged 10.7 per 1,000 inhabitants. This was a normal rate for this season of the year, and corresponded very favorably with the rate for the three preceding years.

Foreign Countries[3]

Cerebrospinal meningitis.[4]—The wave of meningitis which appeared in the United States in 1928 and 1929 apparently came somewhat later in foreign countries. In Europe there were minor increases over the normal in a few countries; but, in April, 1929, the League of Nations reported that it was "not unlikely that the disease is only beginning in Europe."

In the previous outbreak, from 1915 to 1918, the rise occurred earlier in Europe than in America.

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[3] Data from the Monthly Epidemiological Report of the Health Section of the League of Nations' Secretariat, Apr. 15, 1929, supplemented by information published in the Public Health Reports.

[4] Meningococcus meningitis.

In several countries of eastern Europe, (Poland, Ukraine, Latvia, and Estonia), reports for 1928 indicated an increase of the disease over the two preceding years. In Poland the number of cases continued to increase during 1929. During the first 20 weeks of the current year, there were reported 418 cases as compared with 358, and 227 cases during the same period in 1928 and 1927, respectively.

In England and Wales the disease became unusually prevalent during March, 1929, and was well above the normal level during April and May. In 1915 the mortality from meningitis rose to nearly five times its normal height and after remaining high for the two following years, gradually decreased until 1923. Since then it has continued low until the 1929 rise.

In Scotland the recent incidence of meningitis has been above the normal. More than three times the number of cases were reported up to about the middle of May than had occurred during the same period in 1928.

In Germany the number of cases, (514), reported for the first 20 weeks of the year was the highest number reported since 1923. The highest incidence was reached in March, after which the disease remained stationary.

In Italy the meningitis incidence rate was above the normal early in March and remained fairly high during the following month. The number of cases, (339), reported for the first 18 weeks of 1929 was the highest on record since 1918.

Meningitis was prevalent in Chinese ports in April and May. The epidemic was most severe in Shanghai, where during April and May 296 deaths were reported. On April 11 the Chinese Ministry of Health at Nanking reported 300 deaths from meningitis in that part of the town under Chinese administration. Similar outbreaks were reported from other ports. At Dairen, in the Kwantung Territory, 28 cases of meningitis were reported during the week ended May 25.

There was a small outbreak of meningitis on the island of Banka in the Dutch East Indies and sporadic cases were reported from other ports.

Periods of high incidence of meningitis recur at fairly long intervals. The incidence rate of 17.4 per 100,000 population, (annual basis), attained in the United States in March, was the highest rate since 1918. Reports are yet too incomplete to forecast to what height the present outbreak in European countries may rise.

Tularaemia.—Two tularaemia outbreaks occurred in the United Socialist Soviet Republics during 1928. In the Government of Riazan the first cases appeared early in May. The maximum incidence was reached about the middle of the month, and by the end of the month the disease had disappeared. Nine villages on the banks of the Oka River were infected. Approximately 800 cases were reported, and other cases probably escaped attention. Three of the cases were fatal.

The outbreak of tularaemia was reported to have occurred simultaneously with a flood and the appearance of large water rats. The skins of the rats were very valuable and many people were handling them. The disease did not spread from man to man. All persons affected had engaged in the capture of the rats, or had handled the skins from freshly killed rats.

At about the same time, eight villages in the Governments of Ural and Orenburg, along the Ural River, became infected. The number of cases reported was 105. The actual number of cases occurring was perhaps much higher, as the people tried to conceal the infection. Here, also, the disease occurred among peasants who handled water rats.

In both localities a large majority of the cases were among men, and occurred among persons between the ages of 10 and 35.

Laboratory experiments showed that man is very susceptible to tularaemia virus. Two cases each occurred in the Microbiological Institute of Saratov and the Bacteriological Laboratory of Uralsk.

Previous reports show that tularaemia outbreaks have occurred several times in the United Socialist Soviet Republics. In 1926 an outbreak was reported at Astrakhan, at the mouth of the Volga River, with a total of 300 cases reported.

DEATHS DURING WEEK ENDED AUGUST 24, 1929

Summary of information received by telegraph from industrial insurance companies for the week ended August 24, 1929, and corresponding week of 1928. (From the Weekly Health Index, August 28, 1929, issued by the Bureau of the Census, Department of Commerce)

	Week ended Aug. 24, 1929	Corresponding week, 1928
Policies in force	74, 298, 167	71, 607, 396
Number of death claims	11, 634	11, 342
Death claims per 1,000 policies in force, annual rate	8. 2	8. 3

Deaths from all causes in certain large cities of the United States during the week ended August 24, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928. (From the Weekly Health Index, August 28, 1929, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Aug. 24, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended Aug. 24, 1929 [3]
	Total deaths	Death rate [1]		Week ended Aug. 24, 1929	Corresponding week, 1928	
Total, (62 cities)	5,803	10.5	10.3	636	654	[3] 57
Albany [4]	32	13.9	11.7	3	4	50
Baltimore [4]	193	12.2	11.1	21	28	67
White	154			15	20	60
Colored	39	(5)	(5)	6	8	95
Birmingham	63	14.8	15.3	10	13	91
White	43			9	8	135
Colored	20	(5)	(5)	1	5	28
Boston	186	12.2	9.9	20	14	55
Bridgeport	23			2	2	35
Buffalo	148	13.9	11.6	14	18	60
Cambridge	23	9.6	11.2	4	3	72
Camden	30	11.6	7.7	4	4	69
Canton	27	12.1	5.8	3	0	71
Chicago [4]	573	9.5	8.9	52	63	46
Cincinnati	134			11	15	64
Cleveland	176	9.1	9.0	22	22	65
Columbus	69	12.1	13.5	7	7	66
Dallas	40	9.6	12.7	3	3	
White	31			3	2	
Colored	9	(5)	(5)	0	1	
Dayton	33	9.4	9.9	3	5	48
Denver	87	15.5	10.7	4	10	39
Des Moines	30	10.3	6.5	1	3	18
Detroit	288	10.9	9.5	45	40	72
Duluth	16	7.2	6.7	1	2	24
El Paso	30	13.3	14.6	5	7	
Erie	30			5	5	102
Fall River [4]	25	9.7	6.6	1	1	19
Flint	25	8.8	6.3	5	3	61
Fort Worth	22	6.7	9.8	3	4	
White	18			2	4	
Colored	4	(5)	(5)	1	0	
Grand Rapids	34	10.8	6.4	4	0	60
Houston	50			7	6	
White	36			5	4	
Colored	14	(5)	(5)	2	2	
Jersey City	59	9.5	8.5	6	11	46
Kansas City, Kans	30	13.3	13.7	2	4	44
White	20			1	4	25
Colored	10	(5)	(5)	1	0	179
Kansas City, Mo	94	12.6	11.2	12	7	101
Knoxville	26	12.9	12.4	2	5	44
White	21			2	5	49
Colored	5	(5)	(5)	0	0	0
Los Angeles	216			23	18	67
Louisville	102	16.2	9.5	16	7	130
White	78			11	6	102
Colored	24	(5)	(5)	5	1	315
Lowell	25			4	2	91
Lynn	19	9.4	10.9	1	2	27
Memphis	71	19.5	19.2	6	8	71
White	43			3	8	57
Colored	28	(5)	(5)	3	0	94
Milwaukee	77	7.4	7.8	11	8	48
Minneapolis	77	8.8	7.8	10	9	62
Nashville	55	20.6	14.2	12	7	194
White	32			11	6	239
Colored	23	(5)	(5)	1	1	63
New Bedford	18			1	5	21
New Haven	28	7.8	9.2	1	2	15
New Orleans	125	15.2	19.2	15	21	74
White	74			9	14	63
Colored	51	(5)	(5)	6	7	101

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended August 24, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928—Continued

City	Week ended Aug. 24, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended Aug. 24, 1929 [2]
	Total deaths	Death rate [1]		Week ended Aug. 24, 1929	Corresponding week, 1928	
New York	1,105	9.6	10.3	105	142	43
Bronx borough	149	8.2	9.0	10	6	30
Brooklyn borough	363	8.2	8.6	35	47	35
Manhattan borough	435	13.0	14.2	54	74	66
Queens borough	122	7.5	7.8	4	10	16
Richmond borough	36	12.5	12.1	2	5	36
Newark, N. J	86	9.5	9.6	10	10	53
Oakland	65	12.4	9.3	6	3	67
Oklahoma City	25			0	4	0
Omaha	49	11.5	13.1	6	7	70
Paterson	18	6.5	7.9	1	2	18
Philadelphia	366	9.3	9.6	42	30	50
Pittsburgh	150	11.6	11.6	29	23	100
Portland, Oreg	69			3	2	34
Providence	48	8.8	11.3	2	8	18
Richmond	36	9.7	10.5	2	7	28
White	18			1	2	21
Colored	18	[3]	[3]	1	5	41
Rochester	70	11.2	13.4	6	7	51
St. Louis	217	13.4	12.9	27	13	91
St. Paul	38			3	0	31
Salt Lake City [4]	26	9.9	7.2	3	2	46
San Antonio	67	16.1	11.5	16	4	
San Diego	31			4	2	77
San Francisco	118	10.5	13.4	6	3	38
Schenectady	9	5.0	10.1	0	1	0
Seattle	58	7.9	8.5	3	3	32
Somerville	15	7.6	6.6	0	1	0
Spokane	19	9.1	15.3	1	0	26
Springfield, Mass	31	10.8	6.6	1	3	17
Tacoma	17	8.0	9.0	0	2	0
Toledo	53	8.8	10.7	4	3	37
Trenton	30	11.3	11.3	5	3	91
Utica	19	9.5	12.5	0	2	0
Washington, D. C	105	9.9	11.9	18	17	105
White	54			9	9	76
Colored	51	[5]	[5]	9	8	170
Waterbury	16			3	4	76
Wilmington, Del	19	7.7	8.1	2	0	52
Worcester	42	11.1	10.1	2	4	25
Yonkers	23	9.9	6.9	6	4	140
Youngstown	29	8.7	7.8	4	0	57

