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POSTVACCINATION ENCEPHALITIS [1]

With Special Reference to Prevention

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Postvaccination encephalitis,[2] a disease of unknown etiology, was first brought to the attention of the medical profession in 1924. Approximately 700 cases, with a case fatality rate of 40 per cent, have now been recognized. With the exception of 71 cases recorded for the United States during the past 10 years, reports of this complication have been largely confined to European countries, Holland, England, Germany, Sweden, and Norway having been most severely affected. Within certain of the affected countries a peculiar "spotty" distribution of cases has been noted. Within the United States the heaviest incidence so far recorded occurred during the autumn of 1930 in a city of 450,000 inhabitants, where 5 cases of postvaccination encephalitis developed among school children within a period of 13 days. These cases had been vaccinated by five different physicians who employed various types of single insertions. During the following fall two additional cases developed in this same city, again among children entering school.

The occurrence of such localized areas of heavy incidence apparently is not explainable upon the relative number of vaccinations performed or by the vaccination method employed, nor can it be said to have followed any particular batch or strain of vaccine virus. European cases have followed the use of rabbit-brain virus as well as calf strains from many sources. In the United States, cases have followed the employment of calf virus from 10 out of a total of 12 vaccine establishments.

Postvaccination nervous complications usually, though not invariably, follow the first or primary "take" and are therefore largely confined to children. Among the 71 American cases, 2 are stated to have followed a second vaccination. In affected countries where infant vaccination is practiced to a considerable extent, a relative

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[1] From the Cutter Lecture delivered at Boston, Mass., Mar. 31, 1932.

[2] As a designation for this complication, "postvaccination" encephalitis is deemed preferable to "postvaccinal" or "postvaccinial" encephalitis, because the complication follows the vaccination but usually appears at the height of, rather than after, the vaccinia. The term "postvaccination" is, moreover, noncommittal as to the vaccinal or nonvaccinal nature of the ailment.

rarity of this complication has been noted following vaccinations performed during the first year of life as compared with primary vaccinations performed at later ages.

Postvaccination encephalitis may develop from a few days to several weeks following the vaccination, but there is a striking tendency for it to make its appearance when the vaccinia is at its height—in other words, from the 10th to 13th day, inclusive, following primary vaccinations, with a suggestion that the interval tends to be somewhat shortened in cases following secondary vaccinations.

European cases have usually, though not invariably, followed multiple-insertion vaccinations, this until recently having been the approved method of vaccination in the affected countries. In the United States, on the other hand, all cases except one have followed single-insertion vaccinations.

In some instances the nervous complications have followed "takes" of exceptional severity and in a few instances were accompanied with the appearance of generalized lesions interpreted as vaccinal in nature. It is clear, however, that in many instances the local "takes" ran a satisfactory course and were not of exceptional severity. The character of the systemic vaccine response in these cases is more difficult to determine, as they usually merge with the symptoms of the complication, the etiology of which is still obscure.

DIAGNOSIS AND SYMPTOMS

The Rolliston Committee, in their report of the English cases, stress headaches, vomiting, drowsiness, and fever as being usually present. The same symptoms, to which should be added some degree of rigidity of the neck, have also been quite constant in American cases.

A detailed discussion of the variable nervous manifestations that have been encountered in cases of postvaccination encephalitis is not required for the present purpose. Suffice it to say that they may point to involvement of the meninges, the brain, the brain stem or cord, or, more usually, to a combined involvement of two or more of these structures. Cases have been mistaken for tetanus, meningitis of epidemic or tuberculous type, meningismus, encephalitis lethargica, poliomyelitis, sunstroke, cerebral hemorrhage, epilepsy, and hysteria.

In case the differential diagnosis lies between postvaccinal tetanus and postvaccination encephalitis, an interval of 14 days or less from vaccination to onset of symptoms strongly favors encephalitis, while one of 17 days or longer favors tetanus.

The spinal fluid in postvaccination encephalitis is clear, shows no visible or cultivatable organisms, and may be essentially normal. However, it is usually under increased pressure with an augmented cell count, and in a few instances the presence of small amounts of vaccine virus has been demonstrated.

PATHOLOGY

The central nervous system changes encountered in postvaccination encephalitis are similar to those encountered in the nervous system involvement which occasionally follows acute infections other than vaccinia. The findings in these cases consist of adventitial and periadventitial round cell infiltration distributed throughout the brain and cord.

With appropriate staining methods, areas of myelin degeneration may be seen centered about the smaller vessels, which gradually fade into normal myelin structure.

Numerous attempts have been made to produce this same pathological picture in animals through inoculations of vaccine virus or with materials from human cases of postvaccination encephalitis. Such attempts have, in my experience, as well as in that of the majority of workers, met with failure.

Some investigators, notably McIntosh and his coworkers, have attempted to explain these failures on the assumption that demyelination as found in man is of only secondary importance in the pathology of this disease. Thus they endeavor to bring the human pathology more into line with experimental lesions produced by vaccine virus *per se*, which virus they hold to be the direct cause of the complication in man.

In view of the similarity of vaccinal lesions in corresponding tissues of various susceptible species, it is difficult to see why the brain and cord lesions of man and of animals, if due to a direct action of vaccine virus, should be so different. The paucity, or even apparent absence, of vaccine virus in the central nervous system lesions of cases of postvaccination encephalitis and its abundance in experimental vaccinal lesions of the brain or cord of animals is a further difficulty to the acceptance of McIntosh's views.

PROGNOSIS

Among European cases 42 per 100 have ended fatally, while of 71 American cases the mortality was 37 per cent. Nonfatal cases usually recover promptly and without sequelae. Exceptions to this rule do, however, occur. Among the 71 cases which we have collected for this country, there is one patient vaccinated in 1929 who developed postvaccination encephalitis 14 days later and in whom there remains to-day a marked mental deterioration.

Another patient who developed symptoms of a complete transverse myelitis 13 days following vaccination in 1930 still shows complete flaccid paralysis of both legs, with anaesthesia below the level of the umbilicus.

ETIOLOGY

That the relationship between vaccination and postvaccination encephalitis is not an accidental one is admitted by all students of the subject, but the relationship remains obscure.

At the present time, opinion as to the direct cause of this complication is chiefly divided between the vaccine virus and some unknown virus assumed to be activated in the presence of vaccinia. Others have suggested that the complication is in some way related to the development of the vaccine sensitive or immune state. Again, it has been suggested that some vitamin or other dietary factor may be concerned. Lastly, as might be expected, some have attempted to incriminate pleomorphic streptococci and other types of bacteria, as well as protozoa and yeasts, all of which are assumed to be activated in the presence of vaccinia.

Those who contend that the condition is caused by vaccine virus *per se* are able to marshal several isolated facts in support of their contention, such as the following:

1. The occasional finding of vaccine virus in the brain or spinal fluid of human cases and the failure to date to find any other virus.
2. The fact that the complication usually follows primary rather than secondary vaccinations.
3. The fact that the complication usually appears when the vaccinia is near its height—with the suggestion that in cases following secondary vaccinations the interval from vaccination to onset tends to be shortened.
4. The apparently good results reported in a few instances following the employment in treatment of serum from recently vaccinated individuals.

However, such facts fall short of compelling one to accept the view as to the vaccinal nature of this complication. Moreover, even if vaccine virus should be proved ultimately to be the direct cause of postvaccination encephalitis, it seems that it will still be necessary to assume the existence of some accessory determining factor; otherwise it is difficult to explain the recent prevalence of the complication and its peculiar geographical distribution.

Those who attribute postvaccination encephalitis to the action of some unknown virus, harmless under ordinary conditions, are forced to assume that the agent becomes pathogenic when associated with vaccinia, or perhaps with other acute infections. Thus the complication is brought into line with the epidemiologically, clinically, and pathologically quite similar cases of encephalitis which rarely follow various acute infections. While the concept of a single causative agent for these various encephalitides is an attractive one, there is as yet no direct proof in support of this theory.

It seems, therefore, that we should keep an open mind as regards the etiology of postvaccination encephalitis until more facts are accumulated.

PREVENTION

In the absence of definite information as to the etiology of postvaccination encephalitis, attempts at its prevention are more or less empirical. However, it is an established fact that primary infant vaccinations and likewise secondary vaccinations performed at any age both tend to be relatively quite unlikely to be followed by this complication. Now, in both of these relatively insusceptible groups the vaccination reactions tend to be milder than is the rule among primary vaccinations performed after the first year of life and in which the susceptibility to postvaccination encephalitis is highest. Without committing ourselves as to the etiology, it seems logical, therefore, to hope that any procedure which would influence the vaccinated individual toward a more effective immunity response to vaccinia might be of advantage in an attempt to prevent this complication.[3]

My attempts in this regard were suggested by certain well-known observations. For instance, it has been a common experience that healthy, plump animals react most severely to vaccinia. On the other hand, scrawny animals, or those actually ill of some other infection, react poorly or even not at all to the same virus. Likewise, in man, as noted by Gordon, spare and thin individuals tend to stand vaccination better than do plump, full-blooded ones. I have also been impressed by the frequency with which postvaccination encephalitis and also postvaccinal tetanus have occurred in robust, apparently healthy children.

Proceeding upon the homely fact that judicious exercise is essential for the functional well-being of familiar tissues—even to bones and teeth—it may be assumed that the same is true of those tissues which constitute the defense mechanism, wherever and whatever they may be. It was therefore decided to determine whether a preliminary immunization by the injection of nonspecific antigens might increase temporarily the animal's efficiency in its reaction against a subsequent inoculation with vaccinia.

That it is possible to influence favorably the course of various diseases through the parenteral administration of various nonspecific

[3] Likewise, the employment of a conservative vaccination method such as the multiple pressure technique, which tends to reduce the local and systemic vaccine response, also seems indicated. England, Holland, and Germany have abandoned their previously advocated multiple insertion vaccinations and now advise a single small insertion. Following this change, there has been a notable falling off in the number of reported cases of postvaccination encephalitis in these countries which can not, however, with certainty be attributed to this change, since there has been a coincident falling off in the number of primary vaccinations of the more susceptible age groups.

antigens is believed by many, and constitutes the basis of the well-known nonspecific protein therapy originally introduced by Renaud in 1911 and by Kraus in 1915.

It has also been noted that acute infections occurring in an individual suffering from a chronic type of infection may favorably modify the course of the latter—for instance, malaria in paresis, or vaccinia in leprosy. Leprosy lesions, according to Denny and Hopkins, are often intensified for a short period by vaccination, only to regress later—often to an actual improvement as compared with the prevaccination state. Howk and Lawson also report instances wherein an attack of smallpox has been followed by striking amelioration of symptoms in cases of tuberculosis. This type of nonspecific immunization has been designated by Wright as "collateral immunization," and the list of ailments wherein it has been invoked could be greatly extended.

There are instances, moreover, in which a preliminary infection has appeared to influence a subsequent infection, or, in other words, wherein "nonspecific" stimulation of the defense mechanism has been utilized in the sense of prophylaxis rather than treatment. For instance, Pierce, 1928, in her work on rabbit syphilis, showed that a coincident inoculation with vaccinia and with syphilis gave an intensified type of syphilis. However, when rabbits were inoculated with syphilis subsequent to vaccination, it was found that the vaccine-immune animals reacted more effectively to the syphilis than did the nonvaccinated controls. For instance, in the vaccine-immune animals the interval from inoculation with syphilis to onset of symptoms was shortened, metastatic orchitis came on later and in a slightly smaller per cent of cases; and generalized lesions, when they appeared, also came on later and were of shorter duration in the vaccinated group. Thus, at the end of three months, 31 per cent of the vaccine-immune animals were healed as to syphilitic lesions, as against 3.3 per cent for the controls.

Likewise, Kinloch studied the effect of vaccinia upon the course of subsequently acquired acute infections in children under 5 years of age, and found that both complications and deaths were fewer in the previously vaccinated group.

In this connection the work of Bieling, which has been extended and confirmed by others, is of interest. Bieling demonstrated that animals previously treated with dysentery bacilli were able to form agglutinins against typhoid bacilli when injected with only a fraction of the amount of antigen that would be required to produce agglutinins in normal animals. It then seems probable that such a heightened irritability of the defense mechanism as noted by Bieling would tend toward an earlier reaction to natural infections. But no one seems to have made practical application of the principle or to have considered it possible of general application.

The following observations indicate, as might be expected, that the early hours following effective exposure to infection are critical ones in so far as the outcome is concerned. In my experimental work I have had numerous opportunities to observe that animals vaccinated with a concentrated virus or on a large area react more severely than do those vaccinated in a small area or with a diluted virus. Now we must remember that vaccine virus is capable of infinite multiplication, and that it is perhaps but a few hours until the virus in the conservatively vaccinated animals equals that introduced in the vigorously vaccinated ones; yet the reaction inaugurated by the conservatively vaccinated animal during this interval is apparent in the milder type of infection. It then seems axiomatic that the more vigorous this early response the greater would be the protection.

It is apparent, however, that any enhanced efficiency gained through previous "nonspecific" stimulation of the defense mechanism is not an absolute preventive of subsequent infections. But it is possible that it might tend to prevent postvaccination nervous complications through rendering the vaccine response more like the milder and relatively insusceptible infant and secondary vaccinations.

In an attempt to verify experimentally the hypothesis that previous nonspecific inoculations would render an animal's response to vaccinia more efficient, I have made use of an observation made by Rosenau and Andervont. These investigators showed that a strain of vaccine virus developed at the National Institute of Health was capable of producing a fatal meningo-encephalitis when introduced into the brains of white mice. The plan followed was to immunize mice against various antigens and subsequently compare the number of deaths among previously immunized and nonimmunized groups following intracerebral inoculations with vaccine virus.

A dose of virus was selected through preliminary titration which was slightly less than sufficient to kill all of a group of normal mice. Diphtheria toxoid, broth, and typhoid vaccine have been utilized for making the preliminary inoculations.

