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## UTILITY OF ANTIPLAGUE VACCINES AND SERUMS.

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*Vaccine:* Early in the modern studies of plague immunity an experimental foundation for antiplague vaccination was laid by the French (1) and German (2) workers. It may be noted, however, that immunity in animals, induced by vaccination with killed cultures, is not of a very high grade and is not readily induced, even under favorable conditions.

*Vaccines.*—Antiplague vaccine was first used on man in 1897 by Haffkine (3), who employed old killed broth cultures in what we would consider rather large doses. The excellent results reported by him in the way of protection against infection and in the reduction in the severity of attacks when complete immunity was not afforded, have become widely known. Briefly, Haffkine claimed a reduction of attacks among the vaccinated to one-fourth or less compared with those among the control (nonvaccinated) group and a very pronounced reduction in case fatality.

The much-quoted Byculla House of Correction experiment (4) covers an observation on rather small groups of vaccinated and of nonvaccinated persons, apparently comparable in every way, and seems to show that the vaccination gave protection, even as early as the day following the inoculation. This would presuppose a much earlier development of antibodies than seems possible from our present knowledge of active immunity. Cases continued to occur among members of the nonvaccinated group for eight days following vaccination, making a total of 12 attacks with 6 deaths from a group of 185 persons, while but two cases, both of which recovered, occurred among the 153 who were vaccinated.

A most puzzling feature in connection with some of Haffkine's later work on large groups of persons was the apparently very marked reduction in the general death rate among the vaccinated persons, even when the improvement which might be considered due to reduced plague mortality had been excluded. (5) This naturally threw some doubt on the validity of the numerical results in relation to plague.

In the hands of some other observers in India the results were by no means so brilliant as those reported by Haffkine, though the figures practically always pointed to a favorable influence of the prophylactic, as either the incidence or the case mortality, or both, were reduced.

The evidence was carefully examined by a commission appointed by the Government of India. A reading of the report of this commission will convince anyone that while the data were examined in a very critical manner, yet it was conceded that the evidence pointed decidedly to the value of vaccination. Anti plague vaccination is used in India at present to some extent.

Since Haffkine introduced his vaccine, some modifications have been made which do not require special discussion, though some special features developed in recent research demand consideration.

Rowland expresses the opinion that the uses of different strains (9) of the plague organism may have a bearing on the efficiency of the vaccine, and suggests that this may account for the failure of Haffkine's vaccine in the Dutch East Indies. In the light of this it would seem desirable to prepare a vaccine from a strain of the bacillus isolated in the locality where the prophylactic is to be employed. The same worker also presents experimental evidence that the growth in serum medium (10) of the organism used for the preparation of the vaccine produces a better immunizing agent than the broth growth of the same organism.

Sensitized vaccines have been employed, but there is no experimental evidence of their superiority and no record of any observations on large groups of men.

Strong (6), working in the Philippines, came to the conclusion that the inoculating of humans with living avirulent cultures of the plague bacillus afforded a promising method of prophylaxis, but this procedure has never been given a sufficiently extensive trial to demonstrate its value under other than laboratory conditions.

In concluding this brief review of vaccination in plague we must state that we are not acquainted with any evidence indicating that vaccination has ever controlled an outbreak.

*Serums:* Yersin (7 and 8) early prepared a serum by the immunization of horses with dead, and later with living, cultures in the usual manner for preparing antibacterial serums. This procedure was modified by Lustig and Galeotti (8), who used as an antigen for the immunization of horses a substance which they called "nucleo-albumin," obtained from the bacterial cells of the plague bacillus by a special process.

Rowland (11) also used a derivative of plague bacilli for the immunization of horses for the production of a therapeutic serum and

found that it had antitoxic and protective properties and was definitely curative in infected rats.

Antiplague serum, particularly the one made according to Yersin's method, has been used both as a prophylactic and in the treatment of those sick of plague.

Dealing first with the prophylactic use of serum, it may be stated that evidence for or against its value is meager, as no observations are on record in which its use has been extensive and adequately controlled. It is certain that no complete or durable immunity is produced; indeed, it has been stated that whatever protection is conferred does not extend beyond 10 days. We could scarcely hope for a very long passive immunity even from a highly potent serum, and, in comparison with some others, antiplague serum can not be considered as especially potent. When we consider the unpleasant consequences that occasionally follow the injection of horse serum, it appears that the use of antiplague serum as a prophylactic need not be seriously considered until we have a more potent preparation or possess clearer evidence of the value of the serum now in use than is available at present.

The therapeutic use of serum has been tested in many well-controlled series of cases, usually with some apparent advantage on the side of the serum-treated cases, though the reduction of mortality has never been very conspicuous, and indeed in some series there was no observable influence of the serum.

It is obvious that the quality of the serum and the dose in which it is employed may be factors that are of the greatest importance. There is a report by Seeman (12) of the use of the serum in the New Orleans outbreak of 1914 in which brilliant results appear to have been secured by large doses of the serum. As much as 200 cc. was given at a dose and the large doses were repeated. This stands as an almost isolated example of an experience in which definite benefit appears to have been derived from the preparation.

It seems rather unfortunate to those who are called on for advice in connection with a plague outbreak to find that popular and professional interest is so frequently centered on the subject of prophylaxis by vaccines or serums and on treatment by serum when, in fact, the situation demands active measures against rodents. Under American conditions at least it is not a matter of much importance whether biological products are used in a prophylactic way or not. The health officer need give but little consideration to them in his plans to deal with an outbreak of bubonic plague. If people want to be vaccinated for prophylactic purposes there is no objection to complying, but the community should not be allowed to delude itself into the belief that plague may be controlled in this manner. The essential features of an antiplague campaign should be the ex-

termination of rodents and not immunization by means of vaccines or serums.

1. Yersin, Calmette and Borrel: *Ann. de l'Inst. Pasteur* 1895, 9, p. 589.
2. Bericht der deutschen Pestcommission. *Arb. a. d. Kais. Ges.-Amt*, Vol. 18, 1899.
3. Report of Indian Plague Commission. Vol. V, 1901.
4. Same, p. 196.
5. Same, p. 209.
6. *Philippine Journal of Science*, Sec. B. Vol. 2, 1907, p. 238.
7. Yersin, *Ann. de l'Inst. Pasteur*. Vol. 11, 1897.
8. Referred to by Kolle and Wassermann. *Handbuch der pathogenen Mikroorganismen*, 1904; 4th Vol. Second part, p. 949.
9. *Journal of Hygiene, Plague Supplement*, No. IV, p. 759, 1915.
10. *Journal of Hygiene, Plague Supplement*, No. III, p. 440, 1914.
11. *Journal of Hygiene, Plague Supplement*, No. I, p. 20, 1912.
12. *American Journal of Tropical Diseases*, Vol. III, p. 281, 1915.

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## PELLAGRA INCIDENCE IN RELATION TO SEX, AGE, SEASON, OCCUPATION, AND "DISABLING SICKNESS" IN SEVEN COTTON-MILL VILLAGES OF SOUTH CAROLINA DURING 1916.<sup>1</sup>

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### Introduction.

In the spring of 1916 we began a study of pellagra in certain cotton-mill villages of South Carolina. The results of that portion of the first year's study dealing with the relation of diet to pellagra incidence have already been reported.<sup>2</sup> In the present paper we desire to report the results of the part of the study dealing with the incidence of the disease in relation to certain social factors. Although a number of students have made somewhat similar studies, which we hope to review in a later paper, this, so far as we are aware, is the first time that the actual age and sex incidence of the disease have been determined for a population enumerated in direct connection with the study.

### Locality and Population.

The study was made in seven representative cotton-mill villages situated in the northwestern part of South Carolina. The population of each was composed almost entirely of mill employees and their families. The few Negro families present and living in a quarter somewhat apart were not considered, so that our study deals with an exclusively white population which, with hardly a single exception, was of Anglo-Saxon stock, born in this country of American-born parents. We also excluded from our study

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<sup>1</sup> From Field Investigations of Pellagra. Manuscript submitted for publication Feb. 5, 1920. Goldberger, Wheeler, and Sydenstricker, 1920.

the mill executives, store managers, clerks, and their households. There was, therefore, no significant difference in race or occupation (other than that of employment or nonemployment in the cotton mills) in the population (village people) studied.

#### Methods of Study.

Pellagra incidence was determined, as described in a previous paper (*op. cit.*), by a biweekly house-to-house visit and search for cases. This was begun about the middle of April and carried on by one of us (G. A. W.) regularly every two weeks throughout the remainder of the year. This is believed to be the first time this expedient has been applied systematically and continuously over so long a period to the study of this disease.

At each canvass every family was visited and an effort made to see and question all individuals in or about the house. At first considerable reluctance was displayed by some of the people in speaking of any condition which they believed or suspected to be pellagrous; but as we became better known this reserve in large measure disappeared, so that from time to time cases were brought to our attention which might otherwise have escaped us.

In order to see as many as possible of those at work in the mill, the time of the canvass was so varied as to utilize more or less of the lunch hour and Saturday half-holidays in different villages and in different sections of the same village in rotation. At each visit inquiries were made as to the health of the absent members of the household and as to the existence of any suspicious illness or condition in the village, particularly in members of neighboring households. Reports regarded as suggestive were investigated, at times trips to the mill being made for this purpose.

Information with respect to the occurrence of cases of pellagra was also sought from local physicians. Although we believe we enjoyed their full cooperation, the number of cases coming to our attention in this way formed a very small proportion of the total recorded by us. This is interesting as indicating that but a small percentage of cases occurring in any season come to the attention of a physician.

Only those patients with a clearly defined bilaterally symmetrical dermatitis were recorded as having pellagra. In the course of the canvass, cases with manifestations more or less suggestive of the disease were from time to time encountered, but in the absence of a clearly marked bilaterally-symmetrical eruption were recorded at most as "suspects."

The date of the first appearance of the eruption was assumed to mark the onset of the attack. This date could be fixed fairly accurately in most adults, but was frequently rather difficult of determination in children, for it many times happened that in these the

existence of an eruption was not recognized until attention was called to it in the course of the canvass. In such instances the date could frequently be placed as within the period of the immediately preceding two weeks by the fact of the absence of the eruption at the date of the preceding examination, or, in the event of the individual not having been seen at the immediately preceding visit, the date could, as a rule, be placed as falling within the preceding four weeks. A definite date, however, so far as possible, was always assigned even in such instances. In selecting it, the appearance and stage of the eruption, with such other circumstances as the history of the case might bring out, were used as a guide. In general, it may be said that in the vast majority of our cases the date of "onset" is probably correct within less than a week, and in practically all cases it may be said that the eruption appeared not later than this date. It is possible that some of the cases recorded as occurring late in the year were really relapses, the eruption in the early part of the year having escaped our observation.

It is recognized that in assuming that the appearance of the eruption marks the onset of the attack of pellagra a certain error is involved. In many of our cases a definite history of symptoms antedating the eruption was obtained; in a much greater proportion (children for the most part), however, such history either could not be elicited or it was so vague as to be of no value in fixing the date of onset. In the latter event the assumption that the first appearance of the eruption marks the onset of the disease was, therefore, practically unavoidable; hence, for the sake of uniformity and in order to eliminate any possible bias, this rule was adopted and applied in all cases. It follows, therefore, that our "date of onset" should be interpreted as indicating that the attack began "not later than" that date.

In computing the incidence of pellagra among the total population studied, as well as the general incidence according to sex, age, occupation, and month of onset, all cases as defined above were considered without regard to the locality in which the onset of the 1916 attack occurred and without regard to the question of whether the 1916 attack was the initial or a recurrent attack.

The data relating to population were secured by a census of the villages made during May and June, 1916. The population is as nearly as possible that which was observed for pellagra prevalence. In some of the tabulations which are presented care has been taken to consider only those households which were under biweekly observation for specified periods.