[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 69 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: Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 24; 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 August 24, 1929, and August 25, 1928

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended August 24, 1929, and August 25, 1928

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928
New England States:								
Maine					7	16	1	0
New Hampshire	4	1		5		2	0	0
Vermont	1				1	2	0	0
Massachusetts	45	30	1	2	21	46	2	4
Rhode Island	5	4				16	0	0
Connecticut	9	9		1	17	11	0	1
Middle Atlantic States:								
New York	101	109	[1] 5	[1] 11	58	92	8	36
New Jersey	53	70	3		15	19	6	2
Pennsylvania	53	58			61	134	6	0
East North Central States:								
Ohio	26	17		2	15	24	5	1
Indiana	11	6		3	3	3	1	0
Illinois	80	70	4	2	51	24	4	10
Michigan	38	47		1	46	26	23	2
Wisconsin	19	7	11	10	30	19	4	1
West North Central States:								
Minnesota	15	22			3	6	1	1
Iowa	1	4			14		2	1
Missouri	10	19		2	6	12	8	4
North Dakota	6	5		2	8		0	5
South Dakota	2				2		0	0
Nebraska	1	3			7	5	0	0
Kansas	10	3		1	15	2	0	2
South Atlantic States:								
Delaware	1					1	0	1
Maryland [2]	16	18	5	2	1	13	1	0
District of Columbia	9	22				3	1	0
Virginia								
West Virginia	10	7		10	11	7	2	0
North Carolina	101	54				6	1	1
South Carolina	50	23	132	239			0	0
Georgia	19	10	25	53	1	5	0	1
Florida	6	12		25	2	2	0	2

[1] New York City only.

[2] Week ended Friday.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended August 24, 1929, and August 25, 1928—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928
East South Central States:								
Kentucky		14					0	0
Tennessee	16	6	11	8	6	3	0	3
Alabama	41	13	2	23	9	28	1	1
Mississippi	25	5		5				0
West South Central States:								
Arkansas	5	3	3	21	1	5	0	0
Louisiana	17	4	6	7		2	0	1
Oklahoma [1]	20	20	8	22	7	21	1	0
Texas	33	14	2	9	8	3	0	0
Mountain States:								
Montana	5	2			34	5	0	1
Idaho		1			3	1	0	1
Wyoming	1	2			2		0	0
Colorado	6	4			10	2	1	1
New Mexico	3	1				2	1	0
Arizona		1				4	1	0
Utah [1]		2	5	2		1	1	1
Pacific States:								
Washington	3	2			24	17	4	1
Oregon	2	4	2	4	9	8	0	0
California	38	46	9	7	23	11	8	3

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928
New England States:								
Maine	0	1	21	6	0	0	0	4
New Hampshire	0	1	0	4	0	0	2	1
Vermont	0	1	0	5	0	0	0	1
Massachusetts	6	32	44	37	0	0	16	14
Rhode Island	0	0	1	6	0	0	0	1
Connecticut	2	2	7	4	0	0	5	6
Middle Atlantic States:								
New York	30	96	51	45	6	0	70	64
New Jersey	1	8	16	12	0	0	18	15
Pennsylvania	6	12	66	55	0	0	19	36
East North Central States:								
Ohio	5	17	28	42	19	3	30	27
Indiana	0	0	21	9	5	13	12	32
Illinois	3	6	89	45	9	13	35	53
Michigan	5	1	71	62	29	7	7	17
Wisconsin	0	2	33	26	7	3	6	8
West North Central States:								
Minnesota	0	8	30	29	6	0	5	6
Iowa	1	1	15	13	1	0	22	3
Missouri	0	0	17	20	4	1	20	28
North Dakota	0	12	1	19	1	0	1	1
South Dakota	0	0	5	4	2	1	2	2
Nebraska	0	1	5	7	1	5	3	9
Kansas	1	2	16	19	4	7	11	23
South Atlantic States:								
Delaware	0	0	0	2	0	0	1	1
Maryland [2]	0	39	14	10	0	0	21	24
District of Columbia	0	0	2	1	0	0	4	0
Virginia	8	2						
West Virginia	3	24	15	8	1	1	25	30
North Carlonia	2	2	41	16	1	7	50	57
South Carolina	3	1	8	0	2	0	53	82
Georgia	1	1	15	7	0	0	42	40
Florida	2	0	0	2	0	0	1	19

[1] Week ended Friday.

[2] Exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended August 24, 1929, and August 25, 1928—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928	Week ended Aug. 24, 1929	Week ended Aug. 25, 1928
East South Central States:								
Kentucky	0	7	29	21	1	4	23	64
Tennessee	10	2	11	13	0	0	77	98
Alabama	0	0	24	9	0	1	28	79
Mississippi	1	0	8	7	0	0	31	46
West South Central States:								
Arkansas	0	0	8	1	0	2	23	43
Louisiana	0	0	7	5	0	0	26	28
Oklahoma [3]	1	0	17	9	1	8	58	95
Texas	1	0	8	5	17	0	40	8
Mountain States:								
Montana	0	13	5	5	7	13	7	2
Idaho	0	6	4	2	7	1	1	1
Wyoming	0	0	1	0	0	0	3	1
Colorado	0	9	5	11	2	0	6	9
New Mexico	0	0	1	2	2	0	25	9
Arizona	0	0	1	0	0	0	3	0
Utah [2]	0	0	2	6	2	0	3	2
Pacific States:								
Washington	0	16	5	2	12	5	7	2
Oregon	0	0	7	9	6	23	5	9
California	11	7	69	49	22	11	17	27

[2] Week ended Friday.
[3] Exclusive of Oklahoma City and Tulsa.

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
July, 1929										
Illinois	43	590	77	21	1,863	1	4	541	213	77
Iowa	----	18	----	2	62	----	0	90	135	15
Kansas	5	29	1	13	383	1	4	110	67	53
Louisiana	9	57	25	233	35	113	0	43	1	148
Maryland	2	42	11	3	53	4	4	105	0	61
Minnesota	10	45	4	1	258	----	7	132	10	25
Missouri	22	100	5	134	91	----	0	75	46	77
Nevada	----	----	----	----	----	----	----	----	7	----
North Carolina	7	106	----	----	13	41	38	97	35	196
Oklahoma [1]	6	29	55	553	38	118	0	34	54	174
South Carolina	----	71	351	1,940	15	1,239	7	32	10	378
South Dakota	3	19	----	----	22	----	----	20	98	3
Wisconsin	10	69	43	----	1,320	----	2	207	42	8

[1] Exclusive of Oklahoma City and Tulsa.

July, 1929

	Cases
Actinomycosis:	
Minnesota	2
Chicken pox:	
Illinois	393
Iowa	54
Kansas	48
Louisiana	1
Maryland	46
Minnesota	127
Missouri	57
Nevada	17
North Carolina	55
Oklahoma [1]	15
South Carolina	94
South Dakota	37
Wisconsin	357
Dengue:	
South Carolina	3
Diarrhea:	
Maryland	114
South Carolina	1,685

[1] Exclusive of Oklahoma City and Tulsa.

Dysentery:	Cases
Illinois	29
Kansas, (amebic)	1
Louisiana	12
Maryland	43
Minnesota, (amebic)	11
Oklahoma [1]	108
German measles:	
Illinois	30
Iowa	2
Kansas	11
Maryland	3
North Carolina	14
Wisconsin	13
Hookworm disease:	
Louisiana	9
South Carolina	129
Impetigo contagiosa:	
Maryland	7
Lead poisoning:	
Illinois	3
Leprosy:	
Louisiana	1
Lethargic encephalitis:	
Illinois	5
Kansas	1
Louisiana	1
Maryland	4
Minnesota	1
Wisconsin	4
Mumps:	
Illinois	173
Iowa	31
Kansas	103
Maryland	187
Missouri	45
Nevada	2
Oklahoma [1]	13
South Carolina	75
South Dakota	12
Wisconsin	112
Ophthalmia neonatorum:	
Illinois	63
Louisiana	1
Maryland	1
Missouri	1
Oklahoma [1]	2
South Carolina	10
Paratyphoid fever:	
Illinois	4
Kansas	4
Louisiana	1
North Carolina	2
South Carolina	15
Ptomaine poisoning:	
Kansas	1
Puerperal septicemia:	
Illinois	8
Rabies in animals:	
Illinois	8
Iowa	16
Maryland	4
Missouri	10
South Carolina	16
Rabies in man:	
Oklahoma [1]	1
Wisconsin	1

Rocky Mountain spotted or tick fever:	Cases
Nevada	4
South Dakota	1
Scabies:	
Maryland	1
Oklahoma [1]	11
Septic sore throat:	
Illinois	4
Kansas	1
Maryland	6
North Carolina	2
Oklahoma [1]	22
Tetanus:	
Illinois	12
Kansas	2
Louisiana	3
Maryland	5
Missouri	4
South Carolina	1
Trachoma:	
Illinois	6
Louisiana	1
Minnesota	1
Missouri	41
North Carolina	1
Oklahoma [1]	6
South Dakota	1
Wisconsin	1
Trench mouth:	
Maryland	2
Tularaemia:	
Kansas	1
Louisiana	7
Maryland	1
Nevada	17
Wisconsin	1
Typhus fever:	
Maryland	1
North Carolina	1
South Carolina	2
Undulant fever:	
Illinois	5
Iowa	15
Kansas	8
Louisiana	6
Maryland	2
Minnesota	10
South Carolina	2
Wisconsin	1
Vincent's angina:	
Iowa	1
Kansas	5
Maryland	1
Whooping cough:	
Illinois	1,240
Iowa	137
Kansas	383
Louisiana	46
Maryland	480
Minnesota	244
Missouri	429
Nevada	11
North Carolina	1,732
Oklahoma [1]	50
South Carolina	867
South Dakota	18
Wisconsin	1,084

[1] Exclusive of Oklahoma City and Tulsa.

PLAGUE INFECTED GROUND SQUIRRELS IN CALIFORNIA

The Director of Public Health of the State of California reports that on August 19, 1929, plague infection was proved by animal inoculation in a ground squirrel from a ranch 20 miles southeast of Monterey, Monterey County, Calif. The squirrel was shot August 13, 1929.