Diphtheria toxoid was, however, utilized in most of our tests, because it is known to be an efficient exerciser of the immune mechanism, and also because if efficiency was indicated experimentally it could be utilized in children by the simple procedure of administering diphtheria immunization first, followed by vaccination against smallpox, rather than in the reverse order as is now the custom in many localities.

In each experiment, mice for the test and control groups were from the same shipment and were placed in cages usually of 25 mice each. The preliminary inoculations consisted usually of 0.5 c c of the selected antigen given subcutaneously and repeated after an interval usually of about two weeks. Control groups were similarly injected with saline.

The intracerebral inoculations with vaccine virus followed the second inoculation in various tests by intervals of from 3 to 30 days.

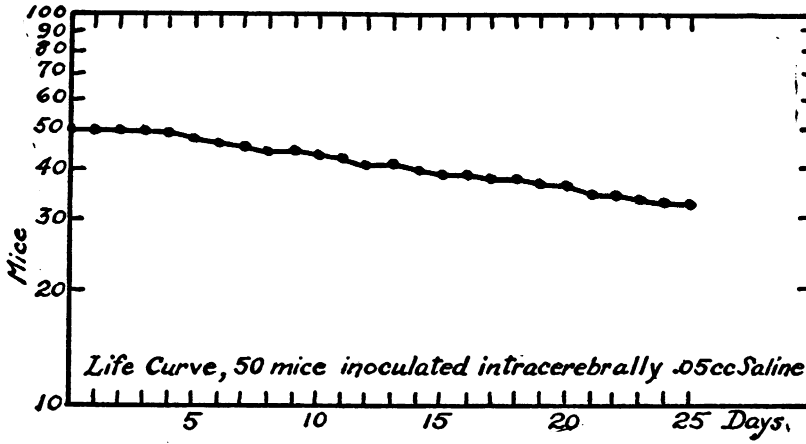

CHART 1

The best interval has yet to be established. The one most frequently utilized in these tests was about three weeks. This long interval was dictated by the work of Glenny and Südmersen, who showed that immunity to diphtheria in animals develops slowly.

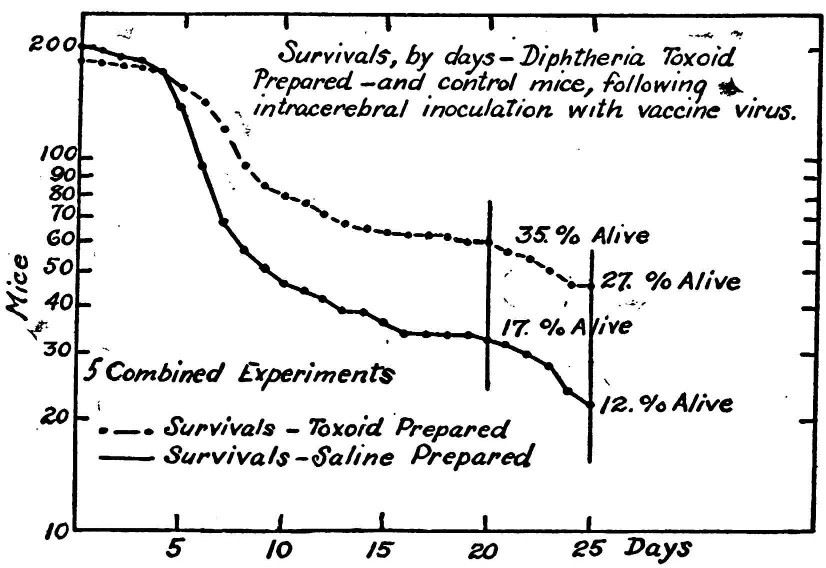

CHART 2

The virus employed for intracerebral inoculations varied in dilution from 1:1,000 to 1:4,000, depending upon the age and batch of virus employed.

The intracerebral inoculations were made under ether by injecting 0.05 c c of the virus suspension through the skull of the right parietal region by means of a 0.25 c c syringe and a 25-gage needle.

The mice which died following inoculation were examined postmortem in order to determine any apparent cause of death other than the inoculation. The gross pathology in mice, however, is not very distinctive, and the cause of death in noninoculated mice often was not apparent. In addition to autopsy we therefore resorted to testing the brains of dead inoculated mice for vaccine virus by the vaccination of rabbits. Virus was usually abundant in the brains of mice dying from three to nine days following inoculation, but was rarely demonstrable by this method after the tenth or twelfth day. The

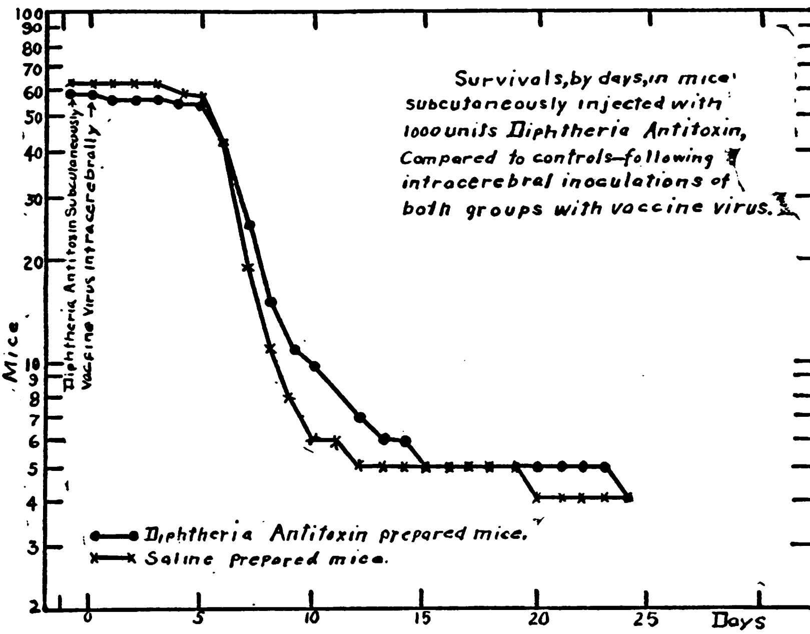

CHART 3

number of deaths which were inconsistent with vaccinia were so few and the number was so similar in test and control groups that they have been ignored; i. e., all deaths occurring during 25 days following the intracerebral inoculations have been considered as vaccinal in nature.

The investigation showed that there were more survivals in the toxoid immunized groups than in the other groups and that the toxoid-treated mice tended to die later than the controls. Occasionally a group would fail to show the protective tendency, but there were no exceptions wherein enough animals were tested to be significant. It is noteworthy that, subcutaneously, 1,000 units of diphtheria antitoxin failed to protect mice against intracerebral inoculation with vaccine virus administered the following day. (Chart 3.)

TABLE 1.—*Deaths, by days, in mice inoculated intracerebrally with vaccine virus*

Day of death following intracerebral inoculation	Preliminary inoculations													
	Toxoid	Saline	Toxoid	Saline	Toxoid	Saline	Toxoid	Saline	Broth	Typhoid	Toxoid	Saline	Toxoid	Saline
	Dilutions of vaccine virus employed for intracerebral inoculation													
	Exp. 1		Exp. 2		Exp. 3		D				E		Totals	
	1/1000	1/1000	1/1000	1/1000	1/2500	1/2500	1/3000	1/3000	1/3000	1/3000	1/4000	1/4000		
1								2	1					2
2		2			1		1	4	2		1	1	3	7
3				2			1	2	3	6		1	1	5
4			7	4	1			2	1	1		2	8	8
5	2	5	3	6	4	4	1	1	7	7	4	4	14	20
6		4	2	3	2	10	6	8	13	12	3	15	13	40
7			2		2	2	4	3	8	10	13	20	21	25
8				1	3	4	6	2	2	3	16	22	25	29
9					1		2	1	2	2	7	4	10	5
10								3		1	5	4	5	7
11	1							2		1	2	3	3	5
12							1	2	1	1	4		5	2
13	1							3			2		3	3
14											2		2	
15								1	2		1		1	1
16										1	1	2	1	2
17												2		2
18											1		1	
19	1										1		2	
20								1		3				1
21							1				2	1	3	1
22							1	1	1		1	1	2	2
23			1				1			1	3	2	5	2
24								4			4		4	4
25									1			2		2
Inoculated	5	11	17	16	19	20	43	47	55	62	98	104	182	198
Dead	5	11	15	16	14	20	25	42	44	49	73	86	132	175
Lived	0	0	2	0	5	0	18	5	11	13	25	18	50	23
Per cent lived	0	0	11.7	0	26.3	0	41.8	10.7	20.0	20.9	25.6	17.3	27.4	11.6

The results can best be shown by reference to Table 1 and Charts 1, 2, and 3. While the results indicate that the protection afforded by a previous nonspecific stimulation is only relative and not absolute, it is believed that the test is rather a severe one, since the remarkable mechanism of some sort which is capable of protecting the central nervous system against vaccine introduced other than into the central nervous system itself is not permitted to operate in these experiments. The method employed has by means of a hypodermic needle penetrated this defense, and it would appear that the saving of such an inoculated animal would be more difficult than the prevention of an occasional brain involvement in the presence of an intact defense mechanism.

Inoculated mice which failed to die in some instances showed nervous symptoms, such as spasm or hyperexcitability, from which they recovered; others, however, showed no apparent ill effects. That these latter mice had, however, received living vaccine virus is indicated by the fact that when such recovered animals were tested with an intracerebral inoculation of rather concentrated virus, 69 per cent remained alive for 25 days, as compared to 4 per cent of the control group.

This protection of a few mice from a cerebral virus infection by means of a previous nonspecific stimulation of the defense mechanism does not necessarily lead to the conclusion that children could be similarly protected from postvaccinal encephalitis. The final test in man must, of course, be sought in epidemiological investigations, and it is in the hope of stimulating such investigations that these experimental results have been reported. However, if the functional status of the defense mechanism has any bearing upon the susceptibility to disease among individuals devoid of a specific immunity, its influence should be apparent in other better understood ailments showing a feeble infecting power, such as poliomyelitis. And in this disease there are certain observations which appear to bear upon this point. For instance, the New York Poliomyelitis Commission in 1916 noted that among 954 poliomyelitis patients 1 to 4 years of age the attack rate among the Schick positive was six to seven times as high as among the Schick negative children.

The commission summed up its observation in the following words: "*A susceptibility to one of the less contagious diseases indicates that the child is also more apt to be susceptible to other contagious and infectious diseases.*"

This observation suggests that an active immunity to diphtheria is associated, probably within the limits of a certain time factor, with a lessened susceptibility to poliomyelitis, a disease of low infectivity. The same observers noted that in measles cases the percentage of positive Schick reactors was "somewhat similar" to that found among normal children of the same age group, possibly indicating, as might be expected, that nonspecific protection was not effective against a highly infectious disease such as measles. In scarlet fever, the infectivity of which, according to Frost, is fifteen times that of poliomyelitis, but in which the infectivity is less than that of measles, the per cent of positive Schick reactors was midway between that found for normal children and for poliomyelitis cases,[4] thus suggesting that immunity to diphtheria is associated with some degree of protection against a recognizable infection with scarlet fever.

It has been contended that the explanation for this interesting observation at New York is to be found in the fact that resistance to both poliomyelitis and diphtheria increase with age at about the same rate. This must be admitted; but why immunity to both diseases

[4] It is conceivable that an attack of poliomyelitis or scarlet fever may render a portion of Schick negative children temporarily Schick positive, as has been claimed by Finkelstein for vaccinia. However, it is noted that measles apparently failed to alter the Schick reaction in the New York cases reported by the poliomyelitis commission in 1916.

should be so constantly associated with the same individuals is not easily explainable on the assumption of a chance contact with the two infective agents. Such an explanation necessitates the assumption that children who suffer contacts sufficient to contract the organisms of diphtheria are the ones effectively exposed to poliomyelitis virus, which exposure results in a specific immunity to that disease usually without recognizable symptoms. On the other hand, an exposure insufficient to infect with diphtheria bacilli must also be considered insufficient to permit spread of poliomyelitis virus. Thus there would be a tendency for the immunes to both diseases, and likewise for the susceptibles to both diseases, to be associated in the same groups respectively.

It should be remembered, however, that when a poliomyelitis virus capable of causing recognizable symptoms made its appearance in New York in 1916, it was precisely in the diphtheria-susceptible group that its spread was most in evidence, notwithstanding the fact that there was no doubt a voluntary effort to reduce contacts during the epidemic. The same tendency was apparent for the scarlet-fever cases.

On the basis of contact it is also difficult to see why susceptibility to measles and diphtheria did not behave as did susceptibility to poliomyelitis and diphtheria. Although measles probably does not require as close contact for transmission as does diphtheria, it yet seems that a contact sufficiently close to convey diphtheria should also favor the spread of measles as well as poliomyelitis.[5]

In order to determine whether susceptibility and likewise immunity to diphtheria and to scarlet fever tended to be associated in the same individuals, respectively, in Washington, I have studied the Schick and Dick reactions, simultaneously performed by Surgeon R. E. Dyer and Surgeon W. T. Harrison, in some 479 previously nonimmunized children from 3 to 15 years of age. Among these children 72 per cent and 49 per cent were shown to be susceptible to diphtheria and scarlet fever, respectively, on the basis of these tests. When one considers the susceptibility to diphtheria among those susceptible and those immune to scarlet fever, it is found that the percentage of Dick positives is only 1.5 times as great for the Schick positive group as for the Schick negative group. (It was also found that the per cent of diphtheria-susceptible children by these tests was but 1.25 times as great among Dick positive children as among Dick negative ones.)