The population of the several villages used in computing incidence according to sex, age, and occupation is slightly less than the total population, for the reason that data for some of the households and

for some individuals were incomplete in these and some other respects, and hence could not be used. The total population of the seven villages enumerated in May and June, 1916, and used for the computation of pellagra incidence was 4,399, while the population used in computing sex, age, and occupation incidence aggregated 4,161.

### Pellagra Incidence.

#### TOTAL INCIDENCE.

A total of 115 definite cases was recorded in the seven villages during the period April 16–December 31, 1916, representing a rate of 26.1 per 1,000 of population. These cases occurred in 77 households, so that on the basis of a total of 798 white mill workers' households, it appears that 9.6 per cent of these included some one or more members with a definite attack of pellagra in 1916.

There were recorded also 73 cases in which the eruption did not conform fully with the criteria we had adopted. These are some of the "suspects" to which previous reference has been made. We are satisfied that all of these may properly be classed as pellagra. If this were done, we would have a total of 188 cases and an incidence rate of 42.7 per 1,000 of population, a rate which is probably more closely representative of the actual condition than is that for our definite cases alone. As it has seemed wiser, however, to adhere strictly to our definition of pellagra, we have segregated these from our definite cases (see Table I) and have not considered them in relation to any of the factors that we have attempted to study.

TABLE I.—*Total pellagra incidence in white population of seven cotton-mill villages of South Carolina during 1916.*

[Households and population as enumerated in May and June, 1916.]

Mill village.	Households.					Persons.				
	Number considered.	With definite cases.		With ill-defined cases only.		Number considered.	With definite cases.		With ill-defined cases.	
		Number.	Per cent.	Number.	Per cent.		Number.	Per 1,000.	Number.	Per 1,000.
<i>At</i> .....	114	9	7.9	8	7.0	579	14	24.2	8	13.8
<i>In</i> .....	118	30	25.4	15	12.7	681	46	67.6	26	38.2
<i>Ny</i> .....	133	1	.8	2	1.5	750	1	1.3	2	2.7
<i>Rc</i> .....	100	13	13.0	11	11.0	603	19	31.5	12	19.9
<i>Sn</i> .....	131	6	4.6	7	5.3	642	8	12.5	7	10.9
<i>Sa</i> .....	85	7	8.2	6	7.1	504	15	29.7	9	17.9
<i>Wy</i> .....	117	11	9.4	5	4.3	640	12	18.7	9	14.1
All villages.....	798	77	9.6	54	6.8	4,399	115	26.1	73	16.6

It may here be noted that the number of cases recorded by us is believed to represent pretty closely, though perhaps not quite fully, the total incidence for the year, even though the search for

cases did not begin until about the middle of April or the 1st of May. Subsequent experience has shown that but few cases develop during the first three months of the year in the locality studied; and as it is highly probable that a considerable proportion of the few developing earlier in the year would have continued active into the period when our canvass for cases began, the number missed was probably too small to affect the general rate very materially.

#### INCIDENCE ACCORDING TO SEX AND AGE.

The incidence of the disease during 1916 among persons of different sexes and of various age periods is shown in Table II. The ages in this table are grouped according to the conventional divisions—by single years up to 5, and by 5-year periods up to 65 years.

TABLE II.—*Pellagra incidence by sex and age in seven cotton-mill villages of South Carolina during 1916.*

[Definite cases in white population.]

Age periods.	Males.			Females.			Total.		
	Num- ber.	Pellagrins.		Num- ber.	Pellagrins.		Num- ber.	Pellagrins.	
		Num- ber.	Per 1,000.		Num- ber.	Per 1,000.		Num- ber.	Per 1,000.
Under 1 year.....	65	0	0.0	63	0	0.0	128	0	0.0
1 year.....	57	0	.0	56	0	.0	113	0	.0
2 years.....	59	0	.0	54	5	92.6	113	5	44.2
3 years.....	82	2	24.4	74	5	67.6	156	7	44.9
4 years.....	76	1	13.2	62	3	48.4	138	4	29.0
Under 5.....	339	3	8.8	309	13	42.1	648	16	24.7
5-9.....	313	20	63.9	296	15	50.7	609	35	57.5
10-14.....	279	5	17.9	258	4	15.5	537	9	16.8
15-19.....	242	2	8.3	279	3	10.8	521	5	9.6
20-24.....	221	1	4.5	234	12	51.3	455	13	28.6
25-29.....	156	0	.0	180	5	27.8	336	5	14.9
30-34.....	131	1	7.6	139	8	57.6	270	9	33.3
35-39.....	119	1	8.3	116	5	43.1	235	6	25.5
40-44.....	81	1	12.3	76	5	65.8	157	6	38.2
45-49.....	63	0	.0	59	3	50.9	122	3	24.6
50-54.....	46	1	21.7	45	1	22.2	91	2	22.0
55-59.....	32	1	31.2	40	0	.0	72	1	13.9
60-64.....	16	2	125.0	19	0	.0	35	2	57.1
65 years and over.....	33	2	60.6	39	1	25.6	72	3	41.7
All ages.....	2,071	40	19.3	2,069	75	35.9	4,160	115	27.6
Under 15 years.....	931	28	30.1	863	32	37.1	1,794	60	33.4
15 years and over.....	1,140	12	10.5	1,226	43	35.1	2,366	55	23.2

This tabulation suggests that certain age periods may be further grouped according to the incidence curves for the two sexes. This has been done in Table III and Fig. 1.



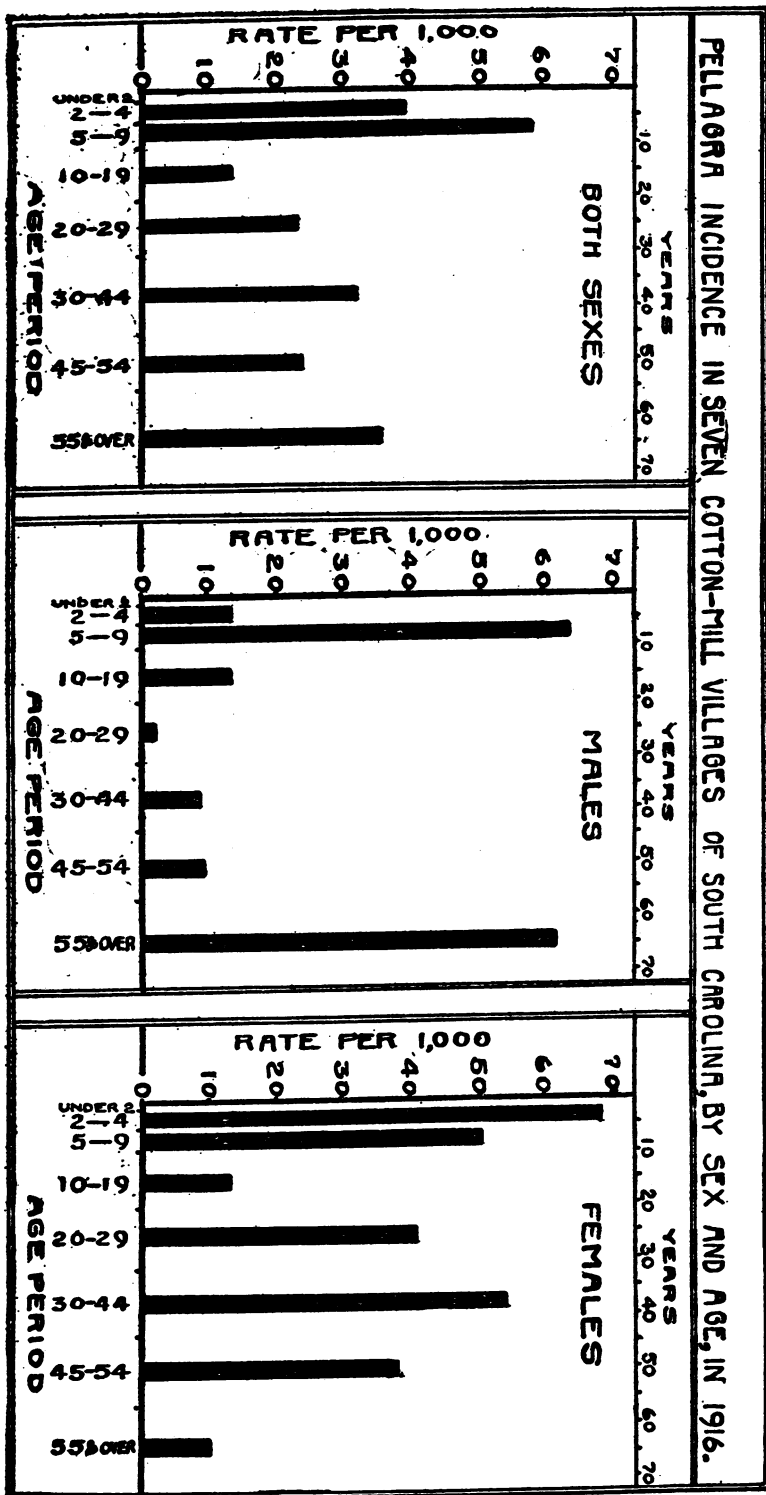


FIG. 1.

TABLE III.—*Pellagra incidence by sex and age in seven cotton-mill villages of South Carolina during 1916.*

[Definite cases in white population, the ages being classified into such periods as indicate the greatest variations.]

Age periods.	Males.			Females.			Total.		
	Number.	Pellagrins.		Number.	Pellagrins.		Number.	Pellagrins.	
		Number.	Per 1,000.		Number.	Per 1,000.		Number.	Per 1,000.
Under 2.....	122	0	.0	119	0	.0	241	0	.0
2-4.....	217	3	13.8	190	13	68.5	407	16	39.3
5-9.....	313	20	63.9	296	15	50.7	609	35	57.5
10-19.....	521	7	13.4	537	7	13.0	1,058	14	13.2
20-29.....	377	1	2.7	414	17	41.1	791	18	22.8
30-44.....	351	3	9.1	351	18	54.4	662	21	31.7
45-54.....	109	1	9.2	104	4	38.5	213	5	23.5
55 years and over.....	81	5	61.7	98	1	10.2	179	6	33.5
All ages.....	2,071	40	19.3	2,089	75	35.9	4,160	115	27.6

If the population of the pellagrous households alone—that is, of only those households in which definite cases of pellagra occurred in 1916—is considered, the variations in incidence (per cent) according to sex and age in this population appear to be similar to the variations indicated by the rate per 1,000 of the entire population censused, as may be seen by comparing Tables III and IV.

TABLE IV.—*Pellagra incidence by sex and age among members of white pellagrous households in seven cotton-mill villages of South Carolina during 1916.*

Age.	Total.			Males.			Females.		
	Number of persons.	Number of pellagrins. <sup>1</sup>	Per cent pellagrins.	Number of persons.	Number of pellagrins. <sup>1</sup>	Per cent pellagrins.	Number of persons.	Number of pellagrins. <sup>1</sup>	Per cent pellagrins.
Under 5.....	67	14	21.0	24	3	12.5	43	11	25.6
5-9.....	79	31	39.2	41	16	39.0	38	15	39.5
10-19.....	114	13	11.4	65	6	9.2	49	7	14.3
20-29.....	46	13	28.3	22	0	.0	24	13	54.2
30-44.....	70	20	28.6	37	3	8.1	33	17	51.5
45-54.....	16	3	18.8	12	1	8.3	4	2	50.0
55 and over.....	12	3	25.0	6	2	33.3	6	1	16.7
All ages.....	404	97	24.0	207	31	15.0	197	66	33.5

<sup>1</sup> Only those pellagrins are considered who had been members of the household regularly (i. e., exclusive of transient persons and of pellagrins the onset of whose 1916 attacks occurred in other households).