On August 20 plague infection was proved by animal inoculation in a ground squirrel from a ranch 18 miles south of Monterey. This squirrel was shot August 16, 1929.

POLIOMYELITIS IN VIRGINIA, 1929

The State health officer of Virginia reports cases of poliomyelitis in Virginia from January 1 to August 24, 1929, as follows:

Cases of poliomyelitis in Virginia, January 1–August 24, 1929

Locality	Jan. 1–May 31	June 1–30	July 1–31	Aug. 1–10	Aug. 11–17	Aug. 18–24	Total
Albemarle County	0	0	0	0	0	2	2
Alleghany County	1	0	1	0	0	0	2
Bedford County	0	1	0	2	0	0	3
Botetourt County	0	0	2	2	0	0	4
Franklin County	0	1	0	1	0	0	2
Giles County	0	0	2	0	0	0	2
Richmond City	0	0	2	2	0	1	5
Roanoke City	0	0	27	12	5	1	45
Roanoke County, (outside city)	0	0	10	5	0	0	15
Shenandoah County	0	0	4	1	0	0	5
Smyth County	0	0	0	1	1	0	2
Washington County	0	0	0	1	0	2	3
Scattering	1	1	5	6	5	2	20
Total	2	3	53	33	11	8	110

The epidemic in Roanoke appears to have reached its height during July. Only one case was reported in Roanoke City and County during the week ended August 24, 1929. The figures show no evidence of an epidemic elsewhere in the State.

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 30,800,000. The estimated population of the 87 cities reporting deaths is more than 29,225,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended August 17, 1929, and August 18, 1928

	1929	1928	Estimated expectancy
Cases reported			
Diphtheria:			
46 States	820	806	
94 cities	371	322	445
Measles:			
46 States	717	918	
94 cities	139	214	
Meningococcus meningitis:			
46 States	102	89	
94 cities	58	52	
Poliomyelitis:			
46 States	114	282	
Scarlet fever:			
46 States	794	665	
94 cities	233	175	251
Smallpox:			
46 States	225	113	
94 cities	41	2	9
Typhoid fever:			
46 States	821	1,090	
94 cities	117	150	170
Deaths reported			
Influenza and pneumonia:			
87 cities	341	318	
Smallpox:			
87 cities	1	0	
Flint, Mich	1	0	

City reports for week ended August 17, 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	0	1	2		0	0	0	2
New Hampshire:									
Concord	(1)	0	0	0		0	0	0	0
Manchester	85,700	0	0	0		0	0	0	0
Nashua	(1)	0	0	0		0	0	0	0
Vermont:									
Barre	(1)	0	0	0		0	0	0	0
Massachusetts:									
Boston	799,200	5	24	11		0	4	13	8
Fall River	134,300	1	2	0		0	2	0	2
Springfield	149,800	0	1	1		0	0	0	1
Worcester	197,600	0	3	0	2	0	3	0	1
Rhode Island:									
Pawtucket	73,100	1	1	0		0	1	0	0
Providence	286,300	0	3	3		0	3	0	3

[1] No estimate of population made.

City reports for week ended August 17, 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.									
Connecticut:									
Bridgeport	(1)	0	3	0		0	0	0	2
Hartford	172,300	0	3	0		0	0	2	3
New Haven	187,900	0	1	0		0	0	0	1
MIDDLE ATLANTIC									
New York:									
Buffalo	555,800	5	8	11		0	0	1	11
New York	6,017,500	8	89	65	10	5	18	26	84
Rochester	328,200	0	4	0		0	0	0	3
Syracuse	199,300	3	2	1		0	0	1	2
New Jersey:									
Camden	135,400	1	2	8	1	0	1	0	0
Newark	473,600	0	6	20	2	0	0	9	3
Trenton	139,000	0	1	0		0	8	0	0
Pennsylvania:									
Philadelphia	2,064,200	0	29	12		0	1	0	21
Pittsburgh	673,800	0	11	5		0	2	0	22
Reading	115,400	2	1	0		0	1	0	1
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	413,700	0	3	7		0	0	1	3
Cleveland	1,010,300	7	19	11	6	2	8	0	4
Columbus	299,000	0	2	1		0	0	0	1
Toledo	313,200	1	5	0		0	2	0	2
Indiana:									
Fort Wayne	105,300	0	1	2		0	0	0	3
Indianapolis	382,100		3						
South Bend	86,100	0	0	0		0	0	0	2
Terre Haute	73,500		1						
Illinois:									
Chicago	3,157,400	7	45	75	1	1	28	1	25
Springfield	67,200	2	0	1		0	0	0	1
Michigan:									
Detroit	1,378,900	2	26	23		0	7	1	11
Flint	148,800	3	2	1		0	1	0	1
Grand Rapids	164,200	1	1	0		0	2	0	1
Wisconsin:									
Kenosha	56,500	0	0	1		0	0	0	0
Madison	50,500	1	1	0		0	5	1	0
Milwaukee	544,200	2	8	11		0	3	5	1
Racine	74,400	1	1	0		0	0	0	0
Superior	(1)	0	1	2		0	0	0	1
WEST NORTH CENTRAL									
Minnesota:									
Duluth	116,800	1	0	0		0	1	1	1
Minneapolis	455,900	0	10	0		0	0	0	2
St. Paul	(1)	0	7	0		0	0	0	1
Iowa:									
Davenport	(1)	1	1	0		0	0	0	0
Des Moines	151,900	0	1	0		0	0	0	0
Sioux City	80,000	0	1	0			0	4	
Waterloo	37,100	0	0				0	0	
Missouri:									
Kansas City	391,000	0	2	0		1	1	0	2
St. Joseph	78,500	0	0	0		0	0	0	1
St. Louis	848,100	0	17	5		0	0	0	0
North Dakota:									
Fargo	(1)	0	1	0		0	0	0	0
Grand Forks	(1)	0	0	0		0	0	0	0
South Dakota:									
Aberdeen	(1)	0	0	0		0	1	1	0
Sioux Falls	(1)	0	0	0		0	0	0	0
Nebraska:									
Omaha	222,800	0	3	3		0	1	0	2
Kansas:									
Topeka	62,800	0	1	0	1	0	4	1	0
Wichita	99,300	0	0	4		0	0	2	2

[1] No estimate of population made.

City reports for week ended August 17, 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			
SOUTH ATLANTIC									
Delaware:									
Wilmington	128,500	0	0	1		0	0	0	1
Maryland:									
Baltimore	830,400	3	12	2	1	0	0	4	12
Cumberland	(1)	0	0	0		0	0	0	0
Frederick	(1)	0	0	0		0	0	0	0
District of Columbia:									
Washington	552,000	0	6	8	2	0	2	0	3
Virginia:									
Lynchburg	38,000	0	1	0		0	0	6	0
Richmond	194,400	0	5	3		0	5	0	1
Roanoke	64,000	0	2	6		0	0	0	0
West Virginia:									
Charleston	55,200	0	0	0		0	0	0	0
Wheeling	(1)	0	0	0		0	0	0	0
North Carolina:									
Raleigh	(1)	0	0	1		0	0	0	1
Wilmington	39,100	0	0	1		0	0	0	1
Winston-Salem	80,000	0	1	0		0	0	0	0
South Carolina:									
Charleston	75,900	0	1	0	16	0	0	0	3
Columbia	50,000	0	1	0		0	0	2	3
Georgia:									
Atlanta	255,100	0	2	1	3	0	1	0	4
Brunswick	(1)	0	0	0		0	0	0	0
Savannah	99,900		0						
Florida:									
Miami	156,700	0	1	3		0	0	0	1
St. Petersburg	53,300	0	0	0		0	0	0	0
Tampa	113,400	0	0	2		0	0	0	3
EAST SOUTH CENTRAL									
Kentucky:									
Covington	59,000	0	0	0		0	0	0	1
Louisville	329,400	0	2	3		0	0	0	4
Tennessee:									
Memphis	190,200		2						
Nashville	139,000	0	2	1		2	0	0	3
Alabama:									
Birmingham	222,400	0	2	4		0	0	0	6
Mobile	69,000	0	0	0		0	0	0	0
Montgomery	63,100	0	0	5			0	0	
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	(1)	0	0	0			0	0	
Little Rock	79,200	0	1	0		0	0	0	0
Louisiana:									
New Orleans	429,400	0	5	5	3	3	1	0	8
Shreveport	81,300	0	0	3		0	0	0	3
Oklahoma:									
Oklahoma City	(1)	0	0	0		0	0	0	1
Tulsa	170,500	0	1	4		0	0	0	0
Texas:									
Dallas	217,600	0	4	11		0	5	0	2
Fort Worth	170,600	0	2	2		0	0	0	3
Galveston	50,600	0	0	0		0	0	0	1
Houston	(1)	0	2	6		0	0	0	5
San Antonio	218,100	0	1	7		0	0	0	1
MOUNTAIN									
Montana:									
Billings	(1)	3	0	0		0	0	0	1
Great Falls	(1)	2	0	0		0	1	5	0
Helena	(1)	0	0	1		0	0	0	0
Missoula	(1)	0	0	0		0	0	0	0
Idaho:									
Boise	(1)	0	1	0		0	0	0	1

[1] No estimate of population made.