It is realized that this group of 479 individuals is not comparable in many ways to the New York group, but it is felt that they do serve to measure the tendency of specific resistance and suceptibility to

[5] A review of the mortality records shows that measles was endemic in New York City for several years prior to 1916.

two diseases to run parallel in the same individuals. Apparently the tendency seems hardly sufficiently marked to explain the New York observations relative to poliomyelitis and diphtheria. Moreover, the studies cited from New York were made at the Willard Parker Hospital, which served poliomyelitis cases from Manhattan, the most densely populated borough of New York City. On the basis of opportunity for contact it would seem, therefore, that immunity to diphtheria should be relatively high among children from this locality.

It is possible, however, that some artificial selection of cases might have influenced the character of the group studied by the Schick test, for instance, if only the children of the well-to-do had been hospitalized. It is noted, however, that 96 per cent of "suitable cases" were hospitalized. Moreover, among 1,499 poliomyelitis cases from 1 to 4 years of age which were reported for Manhattan, 774 among 954 tested were found to be Schick positive. Considering the remaining 545 untested children as entirely Schick negative, there would still be 51.6 per cent of the poliomyelitis cases in the Schick positive group, or well above the 30 to 40 per cent reported for normal children of the same ages. It appears, therefore, barring errors of observation, that in 1916 poliomyelitis had exerted some selectivity for Schick positive children from 1 to 4 years of age in New York City. This association of resistance to diphtheria and to poliomyelitis, a disease of feeble invasive powers, in the same individuals becomes the expected result if we assume that the ability readily to develop a specific immunity against diphtheria indicates an efficient defense mechanism, which, as noted for mice, may be rendered even more efficient against other types of infection through its experience gained with diphtheria.

Surg. W. T. Harrison has recently completed a survey of some 159 cases of poliomyelitis, together with a control group of apparently noninfected familial exposures, in order to ascertain whether a history of diphtheria immunization prior to onset of poliomyelitis in the home exerted any apparent influence upon the attack rate of the latter disease. The figures showed no variations which he deemed of significance. It seems, however, that a time factor which he has not yet considered may be of importance. For instance, it would seem reasonable to conclude that where the defense mechanism against diphtheria is stimulated only by artificial immunization, the postulated nonspecific protection for other ailments would gradually fade. On the other hand, where immunity is gained naturally through repeated contact with diphtheria organisms or through the carrier state, which were the usual methods in 1916, we would have a more or less chronic state of stimulation present which would tend to keep the defense mechanism mobilized and active. Moreover, following inoculation against diphtheria, a proportion of cases always fail to develop immunity. Persons thus difficult to immunize are scattered throughout the population irrespective of inoculation, while in a grouping dependent upon the Schick reaction they tend to fall largely in the Schick positive group. Thus the grouping of cases upon the basis of history and of Schick reaction is not strictly comparable. Moreover, from the viewpoint which has been suggested it would seem that this group, which responds poorly to toxins or antigens, is of especial interest and should receive consideration in any study of susceptibility to diseases of feeble infectivity.[6]

There is certainly a specific immunity to poliomyelitis as there is to many other diseases, but the assumption that resistance to a virulent strain of poliomyelitis virus is always dependent upon a specific immunity gained through contact with feeble strains of that virus is hardly an established fact.

It is conceivable, moreover, that the various postinfectious encephalitides which are apparently on the increase may be due to a common faulty response to infections on the part of a functionally inadequate defense mechanism.

This conception would offer an explanation for the occasional finding of vaccine virus in the spinal fluid of postvaccination-encephalitis cases and its absence in approximately 100 uncomplicated vaccinations so far used as controls by various investigators.

It is probable that infections differ in their ability to exercise the immunity mechanism; for instance, many of the common respiratory diseases apparently give little specific immunity and could hardly be expected, therefore, to call forth nonspecific protection.

Where primary school vaccination is practiced it is probable, therefore, that for many children vaccinia is a notable experience, constituting their first exposure to a disease which gives a solid immunity; and it appears that the evidence submitted rather suggests the advisability of giving the child, especially if more than 1 year old, the benefit of experience with the nonviable diphtheria toxoid which has not, so far as I know, occasioned encephalitis, before it is submitted to inoculation with vaccine virus, a living antigen capable of infinite multiplication. Even were no immunity to nervous complications conferred, the fact that in recent years in the United States diphtheria has maintained a death rate seventy times as high as has smallpox would seem to dictate such a change.

SUMMARY

The only practicable means so far suggested for preventing the encephalitis occasionally noted following smallpox vaccination have to do with the vaccination procedure.

[6] Antitoxins and antiviral antibodies are strikingly similar in their neutralizing behavior, and the work of Finkelstein, above referred to, rather indicates that the same mechanism is concerned in their production.

A suitable vaccination technique is defined as one employing a small superficial insertion, never over one-eighth inch in greatest diameter and which employs no routine dressing.

Infancy is the best time for performing primary vaccinations in so far as the prevention of postvaccination encephalitis is concerned.

Evidence is presented which suggests that inoculation with diphtheria toxoid tends to render mice somewhat more resistant to vaccine virus subsequently administered intracerebrally.

It is suggested that primary vaccinations, especially after the first year of life, be deferred until contemplated immunization against diphtheria or other diseases by means of inanimate antigens has been accomplished.[7]

The hope is expressed that a recent preliminary exercise or mobilization of the immunity or defense forces may lead to a more efficient anti-vaccine-virus response, with the result that the ensuing reaction may tend to simulate primary infant or secondary vaccinations in their comparative mildness and freedom from postvaccination encephalitis. The suggestion is made that possibly the high percentage of poliomyelitis cases recorded among diphtheria-susceptible children in New York in 1916 may be due in part to an increased resistance to poliomyelitis among children immune to diphtheria.

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[7] It is suggested that the first dose of diphtheria toxoid be given preferably at 6 months of age and the second dose 1 month later; vaccination against smallpox to follow the second inoculation in from 3 to 4 weeks. The same procedure is suggested for older children also.

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COURT DECISION RELATING TO PUBLIC HEALTH

City milk ordinance held not applicable to delivery of milk to State prison located in city.—(Kentucky Court of Appeals; Board of Councilmen of City of Frankfort et al. *v.* Commonwealth et al., 49 S. W. (2d) 548; decided May 3, 1932.) One section of the milk ordinance of the city of Frankfort made it unlawful, with certain exceptions, for any person, without a valid permit from the city health officer, to bring or to receive into the city for sale, or to sell or offer for sale, or to have in possession, any milk products defined by the ordinance. The State penitentiary was located in Frankfort, and the State purchasing commission had contracted with a certain individual for the supplying of milk at the prison. Two persons engaged in carrying out this contract were summoned to answer a charge of delivering milk in the city without a permit from the city health officer. These persons were not delivering milk for private sale or for consumption by the general public. The Commonwealth, on the relation of the State purchasing commission, and the contractor, individually, brought action to enjoin the prosecution of the case or of other similar cases. The validity of the ordinance was not assailed, but its application to State institutions located within the city was denied. The court of appeals said that the State, in pursuance of a constitutional mandate, had made provision for the management and control of

State institutions located in Frankfort, that there was no express provision of law conferring upon the city any right to superimpose additional, or any, regulations upon the internal management of the prison, and that the milk ordinance, even though valid within its sphere, had no application to the State governmental functions controlled by a separate and distinct authority.

DEATHS DURING WEEK ENDED JULY 2, 1932

Summary of information received by telegraph from industrial insurance companies for the week ended July 2, 1932, and corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended July 2, 1932	Corresponding week, 1931
Policies in force	72, 288, 818	75, 049, 104
Number of death claims	13, 658	12, 274
Death claims per 1,000 policies in force, annual rate	9. 9	8. 5
Death claims per 1,000 policies, first 26 weeks of year, annual rate	10. 2	10. 5

Deaths [1] from all causes in certain large cities of the United States during the week ended July 2, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates furnished in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended July 2, 1932				Corresponding week, 1931		Death rate [2] for the first 26 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant-mortality rate [3]	Death rate [2]	Deaths under 1 year	1932	1931
Total (85 cities)	7, 096	10. 1	558	[4] 44	12. 5	633	12. 0	12. 9
Akron	32	6. 3	3	37	8. 7	1	7. 6	8. 2
Albany [5]	36	14. 4	4	82	6. 1	1	14. 6	14. 8
Atlanta [6]	75	13. 8	6	58	21. 2	10	13. 8	15. 8
White	42	11. 7	3	44	18. 7	5	10. 9	12. 6
Colored	33	18. 0	3	86	26. 3	5	19. 6	22. 2
Baltimore [5] [6]	186	11. 9	8	28	13. 3	20	14. 0	15. 6
White	142	11. 1	7	32	11. 2	11	13. 0	14. 3
Colored	44	15. 3	1	16	23. 1	9	18. 4	21. 8
Birmingham [6]	50	9. 4	3	31	15. 1	12	11. 7	14. 6
White	17	5. 2	2	33	10. 6	7	9. 1	11. 2
Colored	33	16. 4	1	27	22. 4	5	15. 9	20. 0
Boston	175	11. 6	16	48	11. 8	20	15. 1	15. 1
Bridgeport	30	10. 6	3	53	11. 0	2	11. 3	12. 1
Buffalo	116	10. 3	2	10	11. 2	9	13. 4	14. 1
Cambridge	19	8. 7	1	21	8. 7	2	13. 4	13. 2
Camden	34	14. 9	9	158	10. 1	3	15. 5	15. 3
Canton	19	9. 2	7	174	9. 8	2	9. 8	11. 1
Chicago [5]	578	8. 6	38	37	18. 4	58	10. 4	11. 6
Cincinnati	110	12. 4	5	32	16. 8	15	15. 5	16. 8
Cleveland	184	10. 4	14	45	11. 6	11	11. 5	12. 0
Columbus	61	10. 6	7	70	13. 6	6	14. 0	14. 7
Dallas [6]	62	11. 5	13		9. 9	5	10. 9	12. 0
White	48	10. 7	11		9. 0	4	10. 0	10. 5
Colored	14	15. 0	2		14. 3	1	15. 1	18. 9
Dayton	42	10. 6	5	72	13. 0	2	12. 4	13. 1
Denver	73	13. 0	5	49	11. 1	8	15. 2	14. 7

See footnotes at end of table.

Deaths[1] *from all causes in certain large cities of the United States during the week ended July 2, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*—Continued

City	Week ended July 2, 1932				Corresponding week, 1931		Death rate [2] for the first 26 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant-mortality rate [3]	Death rate [2]	Deaths under 1 year	1932	1931
Des Moines	26	9.3	0	0	14.4	1	11.8	11.9
Detroit	240	7.3	29	52	7.0	27	8.2	9.1
Duluth	16	8.2	2	58	4.1	1	11.1	11.0
El Paso	27	13.2	10		12.4	6	14.2	16.8
Erie	23	10.1	2	42	6.6	0	12.0	11.3
Evansville	20	9.9	0	0	18.5	2	10.2	12.2
Fall River [5] [7]	22	10.0	3	80	9.0	0	12.5	12.8
Flint	22	6.8	2	29	9.2	2	8.1	7.8
Fort Wayne	18	7.8	4	103	7.5	0	10.5	11.3
Forth Worth [6]	22	6.7	1		9.0	4	10.2	11.6
White	15	5.4	0		9.3	3	9.8	11.2
Colored	7	13.7	1		7.7	1	12.5	13.8
Grand Rapids	27	8.1	2	34	10.3	3	9.2	9.9
Hartford	37	11.4	1	13				
Houston [6]	64	10.3	8		10.6	7	11.1	11.5
White	47	10.3	6		11.3	6	10.3	10.7
Colored	17	10.4	2		8.8	1	13.3	13.6
Indianapolis [6]	93	13.0	7	57	17.3	6	13.2	14.5
White	80	12.7	5	46	16.4	4	12.8	14.0
Colored	13	14.7	2	137	24.2	2	15.6	18.0
Jersey City	62	10.1	3	25	9.5	2	11.8	12.6
Kansas City, Kans.[6]	26	11.0	1	22	16.1	5	12.7	14.2
White	23	12.0	1	27	16.8	3	12.4	13.2
Colored	3	6.6	0	0	13.3	2	14.2	18.6
Kansas City, Mo	96	12.1	3	34	17.6	7	12.6	14.3
Knoxville [6]	14	6.5	3	76	13.8	1	12.2	13.6
White	12	6.7	3	84	12.6	1	11.2	12.5
Colored	2	5.7	0	0	20.5	0	17.5	19.2
Long Beach	17	5.5	1	26	8.6	0	9.2	10.2
Los Angeles	209	7.9	14	42	9.4	21	10.8	11.1
Louisville [6]	67	11.3	5	46	14.0	3	13.5	15.4
White	49	9.8	4	42	13.2	3	12.2	13.7
Colored	18	19.7	1	75	18.6	0	20.7	24.5
Lowell [7]	26	13.6	4	105	9.4	3	14.5	13.5
Lynn	31	15.7	0	0	6.6	1	11.4	10.7
Memphis [6]	84	16.7	11	120	19.5	9	16.6	17.1
White	42	13.5	5	85	16.0	3	13.0	14.0
Colored	42	21.8	6	181	25.3	6	22.3	22.0
Miami [6]	21	9.6	1	28	10.7	1	11.8	12.6
White	14	8.3	0	0	9.6	0	10.6	11.5
Colored	7	14.5	1	101	14.4	1	16.1	16.3
Milwaukee	94	8.2	11	52	14.3	15	9.2	10.2
Minneapolis	79	8.6	4	26	19.1	8	10.8	12.0
Nashville [6]	39	13.0	7	104	21.8	6	15.2	17.5
White	24	11.0	5	98	19.9	5	13.8	15.1
Colored	15	18.3	2	125	26.8	1	18.8	23.8
New Bedford [7]	17	7.9	3	86	10.7	4	12.1	13.2
New Haven	42	13.5	5	100	9.6	2	12.9	12.6
New Orleans [6]	157	17.3	21	119	19.5	21	15.7	17.7
White	101	15.7	15	131	16.5	10	13.3	14.4
Colored	56	21.3	6	98	27.1	11	21.5	25.9
New York	1,286	9.3	80	36	9.3	96	11.3	12.2
Bronx Boro	178	6.7	6	17	7.6	10	8.3	8.9
Brooklyn Boro	452	8.8	30	33	8.5	41	10.5	11.3
Manhattan Boro	486	14.3	32	46	13.1	36	17.4	18.6
Queens Boro	123	5.3	9	37	6.6	7	7.3	7.9
Richmond Boro	47	14.7	3	59	12.8	2	14.3	14.2
Newark, N. J	84	9.8	7	38	12.4	8	11.3	12.6
Oakland	57	10.0	1	13	7.5	3	10.7	10.9
Oklahoma City	35	8.9	8	41	8.7	2	10.3	11.8
Omaha	32	7.6	8	34	22.9	4	13.5	14.6
Paterson	35	13.2	2	36	12.4	4	13.3	14.7
Peoria	21	9.9	0	0	28.4	0	11.5	13.5
Philadelphia	455	12.0	29	45	11.6	33	13.3	14.6
Pittsburgh	148	11.4	10	46	13.6	20	13.5	16.1
Portland, Oreg	46	7.7	1	13	10.5	1	11.5	12.2
Providence	42	8.6	6	58	11.0	3	14.1	14.0
Richmond [6]	47	13.3	6	90	12.7	4	14.1	16.6
White	28	11.0	2	45	11.5	2	11.6	14.0
Colored	19	18.8	4	183	15.8	2	20.4	22.9

See footnotes at end of table.