Table IV, showing the number and per cent of members of different sexes and ages in pellagrous households who were affected with pellagra, is significant because it indicates pellagra incidence according to sex and age among persons living under generally closely similar household conditions. It will be observed that the ratio of female to male pellagrins among persons of all ages is about 2 to 1; this ratio varies considerably at different age periods, as is shown in the following:

*Ratio of female to male pellagrins in population of white pellagrous households.*

Age.	Per cent of members of pellagrous households who were affected with pellagra.		Ratio of female to male pellagra rate.
	Male.	Female.	
Under 5.....	12.5	25.6	2.0
5-9.....	39.0	39.5	1.0
10-19.....	9.2	14.3	1.6
20-44.....	6.9	27.4	4.0
45-54.....	8.3	50.0	6.0
55 and over.....	33.3	16.7	.5
All ages.....	15.0	33.5	2.2

Before attaching significance to these variations, consideration should be given to the possibility of their being due entirely or in part to irregularities arising from the relatively slight amount of data. Furthermore, since pellagra incidence is closely related to the household diet and tends to occur by households rather than by individuals in a considerable proportion of instances, the age and sex composition of the households affected may influence materially the rate in a given age period. In those age periods when the distribution of the sexes tends to be very nearly equal, as in the adult periods up to old age, the possible effect of such a condition is slight. But among children, especially young children, and among old persons, the effect of this condition upon the rate per 1,000 may be considerable. The number of our pellagrous families actually is small, and individual families may "run to" boys or to girls; and among old persons in households affected there may chance to be a predominance of widowed or deserted men or women.

A scrutiny of our family schedules indicates that at least one of the variations in incidence according to sex is due to irregularities of this type. In the age period "under 5 years" the rate for females, as indicated in Table II, is 42.1 per 1,000, as against only 8.8 for males. The pellagrins in this group were in 16 households, for 14 of which detailed data are available. The following are the statistics for these 14 households:

	Male.	Female.
(A) Total population "under 5 years".....	5	15
(B) Number of pellagrins "under 5 years".....	3	11
Per cent (B) of (A).....	60	73

It appears, therefore, that the ratio of total males to male pellagrins and the ratio of total females to female pellagrins in the households affected by pellagra-causing conditions (allowing for the small numbers) was much the same and that there was, therefore, no real indication of a significant difference in incidence in the two sexes in this age period.

With these limitations in mind, the data appear to indicate that (1) the disease is rare at the age of 2 and under—no case in this age period was observed in the population studied during 1916; (2) among both males and females up to 20 years the incidence is similar, being higher among children between 2 and 10 years than in persons of the ages of 10 to 19, inclusive; and (3) among adults 20–54 years old the incidence is many times higher in females than in males.

These indications are in harmony with the results of other previous studies (Boudin 1861; Siler, Garrison, and MacNeal 1915). A discussion of their significance is reserved for a later communication.

#### Monthly (or Seasonal) Incidence.

In computing the incidence of 1916 attacks according to month (or season) of onset for all persons affected with pellagra, and in relation to their sex and age, each case of pellagra has been credited to the month in which the eruption appeared. In order to determine the monthly incidence as accurately as possible, the number of cases credited to each month has been adjusted to a 31-day month basis, and the monthly indices have been computed with the monthly average for the year as the basis.

Table V shows the actual number of cases the onset of which occurred in each month, as well as the relative number after adjustment is made to a 31-day month, for males and females and for both sexes. The relative number has been plotted in Fig. 2.

TABLE V.—*Monthly incidence of pellagra during 1916 in seven cotton-mill villages of South Carolina, actual number of definite cases for each sex, with onset in specified months, and the monthly percentage of cases after adjustment to a 31-day month.*

Month.	Males.			Females.			Total.		
	Number of cases.	Number of cases adjusted to 31-day month.	Monthly percentage of cases.	Number of cases.	Number of cases adjusted to 31-day month.	Monthly percentage of cases.	Number of cases.	Number of cases adjusted to 31-day month.	Monthly percentage of cases.
January.....	0	0	0	0	0	0	0	0	0
February.....	0	0	0	1	1.1	1.4	1	1.1	0.9
March.....	3	3	7.4	1	1.0	1.3	4	4.0	3.4
April.....	6	6.2	15.3	7	7.2	9.5	13	13.4	11.6
May.....	7	7.0	17.1	13	13.0	17.1	20	20.0	17.1
June.....	12	12.4	30.3	25	25.8	33.9	37	38.2	32.7
July.....	3	3.0	7.4	15	15.0	19.7	18	18.0	15.4
August.....	1	1.0	2.4	7	7.0	9.2	8	8.0	6.8
September.....	6	6.2	15.3	4	4.1	5.4	10	10.3	8.8
October.....	1	1.0	2.4	2	2.0	2.6	3	3.0	2.6
November.....	1	1.0	2.4	0	0	0	1	1.0	.9
December.....	0	0	0	0	0	0	0	0	0
Total.....	40	40.8	100	75	76.2	100	115	117	100
Monthly average.....		3.4			6.4			9.8	

As may be seen, there was a sharp rise in incidence during April and May, reaching a well-defined peak in June. This was followed by an abrupt decline during July and August which was halted

during September, but was resumed quite sharply during October. The season of onset appeared to be confined almost entirely to the six months, April to September, inclusive, and the period of greatest incidence clearly within the four months, April to July, inclusive. This agrees fairly well with the observations reported by other workers.

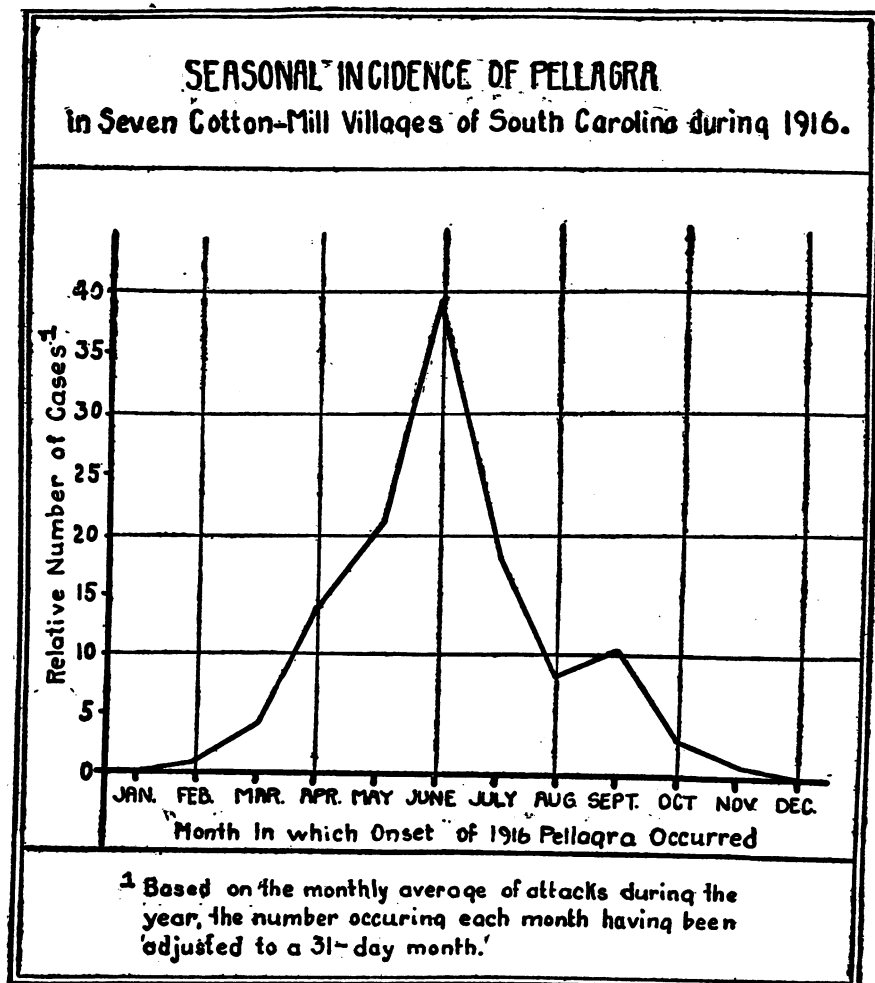


FIG. 2.

It should be observed that the data refer to monthly incidence ("onset") of attack and not to prevalence, since the duration of the attacks was not noted.

The monthly incidence of attacks among males and females appeared to be similar, with the exception of a secondary peak for males in September. The number of cases is too small, however,

to warrant attaching significance to this irregularity. An examination of the detailed data shows that this was due to a predominance of males of the ages of 5 to 9 in two households affected with pellagra, and it may thus be regarded as accidental in a small group of individuals.

The possibility that seasonal incidence might vary among persons of different ages and of different family incomes was suggested by some tabulations made for experimental purposes, but, because of

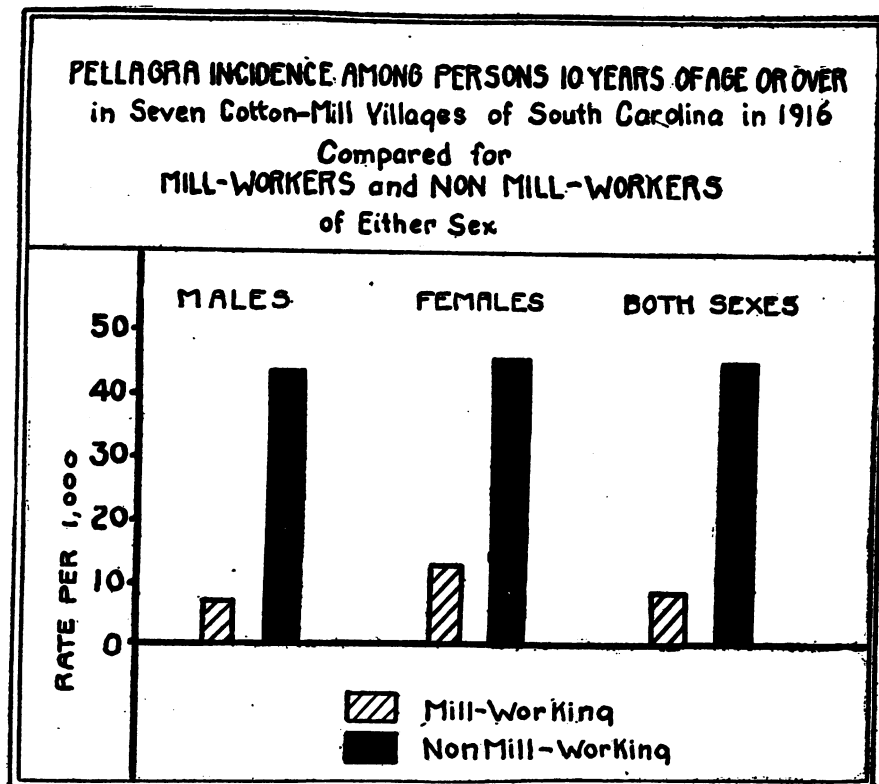


FIG. 3.

the necessity of subdivisions of the population into quite small groups, the results were not believed to be based on sufficient experience to warrant their presentation. The much larger experience afforded by our 1917 studies will, it is hoped, yield more satisfactory indications.

#### INCIDENCE ACCORDING TO OCCUPATION.

On the basis of occupation the population of the villages naturally falls into two classes, namely, mill workers and non-mill workers. Persons classified as mill workers were those who had been employed in the cotton mills during 1916 up to the date of the census, or, in

the case of persons incapacitated by pellagra or other causes, up to the time of the incapacitation. With few exceptions, mill workers had been so employed prior to January 1, 1916, for periods varying in length, some as long as 10 or 15 years. The inclusion of all persons employed in the mills in a single group rather than in groups for specific occupations within the mill is made because (1) the occupations within the mill are for the great majority of persons similar in character and (2) because a considerable proportion of the operatives frequently change from one kind of work to another.