City reports for week ended August 17, 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—continued									
Colorado:									
Denver	294,200	5	9	2	----	2	4	2	1
Pueblo	44,200	2	1	1	----	0	0	0	0
New Mexico:									
Albuquerque	(1)	0	0	0	----	0	1	0	0
Utah:									
Salt Lake City	138,000	3	2	1	----	0	1	7	1
Nevada:									
Reno	(1)	0	0	0	----	0	0	0	0
PACIFIC									
Washington:									
Seattle	383,200	2	2	1	----	----	8	4	----
Spokane	109,100	0	1	0	----	----	3	0	----
Tacoma	110,500	2	1	0	----	0	3	0	1
Oregon:									
Portland	(1)	2	5	4	----	1	0	1	0
Salem	(1)	0	0	0	----	0	0	4	0
California:									
Los Angeles	(1)	11	24	5	6	0	5	7	13
Sacramento	75,700	1	1	0	----	0	0	0	2
San Francisco	585,300	2	10	7	----	1	0	4	7

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	0	1	0	0	0	1	1	0	0	2	14
New Hampshire:											
Concord	0	0	0	0	0	0	0	0	0	0	11
Manchester	1	0	0	0	0	0	0	0	0	0	17
Nashua	0	0	0	0	0	0	0	0	0	0	8
Vermont:											
Barre	0	0	0	0	0	0	0	0	0	0	2
Massachusetts:											
Boston	15	11	0	0	0	10	3	0	0	25	176
Fall River	1	1	0	0	0	2	1	1	0	8	30
Springfield	1	2	0	0	0	1	0	0	0	3	34
Worcester	2	2	0	0	0	7	0	1	1	5	37
Rhode Island:											
Pawtucket	0	1	0	0	0	0	0	0	0	0	14
Providence	2	2	0	0	0	0	1	1	0	2	50
Connecticut:											
Bridgeport	2	0	0	0	0	3	0	0	0	0	29
Hartford	1	2	0	0	0	1	1	0	0	2	42
New Haven	1	0	0	0	0	0	1	2	1	2	30
MIDDLE ATLANTIC											
New York:											
Buffalo	5	7	0	0	0	10	1	0	0	18	123
New York	28	15	0	0	0	75	36	26	5	56	1,159
Rochester	2	1	0	0	0	1	1	0	1	2	73
Syracuse	2	0	0	0	0	0	0	0	0	37	43
New Jersey:											
Camden	0	0	1	0	0	0	0	0	0	4	18
Newark	3	3	0	0	0	7	1	2	0	41	95
Trenton	0	1	0	0	0	3	1	0	0	4	32
Pennsylvania:											
Philadelphia	17	5	0	7	0	43	9	8	0	52	424
Pittsburgh	8	3	0	0	0	7	2	3	0	25	138
Reading	0	0	0	0	0	0	0	0	0	1	19

[1] No estimate of population made.

City reports for week ended August 17, 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		
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	4	6	0	0	0	10	2	0	0	6	109
Cleveland	11	3	0	0	0	10	5	3	0	76	158
Columbus	2	2	0	0	0	4	0	0	0	12	62
Toledo	3	2	0	0	0	3	3	1	0	18	59
Indiana:											
Fort Wayne	0	2	0	7	0	0	1	0	0	0	31
Indianapolis	2	----	1	----	----	----	2	----	----	----	----
South Bend	1	0	0	0	0	2	0	0	0	0	16
Terre Haute	0	----	0	----	----	----	0	----	----	----	----
Illinois:											
Chicago	23	32	1	0	0	54	6	3	0	143	611
Springfield	0	0	0	0	0	1	1	2	0	1	15
Michigan:											
Detroit	22	21	1	0	0	18	5	0	0	91	250
Flint	4	2	0	18	1	1	1	0	0	4	24
Grand Rapids	3	1	0	0	0	0	0	0	0	9	24
Wisconsin:											
Kenosha	0	0	0	0	0	1	0	0	0	8	7
Madison	0	0	0	0	0	0	0	0	0	8	----
Milwaukee	6	4	0	0	0	4	1	0	0	86	77
Racine	1	0	0	0	0	2	0	0	0	5	9
Superior	1	0	0	0	0	0	0	0	0	0	10
WEST NORTH CENTRAL											
Minnesota:											
Duluth	4	3	0	0	0	3	1	0	0	1	26
Minneapolis	12	3	0	1	0	4	1	0	0	8	77
St. Paul	5	2	1	0	0	2	2	0	0	27	44
Iowa:											
Davenport	0	0	0	1	----	----	0	0	----	1	----
Des Moines	2	1	0	0	----	----	0	2	----	0	31
Sioux City	0	0	0	0	----	----	0	0	----	2	----
Waterloo	0	1	0	0	----	----	0	0	----	1	----
Missouri:											
Kansas City	2	0	0	0	0	6	2	0	0	5	94
St. Joseph	0	0	0	0	0	2	1	0	0	0	16
St. Louis	8	5	0	1	0	7	7	2	0	26	166
North Dakota:											
Fargo	1	4	0	0	0	0	0	0	0	2	3
Grand Forks	1	2	0	0	----	----	0	0	----	0	----
South Dakota:											
Aberdeen	0	0	0	0	----	----	0	0	----	7	----
Sioux Falls	0	0	0	0	----	----	0	0	----	----	4
Nebraska:											
Omaha	1	2	0	0	0	2	1	1	0	2	54
Kansas:											
Topeka	1	1	0	0	0	0	0	0	0	8	16
Wichita	1	0	0	0	0	0	1	0	1	0	31
SOUTH ATLANTIC											
Delaware:											
Wilmington	0	0	0	0	0	2	0	0	1	0	23
Maryland:											
Baltimore	5	21	0	0	0	11	9	3	0	51	189
Cumberland	0	0	0	0	0	0	1	0	0	0	11
Frederick	0	0	0	0	0	0	0	0	0	0	1
District of Columbia:											
Washington	4	3	0	0	0	11	4	1	2	6	120
Virginia:											
Lynchburg	0	0	0	0	0	0	1	3	0	38	7
Richmond	2	0	0	0	0	1	2	0	0	8	43
Roanoke	0	2	0	0	0	0	1	0	1	4	12
West Virginia:											
Charleston	0	1	0	0	0	0	1	1	0	9	12
Wheeling	1	0	0	0	0	0	0	0	0	1	8
North Carolina:											
Raleigh	1	1	0	0	0	1	0	0	0	2	17
Wilmington	0	0	0	0	0	0	1	1	0	3	9
Winston-Salem	0	3	0	0	0	1	2	1	0	13	9

City reports for week ended August 17, 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											
South Carolina:											
Charleston	0	0	0	0	0	2	2	4	0	1	21
Columbia	0	1	0	0	0	0	1	2	0	14	14
Georgia:											
Atlanta	3	6	1	0	0	4	5	5	3	9	86
Brunswick	0	0	0	0	0	0	0	0	0	0	3
Savannah	0	----	0	----	----	----	1	----	----	----	----
Florida:											
Miami	0	2	0	0	0	0	0	0	0	1	17
St. Petersburg	0	----	0	----	0	0	0	----	0	----	11
Tampa	0	1	0	0	0	1	0	0	0	0	21
EAST SOUTH CENTRAL											
Kentucky:											
Covington	0	0	1	0	0	1	0	1	0	0	18
Louisville	1	7	0	0	0	5	4	7	0	6	72
Tennessee:											
Memphis	0	----	0	----	----	----	7	----	----	----	----
Nashville	1	0	0	0	0	3	7	8	0	6	50
Alabama:											
Birmingham	2	1	0	1	0	6	6	5	2	7	67
Mobile	0	0	0	0	0	0	1	0	0	0	16
Montgomery	0	1	0	0	----	----	1	1	----	0	----
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	0	0	0	----	----	0	0	----	0	----
Little Rock	0	0	0	0	0	1	2	1	0	0	----
Louisiana:											
New Orleans	2	2	0	0	0	13	5	4	0	1	131
Shreveport	0	0	0	0	0	2	1	1	1	2	27
Oklahoma:											
Oklahoma City	1	1	0	0	0	3	2	3	2	0	42
Tulsa	0	2	0	0	----	----	2	1	----	0	----
Texas:											
Dallas	2	3	0	0	0	2	3	3	1	2	51
Fort Worth	1	1	1	2	0	1	2	3	1	0	37
Galveston	0	3	0	0	0	2	0	0	0	0	9
Houston	1	2	0	0	0	3	0	3	0	0	71
San Antonio	0	0	0	0	0	6	1	0	0	0	77
MOUNTAIN											
Montana:											
Billings	1	0	0	0	0	0	0	0	0	1	7
Great Falls	0	1	0	0	0	0	0	0	0	5	4
Helena	0	0	0	0	0	1	0	0	0	0	4
Missoula	0	1	0	0	0	0	1	0	0	0	4
Idaho:											
Boise	0	0	0	0	0	1	0	2	0	0	7
Colorado:											
Denver	2	3	0	0	0	7	2	4	0	3	74
Pueblo	0	3	0	0	0	1	1	1	0	0	8
New Mexico:											
Albuquerque	0	0	0	0	0	4	0	1	0	0	9
Utah:											
Salt Lake City	1	1	0	1	0	4	1	0	0	13	32
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	2
PACIFIC											
Washington:											
Seattle	2	3	0	0	----	----	2	1	----	18	----
Spokane	2	0	0	0	----	----	1	0	----	1	----
Tacoma	1	2	1	3	0	0	1	0	0	8	18
Oregon:											
Portland	2	0	5	2	0	2	1	1	0	0	62
Salem	0	0	1	0	0	0	0	0	0	0	----
California:											
Los Angeles	8	5	2	0	0	23	3	2	2	33	225
Sacramento	1	1	0	0	0	1	1	0	0	6	31
San Francisco	5	11	0	2	0	8	2	4	0	3	155