Deaths[1] *from all causes in certain large cities of the United States during the week ended July 2, 1932, infant mortality, annual death rate, and comparison with corresponding week of 1931. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)*—Continued

City	Week ended July 2, 1932				Corresponding week, 1931		Death rate [2] for the first 26 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant-mortality rate [3]	Death rate [2]	Deaths under 1 year	1932	1931
Rochester	90	14.0	5	48	16.3	6	12.7	13.0
St. Louis	197	12.4	13	46	28.0	18	14.0	16.9
St. Paul	39	7.3	2	21	18.5	4	10.6	11.6
Salt Lake City [5]	31	11.2	4	63	10.2	3	11.1	12.5
San Antonio	50	10.6	14		13.5	17	14.1	16.0
San Diego	31	9.9	1	22	8.7	2	14.6	14.4
San Francisco	143	11.3	7	48	10.7	3	12.9	13.4
Schenectady	11	6.0	0	0	7.0	0	10.8	10.9
Seattle	73	10.1	6	60	8.1	2	12.1	12.0
Somerville	23	11.3	1	40	6.4	0	9.7	10.3
South Bend	9	4.2	5	145	10.6	2	7.8	8.8
Spokane	20	8.9	1	27	13.5	2	12.4	12.8
Springfield, Mass	25	8.5	3	51	7.9	3	11.7	12.8
Syracuse	47	11.4	3	39	13.2	2	12.3	12.5
Tacoma	23	11.1	2	55	7.7	0	12.5	12.8
Tampa [6]	26	12.6	1	29	11.4	5	12.1	12.8
White	14	8.6	0	0	10.1	4	11.4	11.8
Colored	12	27.5	1	158	16.4	1	14.6	16.4
Toledo	50	8.7	2	22	9.7	6	12.2	12.7
Trenton	45	18.9	0	0	11.4	2	16.6	17.7
Utica	22	11.2	0	0	11.2	1	16.3	15.2
Washington, D. C.[6]	141	14.9	15	84	15.4	12	17.2	16.9
White	86	12.6	7	57	13.2	5	15.3	14.5
Colored	55	21.0	8	142	21.2	7	22.1	23.2
Waterbury	14	7.2	1	33	9.8	1	9.8	10.3
Wilmington, Del.[7]	24	11.8	5	113	11.7	3	15.9	15.3
Worcester	50	13.2	1	14	8.2	2	13.0	13.5
Yonkers	15	5.5	0	0	5.6	0	8.2	9.4
Youngstown	26	7.8	2	32	11.8	4	10.1	10.9

[1] Deaths of nonresidents are included. Stillbirths are excluded.
[2] These rates represent annual rates per 1,000 population, as estimated for 1932 and 1931 by the arithmetical method.
[3] Deaths under 1 year of age per 1,000 estimated live births. Cities left blank are not in the registration area for births.
[4] Data for 81 cities.
[5] Deaths for week ended Friday.
[6] For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows. Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; Tampa, 21; and Washington, D. C., 27.
[7] Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

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 July 9, 1932, and July 11, 1931

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 9, 1932, and July 11, 1931

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended July 9, 1932	Week ended July 11, 1931	Week ended July 9, 1932	Week ended July 11, 1931	Week ended July 9, 1932	Week ended July 11, 1931	Week ended July 9, 1932	Week ended July 11, 1931
New England States:								
Maine	1	5			48	31	0	0
New Hampshire	1	1			23	11	0	0
Vermont	1	1			56	24	0	0
Massachusetts	28	51		2	467	330	0	1
Rhode Island	1	4			16	92	0	0
Connecticut	1	5	1		100	110	0	1
Middle Atlantic States:								
New York	70	117	[1] 3	[1] 10	987	1,299	6	9
New Jersey	25	35	1		414	352	3	5
Pennsylvania	44	53			518	840	2	9
East North Central States:								
Ohio	18	28	6	4	319	734	1	5
Indiana	17	15	8		29	94	1	4
Illinois	41	67	6	10	260	631	0	7
Michigan	13	14	1	1	934	198	1	5
Wisconsin	2	5	9	9	363	318	0	1
West North Central States:								
Minnesota	5	3	1		32	48	1	1
Iowa	9				2	3	0	0
Missouri	21	12	1		13	16	0	1
North Dakota		3			6	4	0	0
South Dakota	4	1			1	1	0	0
Nebraska	7	2	5		2	1	0	0
Kansas	4	1	1	4	54	26	0	1
South Atlantic States:								
Delaware		1				34	0	0
Maryland [2]	6	8	1	1	10	119	0	2
District of Columbia	10	4			5	12	0	2
Virginia	7				58		1	
West Virginia	12	3	7	2	173	25	1	0
North Carolina	11	13	4	2	186	190	1	1
South Carolina	3	4	123		82	36	0	0
Georgia [3]	7	8	18	8	32	19	1	1
Florida [3]	5	6		3	1	26	0	0
East South Central States:								
Kentucky						56	1	2
Tennessee	8		12		1	11	3	0
Alabama [3]	12	10	3		2	39	1	1
Mississippi	6	6					0	0

[1] New York City only.
[2] Week ended Friday.
[3] Typhus fever, week ended July 9, 1932, 32 cases: 6 cases in Georgia, 2 cases in Florida, 3 cases in Alabama, and 21 cases in Texas.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 9, 1932, and July 11, 1931—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended July 9, 1932	Week ended July 11, 1931	Week ended July 9, 1932	Week ended July 11, 1931	Week ended July 9, 1932	Week ended July 11, 1931	Week ended July 9, 1932	Week ended July 11, 1931
West South Central States:								
Arkansas	3	4	2	------	------	2	0	0
Louisiana	15	20	14	15	------	------	0	0
Oklahoma [4]	------	4	8	12	11	5	1	0
Texas [3]	34	21	19	------	91	18	3	0
Mountain States:								
Montana	2	------	------	------	24	18	1	0
Idaho	------	1	------	------	------	1	0	0
Wyoming	------	1	------	------	14	5	0	0
Colorado	4	6	------	------	29	28	0	0
New Mexico	4	1	------	------	1	5	0	0
Arizona	------	1	2	------	1	5	0	0
Utah [2]	------	------	------	3	4	9	1	0
Pacific States:								
Washington	3	6	------	------	77	52	0	1
Oregon	4	2	3	12	34	13	1	1
California	17	48	34	9	103	232	4	3
Total	486	601	293	107	5,583	6,123	35	64

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended July 9, 1932	Week ended July 11, 1931	Week ended July 9, 1932	Week ended July 11, 1931	Week ended July 9, 1932	Week ended July 11, 1931	Week ended July 9, 1932	Week ended July 11, 1931
New England States:								
Maine	2	0	10	9	0	0	5	1
New Hampshire	0	0	8	10	0	0	1	0
Vermont	0	0	3	2	1	12	0	0
Massachusetts	0	6	190	113	0	0	2	5
Rhode Island	0	1	11	10	0	0	0	0
Connecticut	1	7	17	19	0	0	2	1
Middle Atlantic States:								
New York	3	36	257	189	0	25	6	17
New Jersey	1	3	84	78	0	1	8	5
Pennsylvania	4	3	255	209	0	0	14	15
East North Central States:								
Ohio	3	0	73	124	7	29	21	22
Indiana	1	0	28	23	3	49	7	3
Illinois	3	2	110	125	2	46	33	17
Michigan	1	0	190	158	3	14	8	4
Wisconsin	0	3	16	21	1	4	2	8
West North Central States:								
Minnesota	2	1	31	19	9	2	1	2
Iowa	1	0	5	10	2	42	2	1
Missouri	0	0	9	15	0	5	19	12
North Dakota	1	0	0	3	0	6	0	0
South Dakota	0	2	5	4	0	1	1	1
Nebraska	1	1	9	2	2	8	0	3
Kansas	0	0	8	7	1	23	6	5
South Atlantic States:								
Delaware	0	0	7	4	0	0	1	1
Maryland [2]	0	0	18	19	0	0	13	14
District of Columbia	0	0	4	11	0	0	3	0
Virginia	0	------	20	------	2	------	53	------
West Virginia	1	0	3	11	0	3	26	6
North Carolina	0	4	9	19	0	0	28	47
South Carolina	2	4	5	1	0	0	50	112
Georgia [2]	0	1	4	10	3	2	51	41
Florida [2]	0	1	0	0	0	0	0	6

[2] Week ended Friday.
[3] Typhus fever, week ended July 9. 1932, 32 cases; 6 cases in Georgia, 2 cases in Florida, 3 cases in Alabama, and 21 cases in Texas.
[4] Figures for 1932 are exclusive of Oklahoma City and Tulsa and for 1931 are exclusive of Tulsa only.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 9, 1932, and July 11, 1931—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended July 9, 1932	Week ended July 11, 1931	Week ended July 9, 1932	Week ended July 11, 1931	Week ended July 9, 1932	Week ended July 11, 1931	Week ended July 9, 1932	Week ended July 11, 1931
East South Central States:								
Kentucky	1	0	12	13	0	1	70	32
Tennessee	0	0	9	6	3	4	114	42
Alabama [3]	1	4	12	15	10	8	20	38
Mississippi	1	4	5	4	2	16	27	38
West South Central States:								
Arkansas	0	0	3	0	0	12	23	64
Louisiana	0	0	1	6	0	9	23	49
Oklahoma [4]	2	0	8	8	2	17	23	23
Texas [3]	4	0	22	17	13	29	103	24
Mountain States:								
Montana	0	0	0	6	3	1	3	6
Idaho	0	0	0	2	3	0	7	2
Wyoming	1	0	4	1	0	1	0	1
Colorado	0	0	12	10	0	0	2	5
New Mexico	0	0	4	1	0	1	6	2
Arizona	0	0	0	2	0	0	1	2
Utah [2]	0	0	1	1	0	0	0	4
Pacific States:								
Washington	3	1	12	23	6	22	3	5
Oregon	0	0	5	2	7	14	2	8
California	3	6	40	47	5	12	6	11
Total	43	90	1,539	1,389	90	419	796	700

[2] Week ended Friday.
[3] Typhus fever, week ended July 9, 1932, 32 cases: 6 cases in Georgia, 2 cases in Florida, 3 cases in Alabama, and 21 cases in Texas.
[4] Figures for 1932 are exclusive of Oklahoma City and Tulsa and for 1931 are exclusive of Tulsa only.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States 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
April, 1932										
Hawaii Territory	4	29	6		272		0	3	0	8
May, 1932										
Mississippi	1	27	1,203	2,363	62	906	4	24	92	50
June, 1932										
Arizona	1	9	12		27		1	21	1	19
Connecticut	2	12	2	1	955		7	304	0	4
Delaware		4			3		0	32	0	2
Indiana	18	61	33		468		0	183	47	31
Iowa	2	81			18		0	158	65	5
Maine		11	13		375	1	1	89	0	4
Tennessee	6	23	79	208	18	123	3	64	36	174

April, 1932	Cases
Hawaii Territory:	
Chicken pox	75
Conjunctivitis, follicular	25
Hookworm disease	80
Impetigo contagiosa	2
Leprosy	3
Mumps	5
Tetanus	3
Trachoma	4
Whooping cough	7
May, 1932	
Mississippi:	
Chicken pox	308
Dengue	2
Dysentery (amebic)	102
Mumps	157
Ophthalmia neonatorum	10
Puerperal septicemia	29
Rabies in animals	9
Rabies in man	1
Trachoma	7
Tularaemia	2
Undulant fever	2
Whooping cough	889
June, 1932	
Chicken pox:	
Arizona	25
Connecticut	499
Delaware	10
Indiana	269
Iowa	95
Maine	118
Tennessee	50
Conjunctivitis:	
Connecticut	11
Maine	3
Dysentery:	
Arizona	1
Connecticut (amebic)	1
Tennessee	130
German Measles:	
Connecticut	7
Iowa	5
Maine	130
Tennessee	118
Lethargic encephalitis:	
Connecticut	1
Mumps:	Cases
Connecticut	250
Delaware	15
Indiana	286
Iowa	71
Maine	26
Tennessee	26
Ophthalmia neonatorum:	
Maine	2
Tennessee	1
Paratyphoid fever:	
Connecticut	2
Puerperal septicemia:	
Tennessee	2
Rabies in animals:	
Connecticut	9
Septic sore throat:	
Connecticut	9
Tennessee	3
Tetanus:	
Iowa	1
Tennessee	1
Trachoma:	
Arizona	12
Indiana	2
Tennessee	46
Trichinosis:	
Connecticut	2
Tularaemia:	
Tennessee	1
Typhus fever:	
Tennessee	1
Undulant fever:	
Arizona	1
Connecticut	7
Indiana	3
Iowa	10
Maine	1
Tennessee	1
Vincent's angina:	
Iowa	2
Maine	6
Tennessee	9
Whooping cough:	
Arizona	41
Connecticut	371
Delaware	29
Indiana	334
Iowa	43
Maine	70
Tennessee	226