Persons classified as non-mill workers included all not classified as mill workers. In the case of children, these included those at home or at school, a few having been employed in millwork in 1915 during school vacation. In the case of adults, the females were housewives, with negligible exceptions; the males included those unable to engage in millwork or who were idle for some unascertained reason, and a very small number employed at other miscellaneous occupations.

In order to compare the incidence of the disease in these two classes, the members of which lived under the same general household and community conditions, Table VI was prepared. This, it may be seen, indicates that the pellagra rate among both males and females of all ages was considerably higher for the non-mill workers than for the mill workers. Since mill workers are all above the age of 10 years, the pellagra rates for the mill-working and the non-mill-working groups "10 years and over" afford a better basis of comparison. On this basis, the same condition is clearly indicated (Table VI and Fig. 3). As between the sexes the incidence among mill workers seems to follow pretty closely the corresponding general curves; that is, in the age group 10-19 years the rate for males is essentially the same as that for females; for the age groups 20-44 the rate for females is much higher than that for males. A comparison of the rates for the sexes, of those 10 years and over, of the non-mill-working group can hardly be made because of the small numbers among the males in all age groups save that between 10 and 19 years. For this age group the incidence was the same for both sexes.

TABLE VI.—*Pellagra incidence according to occupation among white persons of different sex and age in seven cotton-mill villages of South Carolina during 1916.*

Age period.	Mill working.			Non-mill working.		
	Number of persons.	Pellagrins.		Number of persons.	Pellagrins.	
		Number.	Per 1,000.		Number.	Per 1,000.
<i>Males.</i>						
All ages.....	1,186	8	6.7	885	33	37.3
10 years and over.....	1,186	8	6.7	233	10	42.9
Under 10.....	0	0	.0	652	23	35.3
10-19.....	358	3	8.4	165	4	24.2
20-29.....	362	1	2.8	13	1	76.9
30-44.....	321	3	9.3	10	0	.0
45-54.....	93	0	.0	15	1	6.7
55 years and over.....	52	1	19.2	30	4	13.3
<i>Females.</i>						
All ages.....	639	8	12.5	1,450	66	45.5
10 years and over.....	639	8	12.5	845	38	44.9
Under 10.....	0	0	.0	605	28	46.3
10-19.....	332	2	6.0	205	5	24.4
20-29.....	198	4	20.2	216	12	55.6
30-44.....	95	2	21.1	236	16	67.8
45-54.....	9	0	.0	95	4	42.1
55 years and over.....	5	0	.0	93	1	107.5
<i>Total.</i>						
All ages.....	1,825	16	8.8	2,335	99	42.4
10 years and over.....	1,825	16	8.8	1,078	48	44.5
Under 10.....	0	0	.0	1,257	51	40.6
10-19.....	690	5	7.3	370	9	24.3
20-29.....	560	5	8.9	229	13	56.8
30-44.....	416	5	12.0	246	16	65.0
45-54.....	102	0	.0	110	5	45.5
55 years and over.....	57	1	17.5	123	5	40.6

THE RELATION OF "DISABLING SICKNESS" TO PELLAGRA INCIDENCE.<sup>1</sup>

In connection with the inquiry relating to occupation, it seemed of interest to determine the relation of disabling sickness to pellagra incidence, and, accordingly, Table VII was prepared. This shows that while the pellagra rate among non-mill-working females was approximately four times as high as that among mill-working females, the rate for disabling sickness appears distinctly higher in mill-working than in non-mill-working females. Pellagra would seem, therefore, to have been a relatively unimportant element in the higher sickness rate among mill-working females, and, conversely, the disability indicated by the higher sickness rate among mill-working females appeared not to influence materially the pellagra rate in this group. This does not seem to afford any support for the view entertained by many observers that general debility is an essential predisposing factor in the production of pellagra.

<sup>1</sup> Persons classified as "sick" were those who were "unable to work" on account of sickness or non-industrial accident. See also Sydenstricker, Wheeler, and Goldberger, 1918, where the definition of "disabling sickness" is given and more fully discussed.



**TABLE VII.**—*Cases of disabling sickness of less than three months' duration (exclusive of confinements), as ascertained by a census in May and June, 1916, and of pellagra during 1916, among non-millworking and millworking females between the ages of 10 and 45 in seven cotton-mill villages of South Carolina.*<sup>1</sup>

	Non-millworking.			Millworking.		
	Number of persons.	Cases.		Number of persons.	Cases.	
		Number.	Rate per 1,000.		Number.	Rate per 1,000.
Disabling sickness at date of census.....	664	26	39.2	619	28	45.2
Pellagra during 1916 .....	657	33	50.2	625	8	12.8

<sup>1</sup> The actual rate of pellagra incidence during 1916 can not, of course, be compared with the rate of disabling illness as found for one day. The relative differences in rates according to occupation, however, are comparable, especially when the fact is taken into consideration that the majority of the pellagra cases had their onsets in May and June, the same months in which the census of disabling sickness was made.

### Summary.

1. During 1916 the incidence of pellagra among the members of the families of white mill-operatives of seven representative cotton-mill villages of South Carolina was included in our study.

2. In a population of 4,399, a total of 115 definite cases, representing a rate of 26.1 per 1,000, was recorded. If 73 cases with ill-defined eruption recorded as "suspects" are included, there were in all 188 cases and an incidence rate of fully 42.7 per 1,000 in this population.

3. The data appear to indicate that the disease is rare in children at the age of 2 and under; that among both males and females up to 20 years the incidence is similar, being higher among children between 2 and 10 years than in persons of the ages of 10 to 19, inclusive; and that among adults 20-54 years old the incidence is many times higher in females than in males.

4. There was a sharp rise in incidence during April and May, reaching a well-defined peak in June. The season of onset appeared to be confined almost entirely to the six months, April to September, inclusive.

5. The pellagra rate among both males and females was considerably higher for the non-millworkers than for the millworkers.

6. While the pellagra rate among non-millworking females was approximately four times as high as that among millworking females, the rate for disabling sickness appeared distinctly higher in millworking than in non-millworking females. The disability indicated by the higher sickness rate among millworking females appeared not to influence materially the pellagra rate in this group.

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## CAN THE MOSQUITO CONVEY INFECTION FROM A MALARIA PATIENT UNDERGOING TREATMENT?—DOES SPOROGONY AFFECT MOSQUITO LIFE?

By BRUCE MAYNE, Biologist, United States Public Health Service.

It is possibly of more than academic interest to consider the effect quinine exerts on the mature gametocyte when it is taken up and elaborated in the mosquito. Information on this matter would probably be of some value in determining how soon after beginning treatment a malaria patient is no longer a source of infection for mosquitoes, and it has a practical bearing on the problem of the necessity of isolating the patient by screening.

We know that although every case of malaria is a potential medium for the production of gametocytes, these sexual bodies do not develop until the malarial infection has persisted for several days—8 to 15 days in the case of subtertian malaria, and 7 to 10 days in tertian and quartan malaria—following the onset of definite symptoms of infection. We must appreciate the fact that the infection may be present for a considerable time before the patient gives tangible evidence of its occurrence, so that gametocyte production may be fairly started and the actual time required for the development of gametes may be longer than is generally accounted. It is even possible that the blood may contain at least partially grown parasites before distinct symptoms of malarial infection are noted. This is especially true of latent malaria, and often in these cases the patient harboring moderate numbers of plasmodia not only does not exhibit symptoms but is performing severe manual labor.

Several authorities have reported that after the gametes of the various types of plasmodia have reached maturity, quinine is ineffective in action so far as their development within the mosquito

is concerned. Barber (1918)<sup>1</sup> has indicated in his mosquito-infectivity experiments that quinine apparently has little effect on gametes further than to increase the rate of their disappearance. In numerous trials this worker has shown that human carriers were capable of infecting mosquitoes when quinine was administered in curative doses.

In commenting on the effect of quinine on the malaria parasite in the mosquito, Darling (1910)<sup>2</sup> states, relative to his researches: "Nearly all the infecting experiments were conducted on patients who were receiving the routine ward treatment of quinine sulphate, grains 10, thrice daily in solution, so that, apparently, quinine in these quantities has no destructive or inhibitive effect on the parasites in the mosquito because the zygotes go on to maturity and sporozoites (*P. falciparum*) appear in the salivary glands in from 9 to 11½ days."

Ross (1910),<sup>3</sup> reviewing the literature relative to infectivity, states: "An important point in connection with the prevention of malaria is that Bignami and Bastianelli, Gualdi and Martirano, and Schaudinn have succeeded in infecting anophelines from patients who had been taking quinine. Schaudinn's case had been taking 1 gram thrice a week. Ziemann regards this as indicative that the male gametids are not destroyed as he thought. It also suggests that cases of crescents are likely to prove sources of infection in spite of energetic treatment."

Loeffler (1905),<sup>4</sup> discussing at length the question, Will malaria parasites develop in a mosquito which has bitten a person under quinine treatment? remarks: "The action of quinine on the gametocyte must be a paramount consideration before considering the effect on the insect imbibing quinine-treated blood. When it is observed that crescents can not be caused to disappear from the blood even by long-continued use of massive doses of quinine, the carrier problem from the public-health viewpoint becomes more acute; and if it be determined that the subsequent development of these forms in the stomach of the mosquito can not be prevented under quinine treatment, the sanitary significance of the human-carrier problem becomes more serious.

"Gualdi and Martirano have administered large doses of quinine to patients that had crescents, and after having satisfied themselves by an examination of the urine that the quinine had been actually absorbed, they caused numerous anopheles that had been reared in

<sup>1</sup> M. Barber (1918), Some observations and experiments on Malayan Anopheles with special reference to the transmission of malaria: The Philippine Journal of Science, vol. 13, sec. B, No. 1, p. 23.

<sup>2</sup> S. T. Darling (1910), Studies in relation to malaria: Isthmian Canal Commission Bulletin, p. 32, Washington.

<sup>3</sup> E. Ross (1910), Prevention of Malaria, p. 137, John Murray, London.

<sup>4</sup> F. Loeffler (1905), Malaria Diseases: Modern clinical medicine, p. 291, D. Appleton Co., New York.

the laboratory to suck the blood of these patients. A considerable percentage of these mosquitoes were found to be infected a few days later. On the other hand, in an experiment with tertian malaria, Schoo, in Holland, concludes that in tertian fever not only the asexual forms are destroyed by quinine but also the gametes, and that a single dose of 1 gram quinine sulphate is sufficient to prevent development of gametes in the mosquito. The details are given as follows: A patient who had infected large numbers of anophelines was given 1 gram of quinine sulphate and during three days was bitten by 16 specimens of anophelines. No infections resulted.

"In another experiment a patient with tertian malaria was bitten by 10 anophelines during an untreated period. Six hours after a gram of quinine sulphate was administered, he was bitten by 9 anophelines. Eight specimens of the former lot were found infected during 12 days incubation. None of the latter lot was found infected."

This latter observation is directly in agreement with the writer's experience with the attempted conveyance of the parasites of tertian malaria. We must take into account in order to interpret results with *P. vivax*, that—

1. Fewer gametocytes are required to infect a mosquito. In comparison with the law of infectivity established by Darling, that the probable minimum number of gametocytes of *P. falciparum* necessary to infect a mosquito is 1 to 500 leucocytes, I have found that in blood containing 1 gametocyte of *P. vivax* to 650 leucocytes, infectivity resulted.

2. Gametocytes of *P. vivax* are, to be sure, much less resistant to the action of quinine than are the gametocytes of *P. falciparum*, so that less quinine is required to inhibit mosquito infectivity.