City reports for week ended August 17, 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
NEW ENGLAND									
Massachusetts:									
Boston	0	1	0	0	0	0	2	0	0
Springfield	2	0	0	0	0	0	0	0	0
Worcester	2	0	0	0	0	0	0	0	0
Rhode Island:									
Providence	0	0	0	0	0	0	1	0	1
Connecticut:									
New Haven	1	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
Buffalo	0	1	0	0	0	0	1	0	2
New York	17	8	2	1	0	0	16	6	1
Rochester	0	0	0	0	0	0	0	2	1
Syracuse	0	0	0	0	0	0	0	1	1
New Jersey:									
Newark	0	1	0	0	0	0	1	3	0
Pennsylvania:									
Philadelphia	9	2	0	0	0	1	0	2	0
Pittsburgh	1	0	0	0	0	0	1	0	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	1	0	0	0	0	0	1	0	0
Cleveland	1	1	2	1	0	0	1	3	0
Columbus	0	0	0	0	0	0	0	1	0
Toledo	2	1	0	0	0	0	0	0	0
Illinois:									
Chicago	8	6	1	1	0	0	2	0	0
Michigan:									
Detroit	4	5	0	0	0	1	0	6	1
Flint	0	1	0	0	0	0	1	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	1	1	0	0	0	0	0	0	0
Missouri:									
St. Louis	2	4	0	0	0	0	0	1	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	1	0	0	1	0	0	1	1	0
Virginia:									
Richmond	0	0	0	0	0	0	0	1	0
Roanoke	0	0	0	0	0	0	0	5	0
North Carolina:									
Winston-Salem	0	0	0	0	1	0	0	1	0
South Carolina:									
Charleston	0	0	0	0	6	2	0	0	0
Georgia:									
Atlanta	1	0	0	0	0	0	0	0	0
Florida:									
Miami	0	0	0	0	1	0	0	0	0
Tampa	0	0	0	0	1	0	0	0	0
EAST SOUTH CENTRAL									
Alabama:									
Birmingham	0	0	0	0	1	2	0	1	0
Montgomery	0	0	0	0	1	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	1	0	0	0	3	1	0	0	0
Shreveport	0	0	0	0	0	1	0	0	0

City reports for week ended August 17, 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
WEST SOUTH CENTRAL—continued									
Oklahoma:									
Oklahoma City	0	0	0	0	1	0	0	0	0
Texas:									
Dallas	0	0	0	0	0	0	0	1	0
Fort Worth	0	0	0	0	0	2	0	0	0
Houston	0	0	0	0	0	1	0	0	0
MOUNTAIN									
New Mexico:									
Albuquerque	0	0	1	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	1	0	0	0	0	0	1	0	0
Tacoma	0	0	0	1	0	0	0	0	0
Oregon:									
Portland	1	0	0	0	0	0	0	0	0
California:									
Los Angeles	2	0	0	0	0	0	1	0	0
Sacramento	2	0	0	0	0	0	1	0	0
San Francisco	1	0	0	0	1	0	1	4	1

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended August 17, 1929, compared with those for a like period ended August 18, 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, July 14 to August 17, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	July 20, 1929	July 21, 1928	July 27, 1929	July 28, 1928	Aug. 3, 1929	Aug. 4, 1928	Aug. 10, 1929	Aug. 11, 1928	Aug. 17, 1929	Aug. 18, 1928
98 cities	73	70	68	[2] 68	67	[2] 65	[3] 64	61	[4] 63	55
New England	84	46	59	46	54	57	45	60	38	48
Middle Atlantic	76	90	75	81	67	67	70	60	59	55
East North Central	105	76	103	64	99	73	[5] 85	73	[6] 91	59
West North Central	59	53	21	59	25	66	31	59	23	57
South Atlantic	30	50	28	67	47	55	[7] 32	54	[8] 49	67
East South Central	27	35	27	49	34	28	[9] 30	14	[10] 92	49
West South Central	71	57	103	69	99	41	[11] 126	53	126	45
Mountain	17	35	9	62	9	35	35	35	44	27
Pacific	42	54	32	[2] 57	47	[2] 84	45	69	32	46

Footnotes at end of table.

Summary of weekly reports from cities, July 14 to August 17, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928 —Continued

MEASLES CASE RATES

	Week ended—									
	July 20, 1929	July 21, 1928	July 27, 1929	July 28, 1928	Aug. 3, 1929	Aug. 4, 1928	Aug. 10, 1929	Aug. 11, 1928	Aug. 17, 1929	Aug. 18, 1928
98 cities	98	165	70	[3] 130	49	[3] 99	[3] 30	59	[4] 24	37
New England	147	504	102	651	97	527	32	248	29	64
Middle Atlantic	47	204	27	126	35	79	15	51	15	40
East North Central	210	145	149	83	83	84	[5] 56	63	[6] 33	39
West North Central	61	63	58	29	38	14	33	18	13	22
South Atlantic	43	98	17	75	11	59	[7] 10	23	[8] 16	33
East South Central	7	77	7	98	7	28	[9] 7	35	[10] 0	28
West South Central	4	44	28	60	8	0	[11] 20	4	24	28
Mountain	61	186	70	80	26	97	61	44	52	44
Pacific	112	20	80	[3] 54	45	[3] 30	25	20	47	8

SCARLET FEVER CASE RATES

98 cities	64	56	59	[3] 42	40	[3] 46	[3] 44	37	[4] 39	30
New England	57	78	57	57	63	53	52	67	50	39
Middle Atlantic	35	33	19	27	24	28	23	21	17	21
East North Central	103	88	110	56	62	58	[5] 72	42	[6] 49	37
West North Central	61	72	77	61	35	68	44	68	40	61
South Atlantic	69	29	60	38	28	38	[7] 44	27	[8] 76	17
East South Central	54	14	27	14	34	35	[9] 15	49	[10] 18	14
West South Central	75	32	59	20	40	77	[11] 41	36	40	16
Mountain	78	44	26	27	9	27	44	18	78	27
Pacific	67	79	67	[3] 71	50	[3] 67	57	38	55	36

SMALLPOX CASE RATES

98 cities	14	4	8	[3] 2	7	[3] 4	[3] 5	1	[4] 7	1
New England	0	0	0	0	0	0	0	0	0	0
Middle Atlantic	0	0	0	0	0	0	0	0	3	0
East North Central	32	3	16	1	13	7	[5] 12	1	[6] 17	1
West North Central	23	14	21	4	6	0	10	2	4	0
South Atlantic	2	6	0	0	0	2	[7] 0	2	[8] 0	0
East South Central	7	14	7	35	7	21	[9] 7	0	[10] 9	0
West South Central	0	4	8	0	4	0	[11] 0	0	0	0
Mountain	44	18	9	18	26	35	0	9	9	0
Pacific	35	10	22	[3] 3	35	[3] 10	17	8	12	3

TYPHOID FEVER CASE RATES

98 cities	18	18	18	[3] 22	19	[3] 21	[3] 17	27	[4] 20	27
New England	9	7	29	11	11	5	14	16	11	16
Middle Atlantic	10	12	7	17	11	17	11	15	19	17
East North Central	8	7	8	5	10	10	[5] 12	14	[6] 5	18
West North Central	23	12	13	23	33	8	15	25	6	41
South Atlantic	32	31	37	36	22	42	[7] 24	57	[8] 41	36
East South Central	143	140	102	140	149	154	[9] 44	245	[10] 138	98
West South Central	59	89	71	105	55	61	[11] 65	73	47	97
Mountain	52	0	44	27	9	0	9	9	61	35
Pacific	5	18	7	[3] 17	20	[3] 27	30	15	17	26

Footnotes at end of table.

Summary of weekly reports from cities, July 14 to August 17, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928 —Continued

INFLUENZA DEATH RATES

	Week ended—									
	July 20, 1929	July 21, 1928	July 27, 1929	July 28, 1928	Aug. 3, 1929	Aug. 4, 1928	Aug. 10, 1929	Aug. 11, 1928	Aug. 17, 1929	Aug. 18, 1928
91 cities	3	5	3	5	3	6	[12] 1	5	[4] 3	3
New England	0	9	2	5	0	2	0	0	0	2
Middle Atlantic	2	4	2	2	2	6	1	5	2	0
East North Central	3	5	4	6	4	3	[5] 1	1	[6] 2	4
West North Central	3	3	3	3	0	3	6	6	3	0
South Atlantic	6	8	4	6	4	15	[7] 0	8	[8] 0	0
East South Central	0	0	0	23	15	0	0	15	[10] 21	0
West South Central	20	4	4	12	8	12	8	29	12	29
Mountain	0	9	9	9	9	0	0	9	17	0
Pacific	3	3	0	0	0	10	0	0	3	10

PNEUMONIA DEATH RATES

91 cities	56	58	50	44	54	53	[12] 53	59	[4] 58	55
New England	70	55	32	34	43	57	38	48	52	37
Middle Atlantic	65	60	57	51	61	60	60	72	71	66
East North Central	40	57	38	29	47	31	[5] 41	33	[6] 36	42
West North Central	36	40	51	31	26	70	45	80	33	46
South Atlantic	54	50	60	71	45	52	[7] 44	54	[8] 62	59
East South Central	52	61	52	84	96	38	59	69	[10] 104	77
West South Central	69	54	89	58	81	87	126	108	81	58
Mountain	96	80	61	80	61	62	61	71	35	62
Pacific	66	81	26	10	52	76	43	57	75	61

[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] Seattle and Spokane, Wash., not included.
[3] Indianapolis, Ind., Richmond, Va., Montgomery, Ala., and Fort Smith, Ark., not included.
[4] Indianapolis and Terre Haute, Ind., Savannah, Ga., and Memphis, Tenn., not included.
[5] Indianapolis, Ind., not included.
[6] Indianapolis and Terre Haute, Ind., not included.
[7] Richmond, Va., not included.
[8] Savannah, Ga., not included.
[9] Montgomery, Ala., not included.
[10] Memphis, Tenn., not included.
[11] Fort Smith, Ark., not included.
[12] Indianapolis, Ind., and Richmond, Va., 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	2,365,100	2,273,900	2,365,100	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

CANADA

Provinces—Communicable diseases—Week ended August 10, 1929.—The Department of Pensions and National Health of the Dominion of Canada reports cases of certain communicable diseases for the week ended August 10, 1929, as follows:

	Cerebro-spinal fever	Influenza	Poliomy-elitis	Smallpox	Typhoid fever
Prince Edward Island					
Nova Scotia	1				
New Brunswick					9
Quebec		2		1	17
Ontario	1	1	21	2	21
Manitoba			1		
Saskatchewan					1
Alberta	1			2	2
British Columbia			1		
Total	3	3	23	5	50

CHINA

South Manchuria—Ouli—Plague—July, 1929.—Plague appeared early in July at Ouli, a station and village 15 miles west of Cheng Chia Tung Junction, Ssu-Tao Railway, South Manchuria. Seven cases, with four deaths, occurred from July 1 to 20, 1929. A report dated August 3, 1929, stated that no case had occurred since July 20.