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 95 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 33,860,000. The estimated population of the 88 cities reporting deaths is more than 32,300,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended July 2, 1932, and July 4, 1931

	1932	1931	Estimated expectancy
Cases reported			
Diphtheria:			
46 States	492	614	
95 cities	282	300	564
Measles:			
45 States	7,800	6,592	
95 cities	2,411	2,461	
Meningococcus meningitis:			
46 States	32	56	
95 cities	13	26	
Poliomyelitis:			
46 States	42	45	
Scarlet fever:			
46 States	2,071	1,724	
95 cities	886	672	666
Smallpox:			
46 States	89	569	
95 cities	12	37	24
Typhoid fever:			
46 States	609	472	
95 cities	85	64	60
Deaths reported			
Influenza and pneumonia:			
88 cities	347	407	
Smallpox:			
88 cities	0	0	

City reports for week ended July 2, 1932

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 1923 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	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	2	0	0		0	0	0	1
New Hampshire:								
Concord	0	0	0		0	1	0	0
Manchester	0	0	0		0	0	0	0
Nashua	0	0	0		0	0	0	0
Vermont:								
Barre	0	0	0		0	0	1	0
Massachusetts:								
Boston	44	21	28		0	152	68	10
Fall River	2	2	0		0	18	2	1
Springfield	8	2	53		0	2	0	0
Worcester	9	2	0		0	28	5	7
Rhode Island:								
Pawtucket	0	0	0		0	0	0	0
Providence	0	4	3		0	8	3	2
Connecticut:								
Bridgeport	4	3	0		0	47	0	1
Hartford	3	2	1		0	6	5	3
New Haven	8	0	0		0	1	9	1
MIDDLE ATLANTIC								
New York:								
Buffalo	12	9	0		0	34	0	7
New York	202	180	50	3	5	444	174	86
Rochester	8	5	0		0	3	7	2
Syracuse	8	1	0		0	155	2	1

City reports for week ended July 2, 1932—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MIDDLE ATLANTIC—continued								
New Jersey:								
Camden	4	5	1	-	0	0	0	4
Newark	39	10	2	1	0	91	98	2
Trenton	2	1	0	-	0	7	1	2
Pennsylvania:								
Philadelphia	43	40	2	-	1	7	28	18
Pittsburgh	36	13	7	2	2	26	9	15
Reading	5	1	0	-	0	12	2	2
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	6	3	2	-	2	0	0	4
Cleveland	35	18	2	-	1	66	17	9
Columbus	3	2	0	2	2	47	0	1
Toledo	14	3	0	1	1	37	0	2
Indiana:								
Fort Wayne	-	1	-	-	-	-	-	-
Indianapolis	6	1	1	-	0	5	16	0
South Bend	1	2	1	-	0	0	0	1
Terre Haute	1	0	0	-	0	5	0	0
Illinois:								
Chicago	82	74	24	1	1	215	11	18
Springfield	1	0	0	-	0	0	0	1
Michigan:								
Detroit	26	34	10	1	1	482	7	20
Flint	6	1	0	-	0	8	2	0
Grand Rapids	2	1	0	-	0	7	12	0
Wisconsin:								
Kenosha	0	0	0	-	0	105	0	0
Madison	0	0	0	-	-	13	0	-
Milwaukee	61	8	0	-	0	131	6	2
Racine	13	0	0	-	0	6	3	0
Superior	9	0	0	-	0	0	0	1
WEST NORTH CENTRAL								
Minnesota:								
Duluth	9	0	1	-	0	0	7	3
Minneapolis	13	9	7	-	0	1	3	1
St. Paul	15	4	0	-	0	7	14	2
Iowa:								
Des Moines	0	1	2	-	-	0	0	-
Sioux City	2	0	1	-	-	1	0	-
Waterloo	0	0	0	-	-	0	2	-
Missouri:								
Kansas City	2	2	4	-	0	5	10	1
St. Joseph	0	0	1	-	0	1	0	2
St. Louis	12	21	12	-	-	2	4	7
North Dakota:								
Fargo	1	0	0	-	0	0	0	0
Grand Forks	0	0	0	-	-	5	0	-
South Dakota:								
Aberdeen	1	0	0	-	-	0	0	-
Nebraska:								
Omaha	2	2	4	-	0	1	0	3
Kansas:								
Topeka	11	0	0	1	0	11	1	1
Wichita	8	0	1	-	0	1	2	2
SOUTH ATLANTIC								
Delaware:								
Wilmington	0	1	0	-	0	0	0	1
Maryland:								
Baltimore	35	12	2	2	1	2	42	17
Cumberland	0	0	0	1	0	8	1	0
Frederick	0	0	0	-	0	0	0	0
District of Columbia:								
Washington	12	6	8	-	0	6	0	4
Virginia:								
Lynchburg	2	0	0	-	0	0	0	0
Norfolk	0	0	0	-	0	3	0	3
Richmond	0	1	0	-	0	0	0	0
Roanoke	2	0	0	-	0	0	0	0
West Virginia:								
Charleston	1	0	2	-	0	2	0	0
Huntington	0	-	0	-	0	8	0	-
Wheeling	5	0	0	-	0	32	0	1

City reports for week ended July 2, 1932—Continued

Division, State, and city	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—continued								
North Carolina:								
Raleigh	0	0	0		0	0	0	0
Wilmington	1	0	0		0	0	0	0
Winston-Salem	0	0	0		0	19	0	1
South Carolina:								
Charleston	0	0	0		0	6	0	0
Columbia		0						
Greenville	0	0	0		0	3	0	0
Georgia:								
Atlanta	1	2	2	4	0	1	2	2
Brunswick	0	0	0		0	0	0	0
Savannah	0	0	0		0	1	0	0
Florida:								
Miami	0	1	0		0	2	0	0
Tampa	0	1	0		0	0	0	0
EAST SOUTH CENTRAL								
Kentucky:								
Covington	0	0	0		0	0	0	1
Lexington	5		0		0	0	0	0
Tennessee:								
Memphis	3	1	0		0		0	1
Nashville	0	0	0		0	0	0	2
Alabama:								
Birmingham	0	0	1		1	0	2	0
Mobile	0	0	1		1	0	0	1
Montgomery	0	0	0	3		0	1	
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith	0	0	0			0	0	
Little Rock	0	0	0		0	0	1	2
Louisiana:								
New Orleans	0	6	7	2	0	3	0	13
Shreveport	1	0	1		0	2	2	2
Texas:								
Dallas	0	3	10		0	2	0	1
Fort Worth	0	1	2		0	0	0	0
Galveston	0	0	0		0	0	0	1
Houston	0	2	7		0	9	0	4
San Antonio	0	2	2		0	0	0	4
MOUNTAIN								
Montana:								
Billings	0	0	0		0	0	0	0
Great Falls	0	0	0		0	6	0	1
Helena	2	0	0		0	0	2	0
Missoula	0	0	0		0	0	0	0
Idaho:								
Boise	0	0	0		0	2	0	1
Colorado:								
Denver	23	5	3		0	41	14	5
Pueblo	0	0	0		0	0	0	0
New Mexico:								
Albuquerque	0	0	1		0	2	0	0
Arizona:								
Phoenix	0	0	0		0	0	0	1
Utah:								
Salt Lake City	40	2	0		0	1	17	0
Nevada:								
Reno	0	0	0		0	0	0	0
PACIFIC								
Washington:								
Seattle	11	1	0			5	2	
Spokane	15	2	0			29	0	
Tacoma	2	2	0		0	31	1	1
Oregon:								
Portland	3	4	2	2	0	28	1	2
Salem	0	0	0		0	0	1	0
California:								
Los Angeles	35	23	16	22	0	12	19	10
Sacramento	11	1	0		0	2	2	1
San Francisco	6	8	2	1	1	40	2	7

City reports for week ended July 2, 1932—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	1	1	0	0	0	0	1	1	0	8	15
New Hampshire:											
Concord	1	5	0	0	0	0	0	0	0	0	5
Manchester	0	0	0	0	0	1	0	0	0	0	34
Nashua	0	0	0	0	0	0	0	0	0	0	-------
Vermont:											
Barre	0	0	0	0	0	0	0	0	0	0	-------
Massachusetts:											
Boston	42	67	0	0	0	7	1	0	0	41	175
Fall River	2	8	0	0	0	1	0	0	0	0	22
Springfield	3	3	0	0	0	0	0	0	0	2	23
Worcester	6	11	0	0	0	3	0	0	0	13	50
Rhode Island:											
Pawtucket	0	0	0	0	0	0	0	0	0	0	-------
Providence	6	15	0	0	0	2	0	0	0	37	42
Connecticut:											
Bridgeport	3	3	0	0	0	2	0	0	0	11	30
Hartford	2	3	0	0	0	0	0	1	0	1	35
New Haven	1	1	0	0	0	0	0	0	0	33	42
MIDDLE ATLANTIC											
New York:											
Buffalo	14	23	0	0	0	7	0	0	0	22	114
New York	113	177	0	0	0	99	12	4	0	128	1,285
Rochester	7	20	0	0	0	3	0	1	0	4	84
Syracuse	4	6	0	0	0	0	0	0	0	78	47
New Jersey:											
Camden	2	16	0	0	0	1	0	0	0	1	34
Newark	12	24	0	0	0	6	1	0	0	29	85
Trenton	1	4	0	0	0	8	0	0	0	0	45
Pennsylvania:											
Philadelphia	50	72	0	0	0	30	1	4	0	67	455
Pittsburgh	21	33	0	0	0	7	1	0	0	27	148
Reading	2	4	0	0	0	0	0	0	0	18	26
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	10	16	1	1	0	10	1	2	1	8	110
Cleveland	21	31	1	0	0	18	0	0	0	69	184
Columbus	4	6	0	0	0	2	0	3	0	28	61
Toledo	9	2	0	0	0	5	1	1	0	49	50
Indiana:											
Fort Wayne	1	-------	1	-------	-------	-------	0	-------	-------	-------	-------
Indianapolis	6	3	4	0	0	0	0	1	0	21	-------
South Bend	1	1	0	0	0	0	0	0	0	3	9
Terre Haute	1	0	0	0	0	0	0	1	0	1	17
Illinois:											
Chicago	78	97	1	0	0	45	2	7	1	88	578
Springfield	1	0	0	0	0	0	0	1	0	8	15
Michigan:											
Detroit	64	108	1	0	0	24	2	1	0	114	244
Flint	8	7	1	0	0	2	1	0	0	6	22
Grand Rapids	6	1	0	0	0	0	0	1	0	21	27
Wisconsin:											
Kenosha	1	0	0	1	0	0	0	0	0	4	4
Madison	1	0	0	0	-------	-------	0	0	-------	16	-------
Milwaukee	15	8	0	0	0	8	0	0	0	63	94
Racine	1	0	0	0	0	1	0	0	0	1	8
Superior	2	0	0	0	0	1	0	0	0	3	10
WEST NORTH CENTRAL											
Minnesota:											
Duluth	5	1	0	0	0	2	0	0	0	0	16
Minneapolis	17	8	0	0	0	2	0	0	0	2	79
St. Paul	10	4	0	0	0	2	0	0	0	41	46
Iowa:											
Des Moines	2	0	3	0	-------	-------	0	0	-------	0	26
Sioux City	0	0	0	0	-------	-------	0	0	-------	3	-------
Waterloo	0	0	0	0	-------	-------	0	0	-------	0	-------

City reports for week ended July 2, 1932—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—continued											
Missouri:											
Kansas City	5	3	0	0	0	4	1	1	0	12	96
St. Joseph	0	0	0	0	0	1	0	2	0	6	18
St. Louis	19	13	1	0	0	9	3	0	0	10	197
North Dakota:											
Fargo	2	1	0	0	0	1	0	0	0	1	14
Grand Forks	0	0	0	0			0	0		0	
South Dakota:											
Aberdeen	0	1	0	0			0	0		0	
Nebraska:											
Omaha	1	2	2	1	0	1	0	0	0	1	32
Kansas:											
Topeka	0	0	0	0	0	0	1	0	0	46	12
Wichita	0	1	0	0	0	1	0	0	0	3	35
SOUTH ATLANTIC											
Delaware:											
Wilmington	2	4	0	0	0	0	0	0	0	5	24
Maryland:											
Baltimore	18	12	0	0	0	14	2	2	0	64	186
Cumberland	0	0	0	0	0	1	0	0	0	2	14
Frederick	0	0	0	0	0	1	0	0	0	0	1
District of Col.:											
Washington	10	5	0	0	0	5	0	1	1	14	141
Virginia:											
Lynchburg	0	0	0	0	0	0	0	1	0	27	11
Norfolk	0	0	0	0	0	2	0	1	0	5	39
Richmond	1	2	0	0	0	3	0	4	0	0	48
Roanoke	0	1	0	0	0	0	0	0	0	0	18
West Virginia:											
Charleston	1	0	0	0	0	0	0	0	0	0	13
Huntington		0		0				1		0	
Wheeling	0	0	0	0	0	0	0	1	0	6	16
North Carolina:											
Raleigh	0	1	0	0	0	1	0	1	0	7	18
Wilmington	0	0	0	0	0	0	0	0	0	1	9
Winston-Salem	0	4	0	0	0	1	1	0	0	19	22
South Carolina:											
Charleston	0	0	0	0	0	1	1	3	0	0	27
Columbia	0		0				1				
Greenville		0	0	0	0	0		0	0	3	
Georgia:											
Atlanta	3	0	1	0	0	2	3	7	0	10	75
Brunswick	0	0	0	0	0	0	0	0	0	1	3
Savannah	0	0	0	0	0	4	1	1	0	0	37
Florida:											
Miami	0	1	0	0	0	1	1	3	1	0	22
Tampa	0	0	0	0	0	2	0	0	0	0	26
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	0	0	0	0	1	0	0	0	0	15
Lexington		0		0	0	0		0	0	2	12
Tennessee:											
Memphis	2	1	0	0	0	8	5	5	2	10	84
Nashville	1	1	0	0	0	0	2	2	0	0	39
Alabama:											
Birmingham	1	2	0	0	0	7	1	5	0	9	50
Mobile	0	1	0	1	0	1	1	1	0	1	23
Montgomery	0	0	0	0			1	0		4	
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	0	0	0			0	0		4	
Little Rock	0	1	0	0	0	0	1	0	0	0	2
Louisiana:											
New Orleans	3	3	0	0	0	17	3	7	1	6	157
Shreveport	0	1	0	0	0	0	0	1	0	1	26