It is evident that when no change occurs in the morphology of the fully developed gametocyte in the presence of quinine, the development within the mosquito is not impaired by the drug. This has been shown in experiments conducted in New Orleans and in the works of Darling and of the Italians. In the Canal Zone reports, the conclusion is drawn by Darling that mosquitoes may become infected from blood of patients who had been previously given as high as 450 grains of quinine. In experiments conducted in the United States Public Health Service malaria laboratory in Memphis, Tenn., this observation was carried a step further in proving that such mosquitoes not only harbored typical sporonts, showing that quinine did not alter the morphology or viability of the parasites, but also communicated the infection when induced to bite a healthy volunteer. The patient in this experiment had received 400 grains of quinine sulphate before attempting to infect the mosquito (*A. quadrimaculatus*), and 80 grains were added during the interval of applying the mosquito in the two blood meals. Two weeks fol-

lowing the administration of the 480 grains of quinine, the mosquito was allowed to bite the healthy contact, and in the course of 11 days acute symptoms of the disease were recorded in the new host. A microscopical confirmation of the presence of the parasites (*P. falciparum*) was obtained.

The apparent ease with which sporozoites are killed when introduced into blood protected by quinine in attempted human prophylaxis is contrasted with the survival of the gametocytes taken up by the mosquito from blood treated with quinine.



FIG. 1.—The appearance of a mosquito stomach heavily infested with oocysts—15 days incubation. (Camera lucida drawing.)

FIG. 2.—An oocyst selected from the stomach wall, showing manner of extrusion through the gut epithelium

Relative to the longevity of the mosquito host influenced by malaria infection, it must be pointed out that, as far as our observations carry us, no physiological disturbances are indicated. I believe that this is generally accepted relative to the invasion of the alimentary tract of any insect by the human protozoan parasites. We have observed mosquito stomachs studded with tumor-like masses of

oocysts in advanced stages of sporogony. As many as 250 have been counted and up to 400 estimated. It is recalled that these bodies have developed after having actually penetrated the wall of the mid-gut and becoming encysted prior to bursting their capsules and, in the form of sporozoites, forcibly invading the salivary glands. The extent of rupturing of the tissues can be appreciated in sections of the gut epithelium, where all stages of the process have been observed. Figure 1 illustrates typical parasitism on the insect's stomach, and Figure 2 the manner of extrusion of a single oocyst through the gut wall.

In specimens in which the oocysts have discharged their contents and nothing remains but the enveloping capsules, the damage committed is not appreciable. I believe that if the individual mosquito had not been made to meet an untimely death for the purpose of dissection, it probably would have lived its normal life. In this connection it may be of interest to note that under laboratory experimentation mosquitoes have survived infection for unusually long periods. A French writer, Roubaud (1918),<sup>1</sup> working in France with *A. quadrimaculatus* and *P. falciparum*, found that mosquitoes survived parasitism under laboratory conditions for as long as 125 days. In this instance a dissected specimen revealed a few dead sporozoites in one of its salivary glands.

Under similar conditions the writer has succeeded in keeping mosquitoes alive for over six months. A specimen of *A. punctipennis* survived to the age of 185 days on being fed occasionally on fruit juice, mainly that of raisins and dates. Another specimen of this species, fed on a patient harboring *P. vivax*, was found to retain a few scattered degenerate-appearing sporozoites in two lobes of its salivary glands for a period of 158 days. These organisms were presumably dead, without motility and lacking definite nucleus. The pandemicity of malarial fever may, in no small measure, be accounted for by the longevity of the insect host, associated with its resistance to protozoan invasion.

We are furnished a contrast in the dissemination of filariasis by its insect hosts and are led to speculate on one of the causes contributing to the limitation of the spread of this disease. It is due, possibly, to the relatively high mortality of mosquitoes fed on blood containing microfilarial parasites. The invading parasite penetrates the mosquito's stomach wall, following the forcible rupturing of the enveloping sheath of the worm. In a short time the thoracic muscles in the mosquito are torn by the migrating embryo, followed by the ejection of the developed *Filaria* through Dutton's membrane of the mosquito's proboscis. The extent of trauma sustained would be

<sup>1</sup> E. Roubaud (1918), *Recherches sur la transmission du paludisme par les anophèles francis de régions non palustres*: Ann. Inst. Pasteur, vol. 32, No. 9, pp. 430-462.

sufficient, I believe, to account for the premature death of the parasitized insect host. In this connection, Bahr (1912)<sup>1</sup> notes that the developing *Filaria* has a deleterious effect on the health of the mosquito. Heavily infected mosquitoes can be readily recognized by their attitude and general appearance. The intermediate insect host is observed to become more and more sluggish until, ultimately, it is unable to insert its stilettes. In Bahr's experiments it is recorded that about 95 per cent of mosquitoes fed on light infections of filariasis survived until the twenty-first day, and less than 9 per cent of those fed on heavily infected patients lived until the twenty-first day. In comparison with protozoan infection of anophelines, *Stegomyia calopus*, which survives to the age of 154 days, was observed to harbor microfilariae a maximum of 17 days.

### DIVISION OF VENEREAL DISEASES, MAY, 1920.

During the month of May, 1920, 23,101 cases of venereal diseases were reported to the State boards of health by physicians, hospital superintendents, clinicians, etc., as is shown by the accompanying table. The table also shows that there were 9,498 new admissions to the clinics operating under the joint control of the United States Public Health Service and the State boards of health.

Five States have not submitted reports.

*Venereal disease reports for May, 1920: Number of cases reported by the State boards of health, number of admissions to the venereal disease clinics operating under joint control of United States Public Health Service and State boards of health, and number of treatments of arsphenamine administered.*

State.	Cases reported.				Admissions to clinics.				Arsphenamine treatments administered.
	Total cases.	Gonorrhea.	Syphilis.	Chan-croid.	Total admissions.	Gonorrhea.	Syphilis.	Chan-croid.	
Alabama.....	1,208	522	648	38	721	257	443	21	1,654
Arizona.....	50	31	19		5		5		14
Arkansas.....	410	219	168	23	159	77	74	8	367
California.....	371	165	206		245	103	142		1,028
Colorado.....	593	169	414	10	121	65	53	3	223
Connecticut.....	271	99	172		86	52	33	1	280
Delaware.....									
Florida.....	247	103	136	8	317	98	219		1,066
Georgia.....	1,132	645	438	49	388	235	135	18	1,601
Idaho.....	31	20	11						
Illinois.....	3,421	1,728	1,622	71	463	214	234	15	1,855
Indiana.....	583	298	270	15	554	288	238	28	1,992
Iowa.....	282	177	95	10	108	59	48	1	372
Kansas.....	441	234	202	5	231	119	106	6	825
Kentucky.....	402	179	213	10	160	75	85		705
Louisiana.....	451	238	164	49	357	167	139	51	622
Maine.....									
Maryland.....	404	135	254	15	169	85	69	15	390
Massachusetts.....	869	615	254		535	240	295		1,900
Michigan.....	1,802	939	845	18	93	41	49	3	157
Minnesota.....	908	503	392	13	126	63	62	1	678

<sup>1</sup> P. H. Bahr (1912), Filariasis and elephantiasis in Fiji: Journal London School of Tropical Medicine. Supp. No. 1, pp. 25-26.

<sup>2</sup> Report not submitted.

**Veneral disease reports for May, 1920: Number of cases reported by the State boards of health, etc.—Continued.**

State.	Cases reported.				Admissions to clinics.				Arsphenamine treatments administered
	Total cases.	Gonorrhea.	Syphilis.	Chancroid.	Total admissions.	Gonorrhea.	Syphilis.	Chancroid.	
Mississippi.....	442	271	154	18	194	88	94	9	214
Missouri.....	656	388	217	53	589	278	280	53	717
Montana.....	298	185	43		16	4	12		193
Nebraska.....	427	257	142	28	44	21	23	1	214
New Hampshire.....	74	40	33	1	23	7	14	2	149
New Jersey.....	499	194	237	9	265	116	140	9	639
New Mexico.....	96	58	37	1	2		2		6
New York <sup>1</sup> .....									
North Carolina <sup>1</sup> .....									
North Dakota.....	118	73	44	1	34	10	24		
Ohio.....	980	445	471	64	889	326	531	32	2,053
Oklahoma.....	439				368	159	195	14	1,205
Oregon.....	51	39	12		12	3	9		85
Pennsylvania <sup>1</sup> .....									
Rhode Island.....	147	46	101		67	24	43		433
South Carolina.....	1,014	452	498	64	710	302	355	53	1,432
South Dakota.....	94	65	27	2	12	8	4		23
Tennessee.....	889	446	385	47	279	118	139	22	558
Texas.....	1,159	597	488	74	565	259	266	40	933
Utah.....	58	45	13		35	20	14	1	96
Vermont.....	33	15	18		9	3	6		25
Virginia.....	491	234	239	18	403	163	227	13	1,191
Washington.....	323	267	57	5	24	15	5	1	348
West Virginia.....	766	550	210	8	87	28	58	1	409
Wisconsin.....	294	221	38	5	23	14	9		153
Wyoming.....	58	34	19	5	22	15	6	1	17
Total.....	23,101	11,909	10,046	732	9,498	4,219	4,857	422	26,610

<sup>1</sup> Report not submitted.

## DEATHS DURING WEEK ENDED JUNE 26, 1920.

[From the "Weekly Health Index," June 29, 1920, issued by the Bureau of the Census, Department of Commerce.]

Deaths from all causes in certain large cities of the United States during the week ended June 26, 1920, infant mortality (per cent), annual death rates, and comparison with corresponding week of preceding years.

City.	Population Jan. 1, 1920, subject to revision.	Week ended June 26, 1920.		Average annual death rate per 1,000. <sup>2</sup>	Per cent of deaths under 1 year.	
		Total deaths.	Death rate. <sup>1</sup>		Week ended June 26, 1920.	Previous year or years. <sup>3</sup>
Akron, Ohio.....	208,435	28	7.0	<sup>a</sup> 9.9	14.3	<sup>a</sup> 21.3
Albany, N. Y.....	113,344	27	12.4	C 13.9	11.1	C 10.7
Atlanta, Ga.....	200,616	59	15.3	C 13.7	11.9	C 15.4
Baltimore, Md.....	733,326	106	11.8		19.3	A 15.8
Birmingham, Ala.....	197,670	41	10.8	A 19.1	17.1	A 15.7
Boston, Mass.....	747,923	162	11.3		9.9	A 14.6
Bridgeport, Conn.....	143,152	32	11.7		15.8	
Buffalo, N. Y.....	505,875	98	10.1	C 10.8	21.4	C 19.2
Cambridge, Mass.....	109,456	23	11.0	A 11.7	17.4	A 13.1
Chicago, Ill.....	2,701,212	482	9.3	A 11.6	15.1	A 15.9
Cincinnati, Ohio.....	401,158	86	11.2	C 12.1	11.6	C 9.7
Cleveland, Ohio.....	796,836	145	9.5	C 10.3	13.1	C 10.3
Columbus, Ohio.....	237,031	51	11.2	C 13.4	9.8	C 10.0

<sup>1</sup> Annual rates per 1,000 estimated population.

<sup>2</sup> "A" indicates data for the corresponding week of the years 1913 to 1917, inclusive. "C" indicates data for the corresponding week of the year 1919.

<sup>3</sup> Data are based on statistics of 1915, 1916, and 1917.

<sup>4</sup> Population estimated as of July 1, 1918.