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

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, 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		Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	Week ended— June, 1929 8	15	22	29	July, 1929 6	13	20	27	August, 1929 3	10
Ceylon	C		4			3										
	D		4			3										
Colombo	C	2			1	3				1						
	D					3				1						
China:																
Amoy	C								3	1	1	2	4		P	
Canton	C			3	3	2	1		5	4	3	1		2	1	2
	D				3	1			3	2	3	1		1	1	
Manchuria—Kwantung—Dairen	C															1
Shanghai [1]	C										1		1			
	D											1	1	2	4	24
Swatow	C								P							
	D								4		2	1	3	1		
India	C	12,566	7,627	9,046	18,521	30,616	8,406	7,329	6,937	6,777						
	D	7,912	4,425	4,997	11,069	20,311	5,943	4,815	4,708	4,444						
Bassein	D	6	6	45	118	38	1	1								
Bombay	C	1		6	3		1	1							1	
	D		1	2		2	1	1							1	
Calcutta	C	129	261	552	788	924	98	83	74	99	82	69				
	D	85	144	307	461	605	65	53	7	51	41	29	59	28	24	
Karachi	C															P
Madras	C	4	9			1										
	D	5	4										1	1		
Moulmein	D		1	7	6	31	5									
Negapatam	C	18	3										1			P
Rangoon	C	15	13	15	8	13	1	3	3	1						
	D	9	6	37	10	7	2	2	3	1			1		1	
Tuticorin	C	85	6					15	15	4	4	2				
	D	52	4					12	10	8		2				
Vizagapatam	D												1			

India, (French):																	
Chandernagor	C			3	3	3	1	1		1	1	1					
	D			3	1	3	1	1		1	1				1		
Karikal	C	150	88	20	3												1
	D	128	71	15	3												
Pondicherry Province	C	129	86	46		3	1	1		1							
	D	104	74	38		3	1	1		1							
Indo-China, (see also table below):																	
Pnompenh	C	2	42	13	15	14	2	2	2	5	2	2	3				
	D	1	36	10	9	10	1	1		2	1	1	2	1			
Saigon and Cholon	C	6		12	13	71	43	73	55	17	9	6		2			
	D	3		2	8	37	29	53	49	8	8	4	1	1			
Japan:																	
Kobe. [2]																	
Osaka. [2]																	
Shimonoseki. [2]																	
Siam	C	195	165	397	619	619	121	67	122	159	214	49	54	54			
	D	138	117	269	404	436	78	53	50	95	112	38	26	26			
Anthoang	C	1	3											4			
	D	1	2											4			
Ayudhaya	C	4	4	1	29	2	14		11				6	11			2
	D	4	4	1	19		8		3				3	8			
Bangkok	C	50	61	38	111	131	7	8	9	6	2	2	1	2			2
	D	43	36	21	74	77	2	4	5	2		1					
Chaxoengsao	C	9	1			1											
	D	9	1			1											
Dhannapuri	C	3	3		17												
	D	2	1		7												
Lobpuri	C		3		1												
	D		1		1												
Nagara Pathom	C		2		36	13											
	D		2		20	10											
Pradhumdham	C	1															
	D	1															
Singhapuri	C	6	1														
	D	7	1														
Smud Prakar	C	10	1														
	D	8															
On vessel:																	
S. S. Angby, at Saigon-Cholon	C							1									
	D							1									
S. S. Cap. St. Jacques, at Singapore from Saigon-Cholon	C										P						
S. S. Ekma, at Penang from Singapore	C		P														
S. S. Elephanta, at Penang from Calcutta	C			P													
S. S. Erinpura, at Madras	C					2											
S. S. Media, at Colombo from Calcutta	C					1											
S. S. Saka Maru, at Calcutta	C					6											
S. S. Tilawa, at Penang from Singapore	C			P													
S. S. Tokushima, at Hong Kong	C								2								
	D								2								

[1] Cholera has been reported at Shanghai as follows: Week ended Aug. 17, 1929, 797 cases; week ended August 24, 1929, 500 cases.
[2] Cholera appeared at Osaka, Japan, Aug. 17, 1929; at Kobe Aug. 20; and at Shimonoseki Aug. 27, 1929.

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

CHOLERA—Continued

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

Place		January, 1929	February, 1929	March, 1929	April, 1929			May, 1929			June, 1929			July, 1929	
					1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20
Indo-China, (French), (see also table above):															
Annam	C			6		13	7	15	5					2	5
Cambodia	C	79	69	29		40	44	27	188					55	71
Cochin-China	C	660	223	183		51	37	81	42					146	123
Tonkin	C							3	2						

PLAGUE

Place		Jan. 13-Feb. 9, 1929	Feb. 10-Mar. 9, 1929	Mar. 10-Apr. 6, 1929	Apr. 7-May 4, 1929	May 5-June 1, 1929	Week ended— June, 1929				July, 1929				August, 1929	
							8	15	22	29	6	13	20	27	3	10
Algeria: Philippeville	C													3	3	
Argentina:																
Buenos Aires	C			2	1											
	D			2												
Jujuy Province—Perico	C	3														
Rosario	C	1		31	5											
Azores: St. Michaels Island	C	1		1									1			
Belgian Congo:																
Bukwa	C								3							
	D								3							
Buki	C										1	1				
	D										1	1				
Djugu	C	1	4			2			3							
	D	1	1			3			3							
Rekwa	C										2					
	D										2					

Brazil:																	
Para	C	1															
Porto Alegre	C				1												
British East Africa, (see also table below):																	
Uganda	C	152	112	130	231	450	255	357	398	432	255						
	D	149	108	124	219	409	193	259	301	319	220						
Canary Islands:																	
Tenerife	D											1					
Laguna	C	1				1											
Ceylon:																	
Colombo	C	6	4	4	5	7			1	1		P	P				
	D	5	3	1	4	6		1	1	1							
Plague-infected rats		2	2		1							1				5	
Galle	C											1	1	1			
	D											1	1	1			
Matara	C											7	4	1			
	D											3	3	5			
China:																	
Hainan	C	P	1														
Hong Kong.[1]																	
Manchuria—Tungliao District	C														P	13	
Suyuan Province	C	P	1														
Dutch East Indies:																	
Celebes—Makassar—Plague-infected rats		1															
Java—																	
Batavia and West Java	C	74	70	64	63	58		13	14	8	12						
	D	73	69	65	63		56	13	14	8	12						
Plague-infected rats			4	5	8												
East Java and Madura	C			3													
	D			3													
Surabaya	C	6								2	1						
	D	6								2	1						
Kediri Residency	C	P															
Ecuador, (see table below).																	
Egypt:																	
Alexandria	C	3				1				1	2		3	2	1		
	D	1						1			1		1				
Asuan	C											1	1	2			
	D											1	1	2			
Beheira	C													2			
	D													2			
Beni Suef	C	3	4	2	7		3			3	1	1	1	1	1		
	D	3	1	2	2		1			1							
Daqahliya	C					9	1							1			
	D					1											
Gharbia	C										1	5	1	2			
	D											1					
Girga	C										2	1					
Kena	C										1	1					
	D										1	1					
Menufia Province	C													3			

[1] A case of plague and a plague-infected rat were reported at Hong Kong Aug. 22, 1929.

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

PLAGUE—Continued

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

Place		Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	Week ended— June, 1929 8	15	22	29	July, 1929 6	13	20	27	August, 1929 3	10
Egypt—Continued.																
Miniah	C												4	3		
Port Said	C				2	3		1	1		1	1	1		2	1
	D				1	2	1				1			1	1	
Suez	C		1	2										1		
Greece, (see table below).																
Hawaii: Hamakua—Kukuihaele—Plague-infected rats						6		1								
India	C	12,600	16,570	16,011	6,884	1,394	128	121	176	252						
	D	9,815	12,064	12,592	5,623	1,205	88	77	103	146						
Bassein	C				1							3		6	4	
	D	4	3	6	2	2			1	8	1				5	
Bombay	C	2	4	8	8	1									1	
	D	4	4	6	6	1		1	3						1	
Plague-infected rats		38	38	57	81	44	10	9	7	9	6	7	4	6		
Madras Presidency	C	434	333	132	38	64	15	14	41	15	43					
	D	235	189	80	14	40	8	6	16	8	26					
Rangoon	C	4	4	12	11	2					2					
	D	5	4	9	15	3	1	3	2	3	3	3	8	4	5	
Plague-infected rats		5	11	15	10	5	1		3	2	4	2	3			
Indo-China, (see also table below):																
Pnompenh	C	10	5	10	8	5	1	1		2	5		2		1	5
	D	9	3	10	8	3	1	1		1	5		1	3	1	5
Saigon and Cholon	C		1						1		5			1	2	1
Tourane	C		5													
Iraq:																
Baghdad	C	6	10	11	8	14	2	1	7	2		1				1
	D	3	3	3	7	5			2							
Plague-infected rats		6	22	14	2	1										
Diyalah Liwa	C				7	12	P	1			1					
	D				7	7										
Naudham	C	2					1					1				
	D	1														
Plague-infected rats		1														
Japan: Osaka—Plague-infected rats						2										

Madagascar, (see also table below):																	
Tamatave	C	1				P	1	1			2	2		1			
	D		2	1	1			1	1								
Plague-infected rats								2	2								
Morocco	C			106	31	42	4		5	7	3	21	15				
	D			73	16	4	4		1			11	6				
Nigeria: Lagos	C	14	11	4	8	5	1		1				1				
	D	12	11	4	8	4			1				1				
Plague-infected rats		48	50	18	6	8	4				2	2	5				
Peru, (see table below).																	
Senegal, (see table below).																	
Siam	C	45	9	9	10	9	1										
	D	17	9	8	8	5	1										
Bangkok	C	1	1			2							1				3
	D	2	1			1							1				3
Nagara Pathom	C		3	4	2	3											
	D		2	4	2	2											
Straits Settlements: Singapore	C		1		1												
	D		1		1	1											
Tunisia: Tunis	C													P	P	P	
Turkey:																	
Adalia	C																1
Constantinople	C								P								
Union of Socialist Soviet Republics:																	
Caucasia	C									1	8	1		8			
	D									1	8						
Ural—Kirghiz	C						P	2		2							
	D							2		2							
Union of South Africa:																	
Cape Province	C			1	2												
	D			1	1												
Orange Free State	C	6	2	3	4												
	D	1		2	1												
Transvaal	C			8													
	D			8													
Uruguay: Montevideo	C			4													
On vessel:																	
S. S. Chenonceaux, at Singapore, from Colombo	C			1													
	D			1													
S. S. Tokio, at Shanghai, from Singapore	C													1			
	D													1			
S. S. Ganzan Maru, at Osaka, from Haipong	C					1											
S. S. Seigo Maru, at Osaka, from Bombay—Plague-infected rats						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	1											