City reports for week ended July 2, 1932—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL—contd.											
Texas:											
Dallas	2	1	1	0	0	3	2	8	1	6	62
Fort Worth	1	3	1	0	0	0	1	0	0	0	22
Galveston	0	0	0	0	0	1	0	0	0	0	14
Houston	2	5	1	0	0	7	1	0	1	0	64
San Antonio	0	0	1	1	0	2	1	1	0	0	50
MOUNTAIN											
Montana:											
Billings	0	0	0	0	0	0	0	0	0	0	5
Great Falls	0	0	0	0	0	0	0	0	0	0	6
Helena	0	0	0	0	0	0	0	0	0	0	7
Missoula	0	0	0	0	0	0	0	1	0	0	7
Idaho:											
Boise	0	0	0	2	0	1	0	0	0	0	5
Colorado:											
Denver	6	4	0	0	0	8	0	0	0	25	75
Pueblo	1	0	0	0	0	0	1	0	0	0	11
New Mexico:											
Albuquerque	0	0	0	0	0	2	0	0	0	0	7
Arizona:											
Phoenix	0	0	0	0	0	4	0	0	0	0	-------
Utah:											
Salt Lake City	3	2	0	0	0	1	0	0	0	7	31
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	2
PACIFIC											
Washington:											
Seattle	4	3	1	2	-------	-------	1	0	-------	4	-------
Spokane	2	0	3	0	-------	-------	0	0	-------	6	-------
Tacoma	1	5	1	2	0	1	0	1	0	4	23
Oregon:											
Portland	3	2	6	1	0	1	0	0	0	0	46
Salem	1	0	1	0	0	0	0	0	0	1	-------
California:											
Los Angeles	19	18	3	1	0	16	3	1	0	65	209
Sacramento	2	0	0	0	0	3	1	0	1	5	22
San Francisco	10	2	0	0	0	6	0	0	0	12	143

Division, State, and city	Meningococcus meningitis: Cases	Meningococcus meningitis: Deaths	Lethargic encephalitis: Cases	Lethargic encephalitis: Deaths	Pellagra: Cases	Pellagra: Deaths	Poliomyelitis (infantile paralysis): Cases estimated expectancy	Poliomyelitis: Cases	Poliomyelitis: Deaths
NEW ENGLAND									
Massachusetts:									
Boston	1	0	0	0	0	0	0	0	0
Connecticut:									
Bridgeport	0	1	0	0	0	0	0	0	0
Hartford	0	0	0	1	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	4	2	1	1	0	0	3	1	0
Pennsylvania:									
Philadelphia	2	1	0	0	0	0	0	2	0
Pittsburgh	1	0	0	0	0	0	0	0	0

City reports for week ended July 2, 1932—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	1	0	0	0	0	0	0	0	0
Indiana:									
Indianapolis	1	0	0	0	0	0	0	0	0
Illinois:									
Springfield	0	0	0	0	0	0	0	1	0
Michigan:									
Detroit	0	2	2	2	0	0	0	1	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	0	0	4	0	0	0	0	0	0
Missouri:									
St. Louis	0	0	1	0	0	0	0	0	0
North Dakota:									
Fargo	0	0	0	0	0	0	0	1	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	0	0	0	2	1	0	0	0
District of Columbia:									
Washington	0	0	1	2	0	0	0	0	0
North Carolina:									
Winston-Salem	0	0	1	0	3	1	0	0	0
South Carolina:									
Charleston	0	0	0	0	6	1	0	2	0
Georgia:									
Atlanta	0	1	0	0	0	1	0	0	0
Brunswick	0	0	0	0	1	1	0	0	0
Savannah	0	0	0	0	1	0	0	0	0
Florida: [1]									
Miami	0	0	0	0	2	0	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	0	0	0	0	1	0	0	0	0
Alabama:									
Birmingham	1	0	0	1	3	1	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	1	0	1	0	2	3	1	0	0
Texas:									
Dallas	0	0	0	0	0	0	1	1	0
Houston [1]	0	1	0	0	0	0	0	1	0
MOUNTAIN									
Utah:									
Salt Lake City	1	1	0	0	0	0	0	0	0
PACIFIC									
California:									
San Francisco	0	0	0	0	1	0	0	1	0

[1] Typhus fever, 2 cases: 1 case at Tampa, Fla., and 1 case at Houston, Tex.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended July 2, 1932, compared with those for a like period ended July 4, 1931. The population figures used in computing the rates are estimated mid-year populations for 1931 and 1932, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 34,000,000. The 91 cities reporting deaths have more than 32,400,000 estimated population.

Summary of weekly reports from cities, May 29 to July 2, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	June 4, 1932	June 6, 1931	June 11, 1932	June 13, 1931	June 18, 1932	June 20, 1931	June 25, 1932	June 27, 1931	July 2, 1932	July 4, 1931
98 cities	[2] 45	67	[3] 42	54	47	66	[4] 36	54	[5] 44	[6] 47
New England	46	46	84	41	62	41	[7] 31	67	204	96
Middle Atlantic	46	74	31	55	50	65	38	47	27	53
East North Central	35	75	[8] 34	64	34	89	30	72	[9] 24	49
West North Central	57	55	59	61	64	52	[10] 63	42	59	33
South Atlantic	27	40	27	49	22	44	27	45	[11] 28	[11] 12
East South Central	[2] 31	12	[2] 6	18	6	6	[2] 25	23	12	12
West South Central	59	68	89	27	76	85	[12] 73	68	89	27
Mountain	26	191	43	35	26	26	17	9	26	[13] 9
Pacific	80	49	59	53	67	71	[14] 11	51	34	51

MEASLES CASE RATES

	June 4, 1932	June 6, 1931	June 11, 1932	June 13, 1931	June 18, 1932	June 20, 1931	June 25, 1932	June 27, 1931	July 2, 1932	July 4, 1931
98 cities	[2] 826	1,096	[3] 855	876	617	719	[4] 540	568	[5] 372	[6] 384
New England	1,124	933	1,177	601	1,059	635	[7] 1,001	438	630	402
Middle Atlantic	413	1,102	525	839	363	664	376	511	345	284
East North Central	1,952	1,445	[8] 1,868	1,303	1,298	1,159	972	920	[9] 650	768
West North Central	172	817	176	448	136	331	[10] 109	297	57	140
South Atlantic	333	1,476	512	1,104	392	768	294	591	[11] 154	[11] 311
East South Central	[2] 187	1,151	[2] 25	828	35	852	[2] 12	593	0	352
West South Central	49	254	73	149	59	88	[12] 101	47	53	24
Mountain	957	870	465	705	612	609	543	479	431	[13] 215
Pacific	522	512	611	580	394	302	[14] 613	363	227	149

SCARLET FEVER CASE RATES

	June 4, 1932	June 6, 1931	June 11, 1932	June 13, 1931	June 18, 1932	June 20, 1931	June 25, 1932	June 27, 1931	July 2, 1932	July 4, 1931
98 cities	[2] 302	310	[3] 278	269	252	222	[4] 176	168	[5] 137	[6] 105
New England	546	414	410	291	417	272	[7] 343	238	280	188
Middle Atlantic	418	355	377	318	321	280	211	195	168	135
East North Central	338	422	[8] 354	386	344	310	208	240	[9] 168	122
West North Central	135	258	102	168	44	132	[10] 63	78	63	31
South Atlantic	147	198	120	123	102	77	90	93	[11] 58	[11] 55
East South Central	[2] 6	153	[2] 37	170	12	94	[2] 19	65	29	47
West South Central	43	41	23	88	13	30	[12] 56	30	36	41
Mountain	103	104	190	96	164	78	155	96	52	[13] 36
Pacific	97	86	80	80	126	57	[14] 42	57	53	47

SMALLPOX CASE RATES

	June 4, 1932	June 6, 1931	June 11, 1932	June 13, 1931	June 18, 1932	June 20, 1931	June 25, 1932	June 27, 1931	July 2, 1932	July 4, 1931
98 cities	[2] 5	14	[3] 3	10	3	7	[4] 2	8	[5] 2	[6] 6
New England	0	0	0	0	0	5	[7] 0	0	0	0
Middle Atlantic	0	0	0	1	0	0	0	1	0	0
East North Central	2	16	[8] 1	12	1	5	1	5	[9] 1	8
West North Central	28	42	19	36	9	29	[10] 6	19	2	10
South Atlantic	0	18	0	0	0	14	0	12	[11] 0	[11] 0
East South Central	[2] 31	18	[2] 6	23	12	12	[2] 12	18	6	23
West South Central	7	41	3	24	0	20	[12] 0	30	3	24
Mountain	0	26	0	17	0	0	0	70	17	[13] 0
Pacific	17	33	11	25	17	16	[14] 23	6	10	14

See footnotes at end of table.

Summary of weekly reports from cities, May 29 to July 2, 1932—Annual rates per 100,000 population, compared with rates for the corresponding period of 1931 [1]—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	June 4, 1932	June 6, 1931	June 11, 1932	June 13, 1931	June 17, 1932	June 20, 1931	June 25, 1932	June 27, 1931	July 2, 1932	July 4, 1931
98 cities	[2] 7	6	[3] 7	7	10	9	[4] 10	10	[5] 13	[6] 10
New England	5	2	7	0	5	10	[7] 18	0	5	10
Middle Atlantic	3	5	4	7	7	12	4	4	4	5
East North Central	5	1	[8] 1	4	4	4	5	6	[9] 10	3
West North Central	2	10	6	4	6	6	[10] 12	10	6	10
South Atlantic	16	20	27	14	29	14	37	16	[11] 42	[11] 19
East South Central	[2] 31	18	[2] 12	18	35	12	[2] 44	35	75	41
West South Central	10	10	10	24	16	14	[12] 21	54	56	71
Mountain	9	17	0	9	0	0	9	52	9	[13] 36
Pacific	17	4	15	12	15	10	[14] 8	14	4	4

INFLUENZA DEATH RATES

	June 4, 1932	June 6, 1931	June 11, 1932	June 13, 1931	June 17, 1932	June 20, 1931	June 25, 1932	June 27, 1931	July 2, 1932	July 4, 1931
91 cities	[2] 5	6	[3] 4	4	5	7	[4] 6	4	[5] 3	[6] 3
New England	5	2	0	0	5	7	[7] 3	2	0	0
Middle Atlantic	3	5	7	4	5	8	7	2	4	1
East North Central	3	2	[8] 0	4	4	5	3	6	[9] 4	1
West North Central	6	6	3	6	6	6	[10] 9	0	0	9
South Atlantic	14	14	12	6	8	4	6	6	[11] 2	[11] 4
East South Central	[2] 14	38	[2] 7	13	0	0	[2] 7	6	13	19
West South Central	10	10	0	3	13	14	[12] 14	7	0	10
Mountain	0	0	0	0	0	9	9	0	0	[13] 9
Pacific	2	7	2	5	2	5	[14] 6	2	2	5

PNEUMONIA DEATH RATES

	June 4, 1932	June 6, 1931	June 11, 1932	June 13, 1931	June 17, 1932	June 20, 1931	June 25, 1932	June 27, 1931	July 2, 1932	July 4, 1931
91 cities	[2] 77	86	[3] 73	75	62	70	[4] 57	67	[5] 53	[6] 64
New England	91	120	89	60	79	65	[7] 65	60	62	36
Middle Atlantic	83	102	92	88	75	72	61	76	61	67
East North Central	60	59	[8] 46	60	42	60	43	51	[9] 34	61
West North Central	67	138	70	71	52	106	[10] 53	38	64	77
South Atlantic	98	77	96	83	76	89	73	103	[11] 52	[11] 67
East South Central	[2] 95	76	[2] 27	146	13	83	[2] 55	140	31	83
West South Central	84	86	94	79	81	76	[12] 61	90	91	90
Mountain	129	87	52	70	52	78	60	35	60	[13] 72
Pacific	53	48	44	43	53	34	[14] 54	41	44	46

[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, 1932 and 1931, respectively.
[2] Covington, Ky., not included.
[3] Springfield, Ill., and Covington, Ky., not included.
[4] Hartford, Conn., Wichita, Kans., Covington, Ky., Little Rock, Ark., and Los Angeles, Calif., not included.
[5] Fort Wayne, Ind., and Columbia, S. C., not included.
[6] Columbia, S. C., and Billings, Mont., not included.
[7] Hartford, Conn., not included.
[8] Springfield, Ill., not included.
[9] Fort Wayne, Ind., not included.
[10] Wichita, Kans., not included.
[11] Columbia, S. C., not included.
[12] Little Rock, Ark., not included.
[13] Billings, Mont., not included.
[14] Los Angeles, Calif., not included.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Two weeks ended June 25, 1932.—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the two weeks ended June 25, 1932, as shown in the following table. Provinces not given in the table did not report any case of any disease included in the table.