*Deaths from all causes in certain large cities of the United States during the week ended June 26, 1920—Continued.*

City.	Population Jan. 1, 1920, subject to revision.	Week ended June 26, 1920.		Average annual death rate per 1,000. <sup>2</sup>	Per cent of deaths under 1 year.	
		Total deaths.	Death rate. <sup>1</sup>		Week ended June 26, 1920.	Previous year or years. <sup>3</sup>
Dayton, Ohio.....	153,830	84	11.5	C 6.9	8.8	C 15.0
Denver, Colo.....	256,369	63	12.8	A 12.1	6.3	
Detroit, Mich.....	983,739	133	9.6		25.7	
Fall River, Mass.....	120,485	27	11.7	C 12.1	25.9	C 21.4
Grand Rapids, Mich.....	137,634	24	12.9	C 6.9	29.4	C 0.0
Hartford, Conn.....	138,036	31	11.7		25.8	
Indianapolis, Ind.....	290,359	69	12.4	C 9.9	10.1	C 9.1
Jersey City, N. J.....	297,864	47	8.2	C 8.4	12.8	C 10.4
Kansas City, Kans.....	101,078	22	11.3		13.6	
Kansas City, Mo.....	213,785	78	13.0	C 12.6	16.7	C 7.9
Los Angeles, Calif.....	575,480	156	14.1	A 12.8	12.8	A 9.7
Louisville, Ky.....	234,901	56	12.4	C 11.8	3.6	C 7.5
Lowell, Mass.....	112,479	26	12.1	A 11.9	15.4	A 18.7
Memphis, Tenn.....	162,351	53	17.0	C 19.5	11.3	C 21.7
Milwaukee, Wis.....	457,147	95	10.8	A 10.8	16.8	A 21.2
Minneapolis, Minn.....	380,498	84	11.5	C 10.8	15.5	C 12.8
Nashville, Tenn.....	118,342	36	15.9	C 24.3	8.3	C 21.8
Newark, N. J.....	415,609	71	8.9	C 11.1	12.7	C 6.8
New Haven, Conn.....	162,390	26	8.3	C 9.7	11.5	C 16.7
New Orleans, La.....	387,406	120	16.2	A 20.1	13.3	A 13.3
New York, N. Y.....	5,621,151	1,026	9.5	C 10.4	14.4	C 13.5
Oakland, Calif.....	216,361	56	13.5	A 10.1	7.1	A 8.9
Omaha, Nebr.....	191,601	25	6.8		28.0	C 20.6
Philadelphia, Pa.....	1,823,158	380	10.9	A 13.4	17.6	A 14.1
Pittsburgh, Pa.....	588,193	144	12.8	C 12.2	16.0	C 21.9
Portland, Oreg.....	258,288	58	11.7	C 10.8	8.6	C 9.4
Providence, R. I.....	263,613	61	12.1	C 11.7	11.5	C 22.0
Richmond, Va.....	180,719	47	15.2	C 13.0	25.5	C 20.0
Rochester, N. Y.....	295,850	63	11.1	C 10.0	17.5	C 19.6
St. Louis, Mo.....	773,000	143	9.6	C 11.9	13.3	C 9.7
St. Paul, Minn.....	234,596	50	11.1	C 8.5	20.0	C 10.5
San Francisco, Calif.....	508,410	107	11.0	C 13.8	11.2	C 7.5
Seattle, Wash.....	315,652	50	8.3	A 8.4	10.0	A 13.7
Spokane, Wash.....	104,204	24	12.0	C 9.5	12.5	C 10.5
Springfield, Mass.....	129,338	24	9.7		8.3	
Syracuse, N. Y.....	171,647	53	16.1	C 9.5	11.3	C 22.6
Toledo, Ohio.....	243,109	49	10.5	A 13.8	18.4	A 12.3
Trenton, N. J.....	119,289	28	12.2	A 15.3	7.1	A 19.3
Washington, D. C.....	437,571	87	10.4	A 14.4	11.5	A 14.7
Worcester, Mass.....	179,741	43	12.5	C 12.6	20.9	C 11.6
Youngstown, Ohio.....	139,368	16	6.3		12.5	

*Summary of information received by telegraph from industrial insurance companies for week ended June 26, 1920.*

Policies in force.....	44, 236, 202
Number of death claims.....	7, 839
Death claims per 1,000 policies in force, annual rate.....	8.7

# 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 STATE SUMMARIES.

#### Telegraphic Reports for Week Ended July 3, 1920.

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

ARKANSAS.		FLORIDA.	
	Cases.		Cases.
Cerebrospinal meningitis.....	1	Cerebrospinal meningitis.....	1
Chicken pox.....	17	Diphtheria.....	4
Diphtheria.....	5	Influenza.....	13
Hookworm.....	4	Malaria.....	28
Influenza.....	10	Pneumonia.....	13
Malaria.....	193	Poliomyelitis.....	1
Measles.....	34	Scarlet fever.....	3
Pellagra.....	18	Typhoid fever.....	13
Scarlet fever.....	6		
Smallpox.....	13	GEORGIA.	
Trachoma.....	4	Chicken pox.....	5
Tuberculosis.....	22	Conjunctivitis (acute infectious).....	4
Typhoid fever.....	18	Diphtheria.....	4
Whooping cough.....	156	Dysentery (amebic).....	8
		Dysentery (bacillary).....	45
CALIFORNIA.		Hookworm.....	15
Cerebrospinal meningitis:		Influenza.....	17
San Diego.....	1	Malaria.....	140
San Francisco.....	1	Measles.....	28
Leprosy:		Paratyphoid fever.....	1
Los Angeles.....	1	Pneumonia.....	8
Lethargic encephalitis:		Poliomyelitis.....	1
Los Angeles.....	1	Scarlet fever.....	2
Stanislaus County.....	1	Septic sore throat.....	6
Poliomyelitis:		Smallpox.....	21
Los Angeles.....	3	Trachoma.....	1
Los Angeles County.....	1	Tuberculosis (pulmonary).....	8
Smallpox:		Typhoid fever.....	31
Kings County.....	10	Whooping cough.....	62
Scattering.....	22		
Typhoid fever.....	119	ILLINOIS.	
		Cerebrospinal meningitis:	
DELAWARE.		Chicago.....	1
Chicken pox.....	2	Diphtheria:	
Diphtheria.....	3	Chicago.....	140
Measles.....	7	Scattering.....	11
Pneumonia.....	1	Pneumonia:	
Scabies.....	1	Chicago.....	52
Scarlet fever.....	3	Scattering.....	3
Tuberculosis.....	8	Scarlet fever:	
Typhoid fever.....	3	Chicago.....	97
W. Looping cough.....	4	Scattering.....	

## ILLINOIS—continued.

Cases.

Smallpox.....	59
Typhoid fever.....	8
INDIANA.	
Cerebrospinal meningitis:	
Clinton County.....	1
Switzerland County.....	1
Diphtheria.....	15
Measles.....	78
Poliomyelitis:	
Kosciusko County.....	1
Rabies in animals:	
Clark County.....	1
Vigo County.....	1
Scarlet fever.....	63
Smallpox.....	95
Typhoid fever.....	7

## IOWA.

Diphtheria.....	9
Measles:	
West Burlington.....	18
Scattering.....	11
Scarlet fever.....	13
Smallpox:	
Dubuque.....	19
Scattering.....	35
Whooping cough.....	1

## KANSAS.

Cerebrospinal meningitis.....	1
Chicken pox.....	9
Diphtheria.....	20
Measles.....	97
Mumps.....	9
Scarlet fever.....	14
Smallpox.....	86
Tetanus.....	1
Trachoma.....	1
Tuberculosis.....	80
Typhoid fever.....	22
Whooping cough.....	93

## LOUISIANA.

Diphtheria.....	3
Malaria.....	7
Measles.....	27
Pneumonia.....	15
Smallpox.....	11
Tuberculosis.....	25

## MAINE.

Chicken pox.....	4
Diphtheria.....	4
German measles.....	1
Measles.....	11
Mumps.....	8
Scarlet fever.....	3
Septic sore throat.....	1
Tetanus.....	1
Tuberculosis.....	15
Typhoid fever.....	5
Whooping cough.....	31

MARYLAND.<sup>1</sup>

Cerebrospinal meningitis.....	2
Chicken pox.....	20

## MARYLAND—continued.

Cases.

Diphtheria.....	16
Dysentery.....	2
German measles.....	11
Influenza.....	2
Malaria.....	4
Measles.....	140
Meningitis.....	1
Mumps.....	19
Ophthalmia neonatorum.....	4
Paratyphoid fever.....	1
Pneumonia (all forms).....	25
Scarlet fever.....	21
Septic sore throat.....	2
Smallpox.....	12
Tuberculosis.....	50
Typhoid fever.....	12
Whooping cough.....	42

## MASSACHUSETTS.

Cerebrospinal meningitis.....	1
Chicken pox.....	88
Conjunctivitis (suppurative).....	16
Diphtheria.....	155
German measles.....	6
Influenza.....	1
Malaria.....	1
Measles.....	826
Mumps.....	97
Ophthalmia neonatorum.....	21
Pellagra.....	1
Pneumonia (lobar).....	34
Poliomyelitis.....	1
Scarlet fever.....	120
Septic sore throat.....	2
Tuberculosis (all forms).....	178
Typhoid fever.....	27
Whooping cough.....	253

## MINNESOTA.

Cerebrospinal meningitis.....	1
Smallpox.....	10

## MISSISSIPPI.

Diphtheria.....	8
Influenza.....	3
Scarlet fever.....	2
Smallpox.....	24
Typhoid fever.....	67

## MONTANA.

Diphtheria.....	10
Poliomyelitis:	
Neilhart.....	1
Glasgow.....	1
Rocky Mountain spotted or tick fever—Toston.....	1
Scarlet fever.....	17
Smallpox.....	8
Typhoid fever.....	4

## NEBRASKA.

Chicken pox.....	5
Diphtheria.....	8
Measles:	
Omaha.....	14
York.....	9
Scattering.....	16

<sup>1</sup> Week ended Friday.

## NEBRASKA—continued.

	Cases.
Mumps.....	8
Scarlet fever.....	11
Smallpox:	
Auburn.....	27
Omaha.....	10
Scattering.....	28
Tuberculosis.....	6
Typhoid fever:	
Omaha.....	7
Scattering.....	3
Whooping cough.....	15

## NEW JERSEY.

Influenza.....	1
Pneumonia.....	44

## NEW MEXICO.

Diphtheria.....	14
Malaria.....	4
Measles.....	9
Pellagra.....	1
Pneumonia.....	1
Scarlet fever.....	7
Smallpox—Quay County.....	8
Tuberculosis.....	5
Typhoid fever:	
Animas.....	7
Aztec.....	4
Roswell.....	10
Scattering.....	4
Whooping cough.....	19

## NEW YORK.

(Exclusive of New York City.)

Cerebrospinal meningitis:	
Buffalo.....	1
Elmira.....	1
Lancaster.....	1
Diphtheria.....	127
Influenza.....	2
Lethargic encephalitis.....	4
Measles.....	1,310
Pneumonia.....	91
Polomyelitis—Walworth.....	1
Scarlet fever.....	94
Smallpox.....	2
Typhoid fever.....	23
Whooping cough.....	269

## NORTH CAROLINA.

Cerebrospinal meningitis.....	3
Chicken pox.....	13
Diphtheria.....	5
German measles.....	1
Measles.....	81
Scarlet fever.....	10
Smallpox.....	64
Typhoid fever.....	66
Whooping cough.....	298

## OHIO.

Smallpox—Akron.....	17
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## TEXAS.