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

PLAGUE—Continued

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

Place		February, 1929	March, 1929	April, 1929	May, 1929	June, 1929	July, 1929
British East Africa, (see also table above):							
Kenya	C	4	10	4	22	69	-------
Uganda	C	142	121	282	------	------	------
	D	139	113	264	------	------	------
Ecuador: Guayaquil	C	54	26	19	2	------	------
	D	22	4	5	1	------	------
Plague-infected rats		27	14	13	3	1	------
Greece	C	1	-------	1	------	------	------
Indo-China, (see also table above)	C	------	3	13	------	------	11
Madagascar, (see also table above)	C	348	196	92	------	------	------
	D	335	194	88	------	------	------
Ambositra Province	C	164	90	8	------	------	------
	D	164	90	8	------	------	------
Antisirabe Province	C	21	13	------	------	------	------
	D	21	13	------	------	------	------
Itasy Province	C	16	8	2	------	------	------
	D	10	7	2	------	------	------
Madagascar—Continued.							
Moramanga Province	C	7	5	3	------	------	------
	D	4	5	3	------	------	------
Tananarive Province	C	146	120	78	------	------	------
	D	136	119	74	------	------	------
Peru	C	16	35	------	10	16	------
	D	13	13	------	5	8	------
Senegal:							
Baol [1]	C	------	6	1	21	43	------
	D	------	3	1	6	18	------
Dakar [1]	C	------	-------	6	17	67	------
	D	------	-------	4	11	45	------
Thies [1]	C	8	4	20	6	10	------
	D	7	3	20	3	6	------
Tivaouane [1]	C	12	-------	------	22	93	------
	D	2	-------	------	10	50	------

SMALLPOX

Place		Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	Week ended— June, 1929				July, 1929				August, 1929	
							8	15	22	29	6	13	20	27	3	10
Algeria:																
Algiers	C	-------	-------	3	5	5	1	2	2	1	1	2	2	2	------	------
Cherchell	C	-------	21	42	1	------	------	------	1	------	------	------	------	------	------	------
Oran	C	-------	1	1	2	5	1	------	------	------	------	------	------	1	------	------
Angola, (see table below).																

Arabia: Aden	C	2		30	69	40	20	25	10	55	18	21	42	22	11	
	D			8	20	20	2	6	6	6	18	4	17	17	20	
Bermuda: Hamilton	C						1									
Brazil:																
Porto Alegre	C					1										
Rio de Janeiro	C					3										
British East Africa, (see also table below):																
Tanganyika	C	13	3		3	4				7						
British South Africa: Southern Rhodesia	C	1	17	69	13	12										
Canada:																
Alberta	C	3	5	7	9		8	3	1							
Calgary	C		1		2										1	1
Edmonton	C	2	2	12	5			3	1							
British Columbia—Vancouver	C	66	70	64	46	23	1	2	4	6	4	8	2			
Manitoba	C	21	15	3	2	6	6						1			
Winnipeg and vicinity	C							2								
New Brunswick	C			3								1				
Nova Scotia	C	2			1											
Ontario	C	83	83	57	113	40	15	39	21	9	25	5	13	14		
Niagara Falls	C			1		3										
North Bay	C		4		3	8		2			2	2	2	1		
Ottawa	C		1						1					1		1
Toronto	C	1		2	1			1			5		1	1		
Windsor	C				3	3	1		1		1	1				
Prince Edward Island	C	2	2													
Quebec	C	24	28	14	34	12	5	3	2		2					
Montreal	C	10	16	4	4	1			1							
Quebec	C	8		3	1	1	2									
Riviere du Loup	C				1											
Saskatchewan	C	35	70	13	13	14										
Moose Jaw	C			1												
Regina	C	6														
Saskatoon	C	4		1												
China:																
Amoy	C	P	5	3	4	2										
Canton	C	87	86	135	85	46	5	2	6	3	5	3	3	1	2	
	D	2	15	15	12	4	1				1	1				
Chefoo	C				P	P										
Foochow	C	P	P	P	P											
Hong Kong	C	307	189	92	53	29	2	2	4	2		1			1	
	D	286	246	137	97	25	2	2	1	1	3	2				
Manchuria—																
Changshun	C	3	2		1											
Fushun	C	5														
Harbin	C	5		1	4											
Kwantung—																
Dairen	C	2	9	1	11	21	2	2	4	3		1	4			
	D	2	3		4	8	2		1			2	3			
Port Arthur	C					3										
Mukden	C	3		1												
	D	1														

[1] Incomplete reports.

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

SMALLPOX—Continued

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

Place		Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	Week ended— June, 1929 8	15	22	29	July, 1929 6	13	20	27	August, 1929 3	10
China—Continued.																
Shanghai—																
Foreigners only	C	23	11	4	1	6		2		5	1	1	1			
	D	60	41	25	16	16	1		2	2			1			
Including natives	D		9	33	93	62	9	9		6	2	6	5			
Swatow	C	3	2	8	6	12										
Tientsin	C		P	P	P	P		P	P	P						
Tsingtao	C			P	P											
Yunnanfu																
Chosen, (see table below).																
Colombia:																
Barranquilla	D												2			
Cartagena	D		7													
Curacao, (alastrim)	C				1											
Dominican Republic	C	1														
Dutch East Indies:																
Balikpapan	C		1	5	3	4		1								
Belawan Deli	C	26	9	7	4					1		1		1		
	D	6	6	2										1		
Borneo	C	30	26													
Samarinda	C	4	47	2	1					3	9	2			7	
	D			3						1						
Celebes—Makassar	C			6	39	43	5	4	5	6	6	4	5	6	2	
	D			2	25	33	4	2	4	5	3	3	3	2	1	
Java—Batavia and West Java	C					1		1	5			6				
	D						1									
Sumatra—																
Baros	C	106	36	16												
	D	26	5	2												
Medan	C	11	9	7	2	1				1						
	D	5	6	3		1										
Palembang	C		9													
	D		2													
Ecuador, (see table below).																

Egypt:																
Gharbieh	C		1													
Port Said	C	1			1				1							
Suez	C				5											
France, (see table below).																
Great Britain:																
England and Wales	C	890	1,083	1,156	1,423	1,179	272	191	166	160	153	115	144	129		
Ashton under Lyne	C													7		
Birmingham	C				1	1										
Bradford	C	1	2	3	1	4	2	2					2	1		
Bristol	C	1										1				
Cardiff	C	4		1	1	4										
Castleford	C	48	85	56	31	12	2			1		1				
Hull	C	2														
Leeds	C	3	6	8	3			1						1		
Liverpool	C	1		1												
London	C	40	54	58	201	193	69	41	40	17	43	16	30	18	31	19
London and Great Towns	C	433	425	598	888	656	166	120	113	97	103	64	109	87	73	60
	D			3	6	3			1		1	2		1		
Newcastle-on-Tyne	C	6	6	16	8	37		11		9	9	4		2	1	3
Nottingham	C	1		2												
Stoke-on-Trent	C	14	18	72	133	86	21	9	13	16	5	7	11	9	1	10
West Ham	C													26		
Scotland—																
Aberdeen	C				2											
Glasgow	C			1	19	1										
Greece, (see table below).																
Hedjas	C	153	108	84	77	40	23	19	22	19	27	8	7	11	4	
	D	56	40	52	52	24	11	12	16	14	21	2	4	8	3	
Honduras: Puerto Castilla	C					1										
India	C	12,531	14,890	19,120	22,556	17,011	3,265	2,942	2,674	2,668						
	D	3,045	3,285	3,933	5,060	4,185	891	693	699	723						
Bombay	C	158	397	441	315	208	38	42	36	31	28	21	22	21	18	
	D	78	188	206	175	131	22	27	27	23	13	15	12	15	7	
Calcutta	C	32	104	127	101	39	7	4	8	8	6	3	2	5	13	
	D	16	29	77	74	36	7	4	7	6	4	3	1	3	11	
Karachi	C	5	147	206	144	84	8	13	10	4	6	3	12	4	6	
	D	223	14	70	59	59	6	8	7	4	6	1	6		1	
Madras	C	35	260	392	327	174	21	17	28	22	25	39	24	34		
	D	6	61	83	84	61	2	6	8	4	6	12	10			
Moulmein	C	2	14	18	7	8	3			3	1	4		5	2	
	D		4	4	6	6	2			3	1	3		1	1	
Negapatam	C	26	5	9	7	2		2	1	3	1	1	2			
	D	6	4	1												
Rangoon	C	8	17	13	7	1					1	2				
	D	1	6	6	3	1					1					
Tuticorin	C	2	1		1			1								
Vizagapatam	C	8	52	26	28	2			2	2	2			1		
	D		9	5	8				1	1				2		