Province	Cerebrospinal fever	Influenza	Lethargic encephalitis	Poliomyelitis	Smallpox	Typhoid fever
Nova Scotia		10				
New Brunswick						6
Quebec	1			2	1	153
Ontario			1	1		19
Saskatchewan					2	3
Alberta				3		2
British Columbia					1	4
Total	1	10	1	6	4	187

Quebec Province—Communicable diseases—Week ended June 25, 1932.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended June 25, 1932, as follows:

Disease	Cases	Disease	Cases
Chicken pox	49	Scarlet fever	35
Diphtheria	19	Smallpox	1
Erysipelas	5	Tuberculosis	64
German measles	6	Typhoid fever	118
Measles	35	Whooping cough	46
Poliomyelitis	2		

JAMAICA

Communicable diseases—Four weeks ended June 18, 1932.—During the four weeks ended June 18, 1932, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island of Jamaica, outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Chicken pox	10	32	Leprosy		3
Diphtheria	1		Puerperal fever		4
Dysentery	2	5	Tuberculosis	43	80
Erysipelas		1	Typhoid fever	14	64

JAPAN

Cholera—Tokyo.—Three cases of cholera have been reported in Tokyo, Japan, and its suburbs. The first case was reported June 10, the second, June 15, and the third, June 17. Two of the cases originated in Honjo, a ward of Tokyo, and one case in Kamata, a suburb of Tokyo, located between that city and Yokohama. It is believed that the disease was imported by Japanese troops returning from China. Strict precautionary measures have been taken, including quarantine of suspected districts and compulsory inoculation of contacts and food handlers.

MEXICO

Tampico—Communicable diseases—June, 1932.—During the month of June, 1932, certain communicable diseases were reported in Tampico, Mexico, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria	2	1	Measles	5	
Enteritis, various	69	71	Paratyphoid fever	6	7
Influenza	40		Tuberculosis	41	33
Leprosy	3		Typhoid fever	4	1
Malaria	705	15	Whooping cough	40	2

PANAMA CANAL ZONE

Communicable diseases—May, 1932.—During the month of May, 1932, certain communicable diseases, including imported cases, were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox	25		Measles	19	1
Diphtheria	1		Pneumonia		27
Dysentery (amebic)	2		Scarlet fever	1	
Leprosy	1		Tuberculosis		34
Malaria	145	2	Whooping cough	6	

PUERTO RICO

San Juan—Communicable diseases—Four weeks ended June 18, 1932.—During the four weeks ended June 18, 1932, cases of certain communicable diseases were reported in San Juan, Puerto Rico as follows:

Disease	Cases	Disease	Cases
Chicken pox	1	Malaria	18
Diphtheria	5	Measles	23
Dysentery (amebic)	3	Vincent's angina	1
Leprosy	1	Whooping cough	6

TRINIDAD

Port of Spain—Vital statistics—May, 1931, 1932.—During the months of May, 1931 and 1932, certain vital statistics were reported in Port of Spain, Trinidad, as follows:

	May, 1931	May, 1932		May, 1931	May, 1932
Number of births	160	158	Death rate per 1,000 population	17.7	14.4
Birth rate per 1,000 population	27.4	26.4	Deaths under 1 year	12	16
Number of deaths	103	86	Deaths under 1 year per 1,000 births	75	101

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

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables 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. 10–Feb. 6, 1932	Feb. 7–Mar. 5, 1932	Mar. 6–Apr. 2, 1932	Week ended—													
					April, 1932				May, 1932				June, 1932				July, 1932	
					9	16	23	30	7	14	21	28	4	11	18	25	2	9
China:																		
Amoy	C														3		15	
	D														2		11	
Canton	C			2			1				1	1	2	49	330			
	D										1		1	22	152			
Hankow	C	1	1				3			8					6			
	D						1			3								
Hong Kong	C															9	45	33
	D															9	18	33
Kwantung	C																P	
Nanking	C														123			
	D														45			
Newchwang	C															1	5	
	D																4	
Shanghai	C								11	11	8	40	92	90	130	276		
	D									1	1	1	10	9	23	11		
Swatow	C										1			1		49		
	D															3		
Tientsin	C													3	16			
	D														5			
India	C	10,001	5,826	4,952	1,519	1,432	1,709	1,635	1,497	1,126								
	D	5,267	2,788	2,358	780	719	863	832	731	592								
Bombay	C		1															
	D		1															
Calcutta	C	133	1,118	162	53	114	53	130	174	228	141	106	79	63	106			
	D	70	54	73	25	56	25	42	58	125	79	59	38	27	51			
Chittagong	C	6	1	2														
	D	1	22	1														
Madras	C		3	6														
	D		3	3														
Rangoon	C										1				1			
	D										1				1			

India (French):																		
Chandernagor	C								11		3	5						
	D								5		2	5						
Karikal	C	35	2															
	D	17																
Pondicherry Territory	C	15		2														
	D	15		2														
Pondicherry	C			1														
	D			1														
Indo-China (see also table below):																		
Pnompenh	C	2			1						1		1		1	1		
	D	2			1						1		1		1	1		
Saigon and Cholon	C	1	1	1			1	1	1	1	2	2	2	2	1	1		
	D						1	1	1	1	2	2	1	1	1	1		
Japan:																		
Kobe	C													1				
Tokyo	C													1	2			
Persia: Kouh Bezman	C							[1] 1										
Philippine Islands: Capiz Province	C	22	23															
	D	20	20															
Siam	C	1		1	1	1					8		8					
	D	1		2		1					7		4					
Bangkok	C	1		2	1													
	D	1		1														
On vessels:																		
S. S. Angora at Rangoon from Calcutta	C			1														
S. S. Narbada at Rangoon from Calcutta	C				1													
	D				1													
S. S. Shanghai Maru at Kobe from Shanghai	C												1					
S. S. President Wilson enroute to Manila from Honolulu via Shanghai and Hong Kong	C															2		
	D															1		

Place		November, 1931	December, 1931	January, 1932	February, 1932			March, 1932			April, 1932			May, 1932		
					1–10	11–20	21–29	1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20	21–31
Indo-China (French) (see also table above):																
Annam [2]	C				4									93	20	21
	D				4									7	2	6
Cambodia [2]	C	4	3	12	3	2		6	1	3	4	1	20	12	6	
	D		2	6	2	2		3	1	1	3		8	2	1	
Cochin-China [2]	C	6	14	5	7		P	3	2	4	3	6	18	11	30	
	D	4	7	4	5			2	1	2	2	3	13	8	21	
Laos [2]	C										7					
	D										3					

[1] A suspected case.

[2] Reports incomplete.

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

PLAGUE [1]

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

Place		Jan. 10–Feb. 6, 1932	Feb. 7–Mar. 5, 1932	Mar. 6–Apr. 2, 1932	Week ended—												
					April, 1932				May, 1932				June, 1932				July 2, 1932
					9	16	23	30	7	14	21	28	4	11	18	25	
Argentina:																	
Cordoba Providence [2]	C	1				2											
San Luis Province	C													1	1		
Belgian Congo	C											2					
British East Africa (see also table below):																	
Tanganyika	C	10		2													
	D	10															
Uganda	C	31	8	4	1	7	13	18	11	9	6	11					
	D	26	6	4	1	6	11	18	7	8	6	10					
Canary Islands: Palma Islands—Los Lanos	C	8								1							
	D	8															
Ceylon: Colombo	C	5	4	3		1		1	1	3		2	5	3	3	2	
	D	3	3	3		1		1	1	1		2	5	3	3	2	
Plague-infected rats		1		1				1	5	2	2		4				
China:																	
Kwang Chow Wan	C			8													
	D			8													
Shensi Province	C		P														
Dutch East Indies:																	
Java—																	
Surabaya	C	2															
	D	2															
Tegal	C		1														
Java and Madura	D	499	459	362	98	75	95	97	70	62							
West Java	C	201	141	213	68	52	64	55			41						
	D	200	139	213	68	52	63	54			41						
Ecuador (see table below).																	
Egypt:																	
Alexandria	C	2		2					1	2	1	8	1	2		1	3
	D									2		1	2	1	1		1
Assiout	C	1															
	D	1															
Beheira	C	11						1	2				1	1			
	D	2						1	3				1				
Beni Suef	C						4	33	2								
	D							8	3								

Gharbieh	C												2		1		
	D													1			
Minieh	C	1		3													
	D	1		3													
Tanta	C	1															
	D	1															
Hawaii Territory:																	
Hawaii Island—																	
Hamakua—																	
Honokaa	C		2														
	D		2														
Plague-infected rats			1														
Kukaiau—Plague-infected rats												1	1				
Maui Island—																	
Makawao	C		1														
	D		1														
Plague-infected rats			4														
India	C	7,892	8,593	9,724	1,804	1,400	1,279	714	684	474							
	D	3,971	4,970	5,543	1,065	852	859	443	505	360							
Bassein	C	1	4	9	4			1	2					2		1	
	D		4	7	3		1		2					2			
Bombay	C		5	8	6	3	5	5	2	2	1		1				
	D		5	6	5	3	5	2	1	2	1		1				
Plague-infected rats		57	109	117	30	23	35	34	25	21	1	11	3				
Madras	C						[3] 1										
	D						1										
Madras Presidency	C	2,951	70	158	42	16	11		18	5	6						
	D	155	47	86	14	6	4		4	4	1						
Rangoon	C		9	4	4	1	1	1				1					
	D	1	8	4	4	1		1									
Plague-infected rats			2	8	4			1		2		1		1			
Indo-China (see table below).																	
Iraq: Baghdad	C	5	3													1	
	D		1														
Peru (see table below).																	
Senegal (see table below).																	
Siam	C	1	1	7													
	D	1		3													
Southwest Africa.[4]																	
Syria: Beirut	C				1			1							1		2
Union of South Africa: Orange Free State	C	P	P	P													
	D			10													
United States: California—Los Angeles—Plague-infected rats					1				2					1			
On vessel:																	
Steamship Columbia, at Naples, from Barcelona—Plague-infected rats																1	

[1] Including plague in the United States and its possessions.
[2] 10 cases of bubonic plague were reported in Cordoba Province, Argentina, in January, 1932. They were distant from railroad and 500 kilometers from ports.
[3] An imported case.
[4] 80 cases of plague with 15 deaths were reported in Ovamboland, Southwest Africa, up to Apr. 30, 1932. Antiplague measures have been taken.

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

PLAGUE—Continued

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

Place		January, 1932	February, 1932	March, 1932	April, 1932	May, 1932	June, 1932
British East Africa (see also table above):							
Kenya	C	17	33	22	18	11	
Ecuador:							
Province—							
Chimborazo	C	8	13		6	10	2
Loja	C	11					
Indo-China	C	17	P	P	9	2	
	D	9			6	1	
Madagascar:							
Province—							
Ambatolampy	C	23	40	25			
	D	23	38	25			
Ambositra	C	166	90	81	19		
	D	152	81	67	17		
Antisirabe	C	53	45	54	21		
	D	51	45	53	21		
Meavatanana	C			4			
	D			4			
Miarinarivo	C	15	13	9	6		
	D	15	12	9	6		
Moramanga	C	13	9	3			
	D	13	9	3			
Taranarive	C	203	148	71	42		
	D	196	140	70	40		

Place		January, 1932	February, 1932	March, 1932	April, 1932	May, 1932	June, 1932
Peru	C	11	2				
	D	8	2				
Department—							
Canete	C	3					
Lambayeque	C						2
Libertad	C	1			28		
Otuzco	C					1	
Lima	C	6		1			
Lima	C		1	1	1	1	
	D		1				
Piura	C	1					
Senegal:							
Dakar [5]	C			10			
	D			5			
Louga [5]	C					3	
	D					2	
Rufisque [5]	C					3	6
	D					3	6
Yombel [5]	C			9			
	D			5			

[5] Reports incomplete.

SMALLPOX

Place		Dec. 13, 1931–Jan. 9, 1932	Jan. 10–Feb. 6, 1932	Feb. 7–Mar. 5, 1932	Mar. 6–Apr. 2, 1932	Week ended— April, 1932: 9	16	23	30	May, 1932: 7	14	21	28	June, 1932: 4	11	18	25
Aden	C		2		1												
Algeria:																	
Algiers	C	1													1	1	
Constantine Department	C						1		1	1		1					
Philippeville	C								1								
Southern Territories	C			2													
Brazil:																	
Porto Alegre (alastrim)	C	35	34	19	5	2	1	2	3	2							
	D	2			1												
Rio de Janeiro	C	1															
Santos	C		2														
British East Africa: Tanganyika	C	55	24	5	P					79	11						
	D	4	7	2													
British South Africa:																	
Northern Rhodesia	C	7	5														
Southern Rhodesia	C	1			4	1	6										
Canada:																	
Alberta	C	11															
British Columbia	C	5	25	17	9												1
	D		4	9	3												
Manitoba	C		10				1										
Nova Scotia	C			1													
Ontario	C	14	6	21	4		2	4		1			23				
North Bay	C		1														
Quebec	C	3	1	8													1
Saskatchewan	C	11	35	30	6		1	5	2	3	1	3	6		1		2
Chile: Tocopilla	C	2															
China:																	
Amoy	C	218	183	121	45	7	5	4	1	3		2	3				
	D	79	91	44	25	4	3	3	1	2		2	2				
Canton	C	18	27	44	79	24	18	22	17	19	9	5	9	1	3		
	D			1	7			1		1							
Foochow	C	P	P	P	P		P		P		P		P		P		
Hankow	C	47	59	4	5	1		1	1	1	1	3					
	D	12	5	1													
Hong Kong	C	1	11	51	45	12	13	21	9	7	9	7	1	4	5	2	
	D		6	23	28	2	6	6	6	7	6	2	2	4	6	1	
Manchuria—Dairen	C		1	1	16	7		1		1		1					
Shanghai	C	155	163	167	102	22	24	22	22	16	6	5	6	3	3		
	D	41	62	67	45	7	10	8	10	6	5		2	1	2		