Chicken pox.....	4
Diphtheria.....	29

## TEXAS—continued.

	Cases.
Dysentery:	
Dallas.....	14
Grapevine.....	15
Henderson County.....	10
Mission.....	1
Influenza.....	3
Malaria:	
Bastrop County.....	26
Dallas.....	15
Guadalupe County.....	20
Henderson County.....	25
Mission.....	7
New Braunfels.....	8
Waller County.....	61
Scattering.....	17
Measles:	
Dallas.....	13
Scattering.....	2
Paratyphoid fever.....	3
Pellagra.....	6
Pneumonia.....	3
Scarlet fever.....	8
Smallpox:	
Denton.....	10
Hunt County.....	17
Tyler.....	9
Waco.....	9
Scattering.....	28
Trachoma.....	2
Tuberculosis.....	24
Typhoid fever:	
Dallas.....	11
Wichita Falls.....	65
Scattering.....	34
Whooping cough.....	64

## VERMONT.

Chicken pox.....	16
Diphtheria.....	4
Measles.....	182
Mumps.....	20
Scarlet fever.....	8
Typhoid fever.....	9
Whooping cough.....	42

## WASHINGTON.

Chicken pox.....	38
Diphtheria.....	17
Measles.....	138
Mumps.....	3
Scarlet fever.....	25
Smallpox.....	76
Tuberculosis.....	3
Typhoid fever.....	2
Whooping cough.....	41

## WEST VIRGINIA.

Diphtheria.....	3
Measles:	
Beckley.....	8
Sistersville.....	10
Wheeling.....	24
Scattering.....	17
Scarlet fever.....	12
Smallpox.....	5
Typhoid fever.....	10

WISCONSIN.		WISCONSIN—continued.	
Milwaukee:	Cases.	Scattering—Continued.	Cases.
Chicken pox.....	10	Diphtheria.....	23
Diphtheria.....	13	Influenza.....	5
Measles.....	139	Measles.....	412
Rubella.....	1	Polomyelitis.....	2
Scarlet fever.....	17	Scarlet fever.....	73
Smallpox.....	4	Smallpox.....	80
Tuberculosis.....	12	Trachoma.....	10
Typhoid fever.....	1	Tuberculosis.....	18
Whooping cough.....	45	Typhoid fever.....	3
Scattering:		Whooping cough.....	93
Cerebrospinal meningitis.....	1		
Chicken pox.....	53		

### Kentucky Report for Week Ended June 26, 1920.

	Cases.		Cases.
Chicken pox.....	6	Pneumonia.....	3
Diphtheria.....	4	Scarlet fever.....	13
Measles:		Smallpox:	
Boyd County.....	10	Daviess County.....	11
Jefferson County.....	18	Scattering.....	21
Scattering.....	23	Tuberculosis.....	19
Mumps.....	1	Typhoid fever.....	7
Ophthalmia neonatorum.....	1	Whooping cough.....	19

### SUMMARY OF CASES REPORTED MONTHLY BY STATES.

Tables showing, by counties, the reported cases of cerebrospinal meningitis, influenza, malaria, pellagra, poliomyelitis, smallpox, and typhoid fever are published under the names of these diseases. (See names of these and other diseases in the table of contents.)

The following monthly State reports include only those which were received during the current week. These reports appear each week as received.

State.	Cerebrospinal meningitis.	Diphtheria.	Influenza.	Malaria.	Measles.	Pellagra.	Poliomyelitis.	Scarlet fever.	Smallpox.	Typhoid fever.
May, 1920.										
Arkansas.....	4	26	101	501	313	88	1	26	87	11
Colorado.....		50		1	1,134			108	289	11
Hawaii.....		11	204		34					30
Iowa.....		5	2		116			33	229	8
Kansas.....	6	74	11		1,312	1		155	561	35
Michigan.....		704			4,499		2	950	607	83
Wyoming.....		3	6		133			23	174	5

### RECIPROCAL NOTIFICATION.

#### Connecticut—June, 1920.

Cases of communicable diseases referred during June, 1920, to other State health departments by department of health of the State of Connecticut.

Disease and locality of notification.	Referred to health authority of—	Why referred.
Typhoid fever:		
Sharon, Conn.....	State department of health, Trenton, N. J.	Patient had visited in Plainfield, N. J., 7 days prior to onset of the disease.
Bridgeport, Conn.....	State board of health, Providence, R. I.	Patient visited a hotel in Providence, R. I., 14 days prior to the onset of the disease.
Bridgeport, Conn.....	Massachusetts department of public health, Boston, Mass.	Patient stopped at hotels in Lowell and Boston, Mass., 2 weeks before onset of the disease.
Do.....	State department of health, Albany, N. Y.	Patient resided in New York near Connecticut line.
Scarlet fever:		
Hartford, Conn.....	Massachusetts department of public health, Boston, Mass.	Patient developed symptoms of scarlet fever the day following arrival in Hartford, Conn., from Huntington, Mass.

**ANTHRAX.****Wilmington, Del.—Week Ended June 19, 1920.**

During the week ended June 19, 1920, one case of anthrax was reported at Wilmington, Del.

**CEREBROSPINAL MENINGITIS.****Arkansas and Kansas Reports for May, 1920.**

Place.	New cases reported.	Place.	New cases reported.
<b>Arkansas:</b>		<b>Kansas—Continued.</b>	
Franklin County.....	1	Reno County—	
Hot Spring County.....	2	Hutchinson.....	1
Woodruff County.....	1	Shawnee County—	
Total.....	4	Topeka.....	1
		Wyandotte County—	
<b>Kansas:</b>		Rosedale.....	1
Bourbon County—		Kansas City.....	1
Fort Scott.....	1	Total.....	6
Kingman County—			
Kingman.....	1		

**City Reports for Week Ended June 19, 1920.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Akron, Ohio.....	1	.....	Kansas City, Mo.....	1	.....
Ann Arbor, Mich.....	1	.....	Long Beach, Calif.....	1	1
Baltimore, Md.....	2	1	Marion, Ind.....	.....	1
Birmingham, Ala.....	.....	1	Milwaukee, Wis.....	1	2
Boston, Mass.....	1	1	Nashville, Tenn.....	.....	1
Bridgeport, Conn.....	1	1	New York, N. Y.....	3	4
Chicago, Ill.....	2	4	Niagara Falls, N. Y.....	.....	1
Cohoes, N. Y.....	2	1	Philadelphia, Pa.....	1	.....
Detroit, Mich.....	4	1	St. Louis, Mo.....	2	1
Durham, N. C.....	2	.....	St. Paul, Minn.....	.....	1
Eureka, Calif.....	.....	1	San Francisco, Calif.....	2	1
Galesburg, Ill.....	1	.....	South Bend, Ind.....	1	1
Galveston, Tex.....	1	.....	Topeka, Kans.....	1	1
Highland Park, Mich.....	1	1	Waterbury, Conn.....	1	1
Indianapolis, Ind.....	1	2			

**DIPHTHERIA.**

See Telegraphic weekly reports from States, p. 1672; Monthly summaries by States, p. 1675; and Weekly reports from cities, p. 1688.

**INFLUENZA.****Arkansas Report for May, 1920.**

Place.	New cases reported.	Place.	New cases reported.
<b>Arkansas:</b>		<b>Arkansas—Continued.</b>	
Ashley County.....	8	Miller County.....	4
Baxter County.....	10	Mississippi County.....	1
Calhoun County.....	2	Monroe County.....	1
Clark County.....	4	Pike County.....	6
Clay County.....	2	Prairie County.....	1
Craighead County.....	2	Pulaski County.....	6
Crittenden County.....	3	Searcy County.....	2
Faulkner County.....	8	Sebastian County.....	8
Garland County.....	2	Sevier County.....	4
Howard County.....	2	St. Francis County.....	3
Jackson County.....	6	Washington County.....	1
Lawrence County.....	9	Yell County.....	1
Little River County.....	3	Total.....	101
Lonoke County.....	2		

## INFLUENZA—Continued.

## City Reports for Week Ended June 19, 1920.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Boston, Mass.....	1	.....	Memphis, Tenn.....	.....	1
Bridgeport, Conn.....	.....	1	Milwaukee, Wis.....	1	.....
Chicago, Ill.....	2	.....	New York, N. Y.....	2	8
Cincinnati, Ohio.....	.....	1	Oakland, Calif.....	.....	2
Detroit, Mich.....	.....	1	Richmond, Va.....	.....	1
Dover, N. H.....	4	.....	St. Paul, Minn.....	.....	1
Houston, Tex.....	.....	1	San Francisco, Calif.....	1	.....
Long Beach, Calif.....	1	.....	Trenton, N. J.....	1	1
Los Angeles, Calif.....	1	.....			

## LEPROSY.

## Hot Springs, Ark.—May, 1920.

A case of leprosy was reported at Hot Springs, Ark., as verified on May 15, 1920, in the person of W. H. W., colored, male, age 31. The patient escaped.

## LETHARGIC ENCEPHALITIS.

## California, Kansas, and New York.

During the month of May, 1920, one case of lethargic encephalitis was reported in Kansas. During the week ended June 19, 1920, one case and one death were reported at San Francisco, Calif., and one case and one death were reported at Yonkers, N. Y.

## MALARIA.

## Arkansas and Colorado Reports for May, 1920.

Place.	New cases reported.	Place.	New cases reported.
<b>Arkansas:</b>		<b>Arkansas—Continued.</b>	
Arkansas County.....	2	Logan County.....	11
Ashley County.....	29	Lonoke County.....	3
Bradley County.....	25	Miller County.....	1
Calhoun County.....	7	Mississippi County.....	2
Chicot County.....	3	Monroe County.....	11
Clark County.....	6	Newton County.....	2
Clay County.....	4	Ouachita County.....	50
Cleburne County.....	7	Pike County.....	5
Conway County.....	6	Pope County.....	1
Craighead County.....	9	Prairie County.....	10
Crittenden County.....	3	Pulaski County.....	5
Drew County.....	51	Saline County.....	5
Faulkner County.....	6	Scott County.....	6
Franklin County.....	26	Sebastian County.....	13
Greene County.....	2	Sevier County.....	72
Hempstead County.....	6	St. Francis County.....	16
Hot Spring County.....	11	Union County.....	11
Howard County.....	3	White County.....	9
Izard County.....	4	Yell County.....	1
Jackson County.....	6		
Jefferson County.....	21	Total.....	501
Lafayette County.....	8		
Lawrence County.....	13	<b>Colorado:</b>	
Little River County.....	3	Prowers County.....	1

**MALARIA—Continued.****City Reports for Week Ended June 19, 1920.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Alexandria, La.....	12	.....	East Orange, N. J.....	1	.....
Atlanta, Ga.....	1	.....	Hot Springs, Ark.....		1
Baltimore, Md.....	1	.....	Lake Charles, La.....	1	.....
Baton Rouge, La.....	1	.....	Memphis, Tenn.....		1
Beaumont, Tex.....		1	Nashville, Tenn.....		1
Birmingham, Ala.....	1	.....	New York, N. Y.....	1	.....
Brunswick, Ga.....	3	.....	Rome, Ga.....	1	.....
Dallas, Tex.....	6	1	Savannah, Ga.....	1	.....
Danville, Va.....	3	.....			

**MEASLES.**

See Telegraphic weekly reports from States, p. 1672; Monthly summaries by States, p. 1675; and Weekly reports from cities, p. 1683.

**PELLAGRA.****Arkansas and Kansas Reports for May, 1920.**

Place.	New cases reported.	Place.	New cases reported.
<b>Arkansas:</b>		<b>Arkansas—Continued.</b>	
Arkansas County.....	5	Miller County.....	1
Ashley County.....	4	Mississippi County.....	2
Chicot County.....	3	Onachita County.....	11
Clark County.....	2	Pike County.....	1
Cleburne County.....	2	Prairie County.....	3
Crittenden County.....	2	Pulaski County.....	2
Desha County.....	1	Sebastian County.....	4
Drew County.....	3	St. Francis County.....	1
Faulkner County.....	8	Union County.....	3
Hempstead County.....	2	Washington County.....	5
Howard County.....	3	White County.....	1
Jackson County.....	2		
Jefferson County.....	6	Total.....	88
Lawrence County.....	5		
Little River County.....	1	<b>Kansas:</b>	
Logan County.....	1	Montgomery County—	
Loneke County.....	3	Independence.....	1
Madison County.....	1		

**City Reports for Week Ended June 19, 1920.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Alexandria, La.....	2	.....	Charleston, S. C.....		1
Atlanta, Ga.....		2	Dallas, Tex.....		2
Beaumont, Tex.....	1	.....	Montgomery, Ala.....		2
Birmingham, Ala.....	1	.....	Waco, Tex.....		1

**PLAGUE (HUMAN).****Beaumont, Tex.<sup>1</sup>**

From June 26 to July 7, 1920, eight cases of human plague, with two deaths, were reported in Beaumont, Tex.