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

SMALLPOX—Continued

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

Place		Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	Week ended— June, 1929				July, 1929				August, 1929	
							8	15	22	29	6	13	20	27	3	10
India, (French):																
Karikal	C			2	2	3		1	3	1			1			10
	D			2	2	3		1	3	1			1			
Pondicherry Province	C	59	79	70	60	32	4		7	7	5	4	8	1		3
	D	51	61	60	51	30	3		7	5	5	4	3	1		1
India, (Portuguese)	C					3	8	1				1	1			
Indo-China, (see also table below):																
Pnompenh	C	77	62	68	40	22	1	3	2	2	5	1	3			2
	D	42	36	33	24	12	1	1			1	1	1		1	1
Saigon and Cholon	C	5	2	2	2	1								1		
	D	1				1				1						
Iraq:																
Baghdad	C	17	7	6	6	3		1					1			
	D	3	5	1												
Basra	C	18	7	9	8	8	8		1				1			
	D	10	5	2	6	8	1									
Diyalah Liwa	C					48					8					
	D					13					2					
Hillah Liwa	C	20														
	D	9														
Kirkuk Liwa	C		18													
	D		4													
Mossoul	C	30	28					12	6	2	12				21	
	D	17	4												1	
Sinjar	C	61														
	D	15														
Italy:																
Rome and vicinity	C	2														
Turin	C		1													
Ivory Coast, (see table below).																
Jamaica, (outside Kingston), (alastrim)	C				1	1						7				
Japan:																
Kobe	C		1													
Nagasaki	C	3														
	D	2														

Niigata	C					12		2									
Osaka	C		1			1											
Shimane Province	C			16	3												
Tokyo	C					2		1									
Macao	D	24	75	32	20	5			2								
Mexico:																	
Acapulco	C				1	1	1		1			3			1	2	
	D				1	1	1		1			3			1	2	
Aguascalientes	D	3	3	5	9	6	5	4	3	5	3	5	2	1	2	3	
Chiapas Province	C			P													
Chihuahua	D	1															
Coahuila	D								17								
Jalisco, (State): Guadalajara	D	8	8	13	12	15	3	3	1	4	5		1		1	2	
Juarez	D	1	1	3													
Mexico City and surrounding territory	C	2	2	1		1	3	1	2	3	3	2		5	5		
Oaxaca--Zacatepec	C				P			1	1	6	1			2			
Palomas	C		1														
Tampico	C		1	2													
Vera Cruz	D			2													
Morocco, (see table below).																	
Netherlands: Rotterdam	C													40	30	53	
Nicaragua: Managua	C				P												
Nigeria:																	
Lagos	C			1	1	2								1			
Southern Provinces	C	162															
	D	31															
Norway: Stavanger	C				2												
Palestine	C					1											
Panama Canal Zone	C			P							7		13				
Persia, (see table below).																	
Poland	C	41			6	2		35	31								
	D	3							2								
Portugal:																	
Lisbon	C	4		3	4	1	1	2	2	1	3						
Oporto	C			1	2				1	1		2					
Senegal, (see table below).																	
Siam	C	2	4		55	32	21	1	5		23		3	2	1		
	D				8	9	5	1	1		2						
Somaliland, British: Boales	C							5		6		1	3				
	D									4							
Somaliland, French: Jibuti	C					3	2	5	3	6	8	7	25	83	8	10	
	D					1	2	2		4	2	1	2	16	11	1	
Spain: Valencia	C		2	5						1							
Straits Settlements: Singapore	C	5	3	1				1									
Sudan, (Anglo-Egyptian)	C	265	188	245	377	1,570	228	243	113	598	323	25	724	49	55		
	D	34	54	29	26	132	40	60	47	48	28	9	115	12	51		
Sudan, (French), (see table below).																	
Syria, (see table below).																	
Tunisia: Tunis	C		5		2			1		1	1						
Turkey, (see table below).																	
Union of Socialist Soviet Republics: Vladivostok	C					2											

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

SMALLPOX—Continued

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

Place		Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	Week ended— June, 1929				July, 1929				August, 1929	
							8	15	22	29	6	13	20	27	3	10
Union of South Africa:																
Cape Province	C				P	P	P	P								
Transvaal	C			P	P	P	P									
Upper Volta	C	3	4	4	15	2	2		5	3						
On vessel:																
S. S. Aorangi, at Sydney	C									1						
S. S. Assyria, at Suez, from Bombay	C					1										
S. S. City of Venice, at Suez, from Calcutta	C					1										
S. S. Fern, at Port Said, from Abadan	C					P										
S. S. British Birch, at Suez, from Abadan	C									1						
S. S. Keneh, at Suakim, from Jeddah	C								4							
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		January, 1929	February, 1929	March, 1929	April, 1929			May, 1929			June, 1929			July, 1929	
					1–10	11–20	21–30	1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20
Indo-China, (see also table above)	C	311	364	561	500	100	155	343	67					87	72
Ivory Coast	C			4											
Senegal	C		80	70	50	7			1						
	D		8	11	15										
Sudan, (French)	C			26	10	9	64	2					57	2	13
	D			3									15		
Syria: Beirut	C	1	48	12	2	16		4		8	18	12	6	26	

Place		January, 1929	February, 1929	March, 1929	April, 1929	May, 1929	June, 1929
Angola	C	1					
British East Africa, (see also table above):							
Kenya	C			23	91	38	
Chosen: Chinampo	C		1				
Ecuador: Guayaquil	C	12	4	2	2	1	
	D	1	1				
France	C	9	3	5			15
Greece	C	8	5	2	4	5	2
	D	1	1				
Morocco	C	7	11	8	12	39	2
Persia	D	68	23	8			
Turkey	C	16	7		1		11
	D	6					

TYPHUS FEVER

Place		Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	Week ended— June, 1929 8	15	22	29	July, 1929 6	13	20	27	Aug. 3, 1929
Algeria:															
Algiers	C			6	11	1	1					1	6	2	
Constantine Department	C	2	13	3			1	3	7						
Oran	C	5	2		8	14	1		4		3		6		
British South Africa: Northern Rhodesia	C					3									
	D					3									
Bulgaria	C	7	39	40	28	21	1	2	1		1	2	2	7	
	D		2	5	2	1			1			1	1		
Sofia	C	1											1		
Chile:															
Concepcion	C			2		1									
Valparaiso	C										1				
China:															
Canton	C	2													
	D	2													
Hong Kong	C	1													
Manchuria	C			1											

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

TYPHUS FEVER—Continued

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

Place		Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	Week ended— June, 1929 8	15	22	29	July, 1929 6	13	20	27	Aug. 3, 1929
Chosen, (see table below).															
Czechoslovakia, (see table below).															
Egypt:															
Alexandria	C			1	1										
	D			1		1									
Assouan Province	C		2												
	D		2												
Beheira Province	C		13	67	50	159	13				5			3	25
	D			9	9	24	6				2			2	
Cairo	C					2					1		1		
Daqahliya Province	C			34											
Gharbieh	C	1	2												
	D		1												
Menoufieh Province	C				35										
Port Said	C					2	1			1	3	1			
Greece, (see table below).															
Hungary	C					1									
Indo-China, (see table below).															
Ireland, (Irish Free State):															
Cavan County—Carrickmacross	C					1									
Cork County	C		1												
Donegal County—															
Inishower	C				1										
Stranorlar	C							1							
Dublin	C	1													
	D	1													
Kerry County—															
Dingle	C			2	2										
Killarney	C		1		2										
Tyrone County, Strabane.[1]															

Latvia, (see table below).															
Lithuania, (see table below).															
Mexico, (see also table below):															
Aguascalientes	D			5						1					
Mexico City, including municipalities in Federal District	C	11	7	4	4	8	6	2	4	2	4	2		5	
	D	3	2		1	2		1							
Morocco	C	20	17	19	28	5		2	5	5		27			
	D				4							11			
Norway: Oslo	C				12	2									
Palestine	C	3		2		2			2		1	1	1	1	
Poland	C	222	202	295	314	264	78	35	31	33	25	24	25	16	
	D	15	18	20	25	19	2		2	3	1	1	2		
Portugal:															
Lisbon	C								1						
Oporto	C									1					
Rumania	C	173	211	220	135	179		36	32	23	7	25			
	D	23	28	30	16	31		3	5	5	1	1			
Tunisia	C	2	3	20	19	22	12	8	3			2			
Turkey, (see table below).															
Union of South Africa:															
Cape Province	C	P	P	P	P	P	P	P			P			P	
Natal	C		2	P	P	P		P							
Orange Free State	C	P	P		P	P	P	P			P				
Transvaal	C	1		P	P	P	P	P							
Yugoslavia, (see table below).															

Place		January, 1929	February, 1929	March, 1929	April, 1929	May, 1929	June, 1929
Canada: Ontario	C						1
Chosen: Seoul	C	4		3	2	1	
Czechoslovakia	C	6	7	41	25	18	
	D		1	1		1	
Greece: Athens	C	13	4	4	2		3
	D	5					
Indo-China: Tonkin	C				2		
Latvia	C			1	10	7	5
Lithuania	C	32	24	62	101	63	27
	D	3	3	1	7	5	4
Mexico, (see also table above):							
Sonora	D	1					
Turkey	C	1	3	11	3	7	10
	D		1			1	3
Yugoslavia	C	15	13	7		19	
	D		2			1	

[1] During the period from Apr. 14 to May 21, 1929, 18 cases of typhus fever with 4 deaths were reported in Strabane, Tyrone County, Ireland.

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

YELLOW FEVER

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

Place		Jan. 13–Feb. 9, 1929	Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	Week ended— May, 1929			June, 1929					July, 1929			
						11	18	25	1	8	15	22	29	6	13	20	27
Belgian Congo: Tumba	C				1												
Brazil:																	
Bahia	C			1										1			
	D			1										1			
Guaratingueta	C		[1] 1														
	D		[1] 1														
Para	D	1		5													
Pernambuco	C			4													
Porto Alegre	D					[1] 1											
Rio de Janeiro [2]	C	16	92	252	180	24	22	17	7	5	2	0	0	0	1	0	
	D	17	67	132	94	18	11	6	3	3		2			1		
Sao Paulo	C	1															
	D	1															
Colombia:																	
Simacota	C																4
Socorro [3]	C													6			6
Liberia: Monrovia	C	3	7	10	2							1	3	4			
	D	2	4	4									3	1			
On vessel:																	
S. S. Skogland, at Porto Alegre, from Rio de Janeiro	C					1											

[1] Imported.
[2] 29 cases of yellow fever with 14 deaths were reported at Rio de Janeiro during January, 1929, mostly suburban.
[3] From June 19 to July 8, 1929, 41 cases of yellow fever with 23 deaths were reported in Socorro, Colombia.