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

SMALLPOX—Continued

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

Place		Dec. 13, 1931–Jan. 9, 1932	Jan. 10–Feb. 6, 1932	Feb. 7–Mar. 5, 1932	Mar. 6–Apr. 2, 1932	Week ended— April, 1932: 9	April, 1932: 16	April, 1932: 23	April, 1932: 30	May, 1932: 7	May, 1932: 14	May, 1932: 21	May, 1932: 28	June, 1932: 4	June, 1932: 11	June, 1932: 18	June, 1932: 25
China—Continued.																	
Swatow	C	2		1													
Tientsin	C		1	2	8	1	1			1				2			
	D			1	1												
Chosen (see table below).																	
Colombia: Cali	C	1															
Dahomey	C				6				2	2					15		
	D				1												
Dutch East Indies: Batavia	C	1	1														
	D		1														
Egypt:																	
Alexandria	C				1						1	1				1	
Cairo	C		1														
Suez	C			2	20	1	1	2		1							
	D				3												
Finland	C												1				
France (see table below).																	
Germany: Aix-la-Chapelle	C		1														
Gold Coast (see table below).																	
Great Britain:																	
England and Wales	C	198	227	258	273	70	87	96	62	68	76	56	68	49	36	25	30
London	C	100	100	136	129	30	25	48	34	41	39	25	29	49	18	15	18
London and Great Towns	C	152	188	203	236	57	63	86	51	59	60	47	52	37	31	37	23
Greece (see table below).																	
Guatemala (see table below).																	
Honduras: [1]																	
Ceiba	D			1	2	1			1								
Puerto Castilla	C		1	4					4			1	P			2	
Tegucigalpa	C			5													
Tela	C				2	2							1				
Trujillo	C			35													
	D			5													
India	C	2,361	4,576	9,709	12,040	4,093	3,431	3,083	3,120	4,230	3,388						
	D	464	970	1,896	2,234	783	705	665	742	996	796						
Bassein	C		3			1											
	D					1											

Bombay	C	3	6	23	27	7	7	8	3	10	12	2	12	7	4		
	D	2	2	10	12	2	3	5		2	4	1	5	4	2		
Calcutta	C	7	27	102	159	38	19	40	36	17	35	22	19	15	16		
	D	3	15	54	115	30	11	22	36	12	29	16	10	17	14		
Chittagong	C				2						2						
	D				1						1						
Cochin	C		1	9	3	1											
Karachi	C	3	18	23	19	6	4	10	9	4	5	3	4	7	5	3	
	D		6	8	8	2		2	5		2	1	3	1	1	1	
Madras	C	7	9	15	51	15	20	13	10	17	10	10	10	3	8		
	D	2	3	4	16	4	2	2	3	2	4	2	3		3		
Moulmein	C		4	4	7	1											
Negapatam	C			1	1							1	2				
	D		1									1					
Rangoon	C	39	147	418	606	116	71	32	41	18	26	13	9	6	10		
	D	10	40	127	179	32	28	12	16	0	11	6	2	4	4		
Tuticorin	C	6	28	36	14		3		2	4							
	D		2	8	9		1		2	5							
Vizagapatam	C	2		3	2												
India (French):																	
Karikal	C	4	1	4	19	3	15	1	2	2	4	1	4				
	D	2	1	4	9	3	6	1	2	2	2	1	2				
Pondicherry Territory	C	22	32	20	29	3	10	6	3	3	5	28	11		4	2	
	D	22	27	20	26	2	8	6	3	3	5	28	11		4	2	
Indo-China (see also table below):																	
Pnompenh	C		1	2	1												
Saigon and Cholon	C	32	117	145	212	33	35	32	13	12	8	8	5	3	3	3	9
	D	24	92	85	174	30	32	27	12	11	7	7	5	3	3	2	9
Iraq:																	
Baghdad	C	15	10	4	20		5	10	12	4	7	10		14	9	3	1
	D	8	13	4	10		2	5	6	2	3	3		6	4	2	
Basra	C	1	2	2	11	1	1	1	1	1	1	4	2	2	4	2	
	D	2					1	2	1		1	1	1	1		1	
Ivory Coast (see table below).																	
Japan:																	
Kobe	C			1	2		1				1	7	2				
	D				1								1				
Nagasaki	C									1	4	4	4	1	1	1	
Osaka Prefecture [2]	C							3	90	34	48						
Osaka	C										1						
Taiwan	C		35	58	1			1									
Yokohama	C	1	2														
Mexico (see also table below):																	
Chihuahua	D			3	1	1						1			5		
Durango	D					1											
Jalisco (State)—Guadalajara	D	1	3		1			1	1		1	1		1	1		
Mexico City and surrounding territory	C	8	14	33	6	2	5	6	3	3	2	3	9	4	7		
	D			1				1	1		1						
Monterrey	C		1	8	1		1	1		1			1				
Saltillo	D											1	2	2			

[1] 590 cases of smallpox with 15 deaths were reported in Honduras from July, 1931, to Feb. 16, 1932.
[2] Two hundred and sixty-four cases of smallpox were reported in Osaka Prefecture, Japan, from Mar. 1 to May 28, 1932.

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

SMALLPOX—Continued

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

Place		Dec. 13, 1931–Jan. 9, 1932	Jan. 10–Feb. 6, 1932	Feb. 7–Mar. 5, 1932	Mar. 6–Apr. 2, 1932	Week ended— April, 1932: 9	April 16	April 23	April 30	May, 1932: 7	May 14	May 21	May 28	June, 1932: 4	June 11	June 18	June 25
Mexico—Continued.																	
San Luis Potosi	D	2	5	2	3		1	1		1			1		1		
Torreon	C	2	6	2	2	1			2		1	1	1	1	1	1	
	D	2	2	3	2	1			2		3			1			1
Morocco (see table below).																	
Nigeria	C		217	46	750			82	34		939						
	D		120	2	111			6	13		316						
Palestine	C										1						
Poland	C	1									1			1			
Portugal:																	
Lisbon	C	108	98	50	38	5	11	4	6	10	5	8	6	2	5	6	
Oporto	C	2	3	14	14	10	6		5	3	5	8	8	4	9	8	2
Salvador	C			85	10												
Siam	C	13	1		2								1	8	1		
Sierra Leone [3]	D													4	1		
Straits Settlements	C	2	4	6	1												
	D		1		2												
Sudan (Anglo-Egyptian)	C	2	3	8	4		1		2						1	1	1
	D		1	1													
Sweden: Malmo	C		9														
Syria (see table below).																	
Tunisia: Tunis	C	1			1												
Turkey (see also table below): Istanbul	C			1			1				1						
Union of South Africa:																	
Cape Province	C	P				P	P	P	P	P	P	P	P				
Orange Free State	C						P	P	P								
Transvaal	C				P				P	P		P	P				
On vessels:																	
Brazilian ship Jaboatoa at New Orleans from Brazil	C	1															
S. S. Tacoma at Manila from Shanghai	C	1															
S. S. Cressington Court at Yokohama from Shanghai	C		1														
S. S. Bollington Court at Yokohama from Shanghai	C		1														
S. S. Victoria City at Brisbane from Shanghai	C		1														

S. S. Bellasco at Mobile from Habana, Cuba, and Hull, England	C	1														
S. S. Frauenfels at Suez from Calcutta	C				1											
S. S. Uwajima Maru at Osaka from Shanghai	C		1													
S. S. President Jackson at Yokohama from San Francisco via Honolulu	C	1														
S. S. Hong Kheng at Singapore from Amoy, via Swatow and Hong Kong	C		1													
S. S. Hai Ning and S. S. Solviken at Hong Kong	C		P													
S. S. Merkara at Aden from Colombo	C		2													
S. S. Tjisadane at Hong Kong from Shanghai and Amoy	C		P													
S. S. Poafung at Shanghai	C		1													
S. S. Rajula at Penang from Negapatam	C		P													
S. S. MacGillivary at Suez from Rangoon	C				[4] 1											
S. S. Tainui at Southampton from New Zealand	C				[4] 1											
S. S. Glenbank at Suez from Aden	C				1											
S. S. Tuscania at Suez from Bombay	C										1					

Place		December, 1931	January, 1932	February, 1932	March, 1932			April, 1932			May, 1932		
					1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31
Gold Coast	C		2										
	D		1										
Indo-China (see also table above)	C	509	309	660	230	275	222	175	247	146	211	78	
	D	93	148	231	109	113	120	80	97	64	46	37	
Ivory Coast	C												19
	D												1
Syria: Beirut	C		5					1		1			

Place		October, 1931	November, 1931	December, 1931	January, 1932	February, 1932	March, 1932	April, 1932
Chosen	C	7	2	1	1	6	30	55
	D	1				3	9	5
France	C		6	1				
Greece	C						1	8
Guatemala	C				5			
	D				1			

Place		October, 1931	November, 1931	December, 1931	January, 1932	February, 1932	March, 1932	April, 1932
Mexico (see also table above)	D	427	419	423				
Morocco	C	91	152	279	488	368	308	101
Turkey (see also table above)	C				31	22	2	
	D				1	1		

[3] From Mar. 6 to Apr. 30, 1932, 551 cases of smallpox with 6 deaths, were reported in Sierra Leone.

[4] A suspected case.

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

TYPHUS FEVER

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

Place		Dec. 13, 1931–Jan. 9, 1932	Jan. 10–Feb. 6, 1932	Feb. 7–Mar. 5, 1932	Mar. 6–Apr. 2, 1932	Week ended— April, 1932 9	April 16	April 23	April 30	May, 1932 7	May 14	May 21	May 28	June, 1932 4	June 11	June 18	June 25
Algeria:																	
Algiers	C	4	1	3	7		8	9	23	7	23	31		8	5	5	
Constantine Department	C	5	7		7									1			
Geryville	C		7	1													
Oran	C				1								4	10			
Bulgaria	C	22	44	66	44	15	6	15	9	10	7	16	5	4	5		
	D	3	6	6	2		3	4	2		2	1		1			
Chile:																	
Antofagasta	C	1	1									1					
Santiago	C				1		1										
China:																	
Hankow	C	4			5						1		1				
Swatow	C			2													
Tientsin	C										1						
Chosen (see table below).																	
Colombia: Cali	D			1													
Czechoslovakia (see table below).																	
Egypt:																	
Alexandria	C	5		1		5	2	7					1	5	2		1
Beheira	C	7		70	46				5								
	D			16					1								
Dakahlia	C											69					
Gharbieh	C	1		12					5								
	D								2								
Port Said	C													1			
Provinces	C	11	43	333	676	112	49	41	20	27	38	38	60	139			
	D	2	3	25	49	18	9	12	4	6	1	1		10			
Greece (see table below).																	
Irish Free State:																	
Roscommon County—																	
Leitrim	C											1					
	D											1					
Roscommon	C													1			
Waterford County—Lismore	C	1															

Latvia (see table below).																	
Lithuania (see table below).																	
Mexico:																	
Guadalajara	D	1															
Mexico City, including municipalties in Federal District	C	11	25	20	7	3	2	3	3	2		5	1	2	4		
	D	6	9	12	4	1		2					2		1		
San Luis Potosi	D	1		1	1												
Morocco	C	9	6	59	29	9	7	3	15	3	7	7	2	13	5	4	
	D	1		6	6	1									3		
Palestine	C	4	3	1						1				2	1		
Paraguay: Asuncion	D			1													
Poland	C	193	265	215	255	85	95	119	115	70	106	106	98	83	77	21	
	D	14	10	21	22	5	10	11	13	7	4	5	9	3	4	1	
Portugal:																	
Lisbon	C													2	5		
Oporto	C		1	1		10				3				4			
Rumania	C	108	264	296	270	89	62	55	46	61	60	53					
	D	10	13	28	31	8	6	5	2	8	8						
Tunisia: Tunis	C	2	1	24	81	32	6	20	19	26	15	13	1	13	9		
	D			3	8	4											
Turkey (see table below).																	
Union of South Africa:																	
Cape Province	C	P	P	P	P	P	P	P	P	P	P	P					
Natal	C	P		P				P	P	P							
Orange Free State	C	P	P	P	P	P	P	P	P	P	P	P					
Transvaal	C	P	P	P													
Venezuela: Caracas (see table below).																	
Yugoslavia (see table below).																	
On vessel: At Antofagasta, from Iquique and points north	C	1															

Place		December, 1931	January, 1932	February, 1932	March, 1932	April, 1932	May, 1932
Chosen: Seoul	C			5	4		
	D			1			
Czechoslovakia	C	10	1			1	
	D	3					
Greece	C	6	4	4	7	1	
	D	1					
Latvia	C	12					

Place		December, 1931	January, 1932	February, 1932	March, 1932	April, 1932	May, 1932
Lithuania	C	20	21	10	32	25	13
	D	1	3	3	3	5	1
Turkey	C	21	14	22	6	1	
	D	2	3	1	3		
Venezuela: Caracas	D	1	2				
Yugoslavia	C	14	11	26	5	29	34
	D	1		2	1		6

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

YELLOW FEVER

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

Place		Jan. 10–Feb. 6, 1932	Feb. 7–Mar. 5, 1932	Mar. 6–Apr. 2, 1932	Week ended— April, 1932				May, 1932				June, 1932				July 2, 1932
					9	16	23	30	7	14	21	28	4	11	18	25	
Brazil:																	
Bahia State—Esplanada	C								P								
Ceara State	C							1									
	D							1									
Espirito Santo State	C			2	1	P	P	P									
	D			2	1												
Santa Teresa (about 56 miles from Victoria)	D		1														
Parahyba State	C															1	
	D															1	
Pernambuco State	D				1												1
Dahomey: Porto Novo	C			1													
	D			1													
Gold Coast:																	
Avudua	C			1	1												
Cape Coast	C			P													
Tamale	C			1													
Yapei	C		1														
Nigeria	C											1					

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