<sup>1</sup> This report includes the death from human plague reported in the Public Health Reports of July 2, 1920, p. 1618.



## PLAGUE (RODENT).

## California.

The following table shows the number of ground squirrels (*Citellus beecheyi*) confirmed as plague infected during the week ended June 19, 1920, also the number of squirrels collected for examination during the same period:

County.	Plague infection confirmed during week.	Squirrels collected.
Merced .....	None.	93
Monterey .....	2	142
San Benito .....	3	228
San Joaquin .....	None.	155
San Mateo .....	None.	223
Santa Clara .....	None.	392
Santa Cruz .....	12	415
Stanislaus .....	None.	313
Total .....	17	1,961

Other animals collected and examined for plague infection were as follows: San Francisco, 24 rats; Monterey County, 2 rabbits. None was confirmed as plague infected.

## New Orleans, La.

During the week ended June 26, 1920, 6,390 rodents were captured and 4,805 were examined for plague infection. Two rodents, *Mus norvegicus*, were found to be plague infected. The classification of the rodents captured is as follows: *Mus norvegicus*, 3,540; *Mus rattus*, 213; *Mus alexandrinus*, 412; *Mus musculus*, 2,020; wood rats, 12; miscellaneous, 2; and putrid, 191.

## PNEUMONIA (ALL FORMS).

## City Reports for Week Ended June 19, 1920.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Akron, Ohio .....	2	.....	Butte, Mont. ....	.....	3
Alameda, Calif. ....	1	1	Cambridge, Mass. ....	2	1
Albany, N. Y. ....	13	.....	Charleston, S. C. ....	.....	3
Alton, Ill. ....	.....	1	Charlotte, N. C. ....	.....	2
Anaconda, Mont. ....	.....	1	Cheyenne, Wyo. ....	1	1
Ashtabula, Ohio. ....	3	2	Chicago, Ill. ....	133	34
Atlanta, Ga. ....	1	4	Cincinnati, Ohio. ....	4	3
Atlantic City, N. J. ....	2	1	Cleveland, Ohio. ....	8	9
Baltimore, Md. ....	45	17	Clinton, Mass. ....	.....	1
Barberton, Ohio. ....	.....	2	Cohoes, N. Y. ....	5	1
Bayonne, N. J. ....	1	.....	Colorado Springs, Colo. ....	.....	1
Belleville, N. J. ....	1	.....	Columbus, Ohio. ....	.....	3
Beverly, Mass. ....	.....	1	Cortland, N. Y. ....	1	1
Binghamton, N. Y. ....	4	.....	Dayton, Ohio. ....	1	.....
Birmingham, Ala. ....	.....	3	Denver, Colo. ....	.....	6
Bluefield, W. Va. ....	1	1	Detroit, Mich. ....	19	19
Boston, Mass. ....	9	10	East Chicago, Ind. ....	.....	1
Bridgeport, Conn. ....	.....	1	East Orange, N. J. ....	.....	11
Brookton, Mass. ....	.....	1	East St. Louis, Ill. ....	.....	1
Brookline, Mass. ....	1	.....	Elizabeth, N. J. ....	.....	1
Buffalo, N. Y. ....	.....	6	Elkhart, Ind. ....	.....	2

## PNEUMONIA (ALL FORMS)—Continued.

City Reports for Week Ended June 19, 1920—Continued.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
El Paso, Tex.		1	New York, N. Y.	112	104
Emreka, Calif.		1	Niagara Falls, N. Y.	2	1
Everett, Mass.	1	1	Norwalk, Conn.		1
Fall River, Mass.	3	2	Oklahoma City, Okla.		1
Fargo, N. Dak.		2	Omaha, Nebr.		5
Gary, Ind.		1	Pasadena, Calif.	1	
Grand Rapids, Mich.		1	Passaic, N. J.	1	
Great Falls, Mont.	1	2	Paterson, N. J.	4	
Greensboro, N. C.		1	Pawtucket, R. I.		2
Hackensack, N. J.	1		Peekskill, N. Y.		1
Hammond, Ind.		1	Perth Amboy, N. J.		1
Haverhill, Mass.	2		Philadelphia, Pa.	15	43
Hibbing, Minn.	4		Piqua, Ohio.	1	1
Hoboken, N. J.		3	Plainfield, N. J.	1	
Holyoke, Mass.	1	2	Plymouth, Mass.		1
Huntington, W. Va.		1	Pontiac, Mich.	1	1
Indianapolis, Ind.		3	Port Huron, Mich.	1	1
Ithaca, N. Y.		1	Portland, Oreg.		4
Jacksonville, Ill.		3	Providence, R. I.		2
Jefferson City, Mo.		1	Pueblo, Colo.		1
Jersey City, N. J.	1		Richmond, Va.	1	1
Kalamazoo, Mich.	2	1	Rochester, N. Y.	6	4
Kansas City, Kans.	1		Rockford, Ill.		2
Kansas City, Mo.	10	7	Rocky Mount, N. C.		1
Kearny, N. J.	4		Saginaw, Mich.		1
Lackawanna, N. Y.	2	1	St. Paul, Minn.		3
La Fayette, Ind.		1	Salem, Mass.	1	1
Lawrence, Kans.	1		Salt Lake City, Utah.		3
Lawrence, Mass.	1	1	San Diego, Calif.		1
Lincoln, Nebr.	1	1	San Francisco, Calif.	12	2
Long Beach, Calif.		1	Santa Cruz, Calif.	1	
Long Branch, N. J.	1		Saratoga Springs, N. Y.	3	1
Los Angeles, Calif.	22	6	Savannah, Ga.		1
Louisville, Ky.		1	Echenectady, N. Y.	1	
Lowell, Mass.		2	Springfield, Mass.	2	1
Lynn, Mass.	2	1	Springfield, Mo.		1
Malden, Mass.		1	Springfield, Ohio.		1
Manchester, Conn.	1		Staunton, Va.	3	3
Marion, Ind.		1	Stockton, Calif.	1	1
Melrose, Mass.		1	Superior, Wis.		1
Memphis, Tenn.		5	Syracuse, N. Y.	3	5
Methuen, Mass.		2	Toledo, Ohio.	1	1
Milwaukee, Wis.		10	Topeka, Kans.		2
Minneapolis, Minn.		3	Trenton, N. J.	3	4
Missoula, Mont.		1	Troy, N. Y.	2	
Morgantown, W. Va.	1		Washington, D. C.		5
Morristown, N. J.		1	Watertown, N. Y.		1
Mount Vernon, N. Y.	3		West Hoboken, N. J.		1
Nashville, Tenn.		1	West Orange, N. J.	4	
Newark, N. J.	26	5	White Plains, N. Y.		1
New Bedford, Mass.		2	Wichita, Kans.	2	3
New Britain, Conn.		1	Wilmington, Del.		2
New Haven, Conn.		6	Woburn, Mass.		1
New London, Conn.	1		Worcester, Mass.	7	5
New Orleans, La.	1	4	Yonkers, N. Y.	1	1
Newport, R. I.		1	Youngstown, Ohio.	2	1
Newton, Mass.	1	1			

## POLIOMYELITIS (INFANTILE PARALYSIS).

Arkansas and Michigan—May, 1920.

During May, 1920, one case of poliomyelitis was reported in Crawford County, Ark., one case was reported in Oakland County and one in Wayne County, Mich.

City Reports for Week Ended June 19, 1920.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Boston, Mass.	1		Detroit, Mich.	1	
Chicago, Ill.	1		Lowell, Mass.	1	
Clarksburg, W. Va.	1		Lynn, Mass.	1	

**RABIES IN ANIMALS.****City Reports for Week Ended June 19, 1920.**

During the week ended June 19, 1920, one case of rabies in animals was reported at Akron, Ohio, one at Detroit, Mich., one at Ironton, Ohio, and one at Oakland, Calif.

**ROCKY MOUNTAIN SPOTTED OR TICK FEVER.****Idaho, Montana, and Wyoming.**

During the month of May, 1920, four cases of Rocky Mountain spotted or tick fever were reported at Bancroft, Bannock County, Idaho; seven cases were reported in Fremont County and one case was reported in Park County, Wyo. During the week ended June 19, 1920, one case was reported at Missoula, Mont.

**SCARLET FEVER.**

See Telegraphic weekly reports from States, p. 1672; Monthly summaries by States, p. 1675; and Weekly reports from cities, p. 1688.

**SMALLPOX.****Colorado and Kansas Reports for May, 1920—Vaccination Histories.**

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Vaccinated within 7 years preceding attack.	Last vaccinated more than 7 years preceding attack.	Never successfully vaccinated.	History not obtained or uncertain.
<b>Colorado:</b>						
Adams County.....	11				11	
Alamosa County.....	2				2	
Chaffee County.....	1					1
Cheyenne County.....	1				1	
Denver.....	70		6		60	4
Eagle County.....	2		2			
El Paso County.....	47		2		43	2
Fremont County.....	32				31	1
Huerfano County.....	10				9	1
Jefferson County.....	1					1
Kit Carson County.....	11				9	2
La Plata County.....	2		1			1
Larimer County.....	24				1	23
Las Animas County.....	5		1		4	
Montrose County.....	2		1		2	
Morgan County.....	18					18
Otero County.....	4				4	
Prowers County.....	27		2		18	7
Pueblo.....	7				7	
Rio Grande County.....	5					5
Sedgwick County.....	5				5	
Weld County.....	2		1		1	
Total.....	289		15		208	66
<b>Kansas:</b>						
Allen County—						
Iola.....	3				1	2
Atchison County—						
Atchison.....	1					

## SMALLPOX—Continued.

## Colorado and Kansas Reports for May, 1920—Vaccination Histories—Continued.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Vaccinated within 7 years preceding attack.	Last vaccinated more than 7 years preceding attack.	Never successfully vaccinated.	History not obtained or uncertain.
Kansas—Continued.						
Barton County—						
Hoisington.....	2			1	1	.....
Bourbon County—						
Mapleton.....	2					2
Fort Scott (1 R. F. D.).....	22		1	1	6	14
Brown County—						
Robinson.....	1					1
Reserve.....	1					1
Butler County—						
Oil Hill.....	2				2	.....
Atlanta.....	2				2	.....
Potwin.....	1				1	.....
Douglass.....	2			1	1	.....
Augusta.....	1			1		.....
El Dorado.....	17				1	16
Chase County—						
Cottonwood Falls.....	2				2	.....
Cherokee County—						
Treece.....	2				2	.....
Galena.....	3				3	.....
Cheyenne County—						
Bird City.....	1					1
Cheyenne.....	1					1
Cloud County—						
Concordia.....	4				4	.....
Comanche County—						
Coldwater.....	3				3	.....
Cowley County—						
Atlanta.....	3				3	.....
Dexter.....	1					1
Udall.....	1				1	.....
Arkansas City.....	9			1	4	4
Crawford County—						
Gross.....	3				3	.....
Mulberry.....	1				1	.....
Pittsburg.....	17					17
Dickinson County—						
Abilene.....	12					12
Enterprise.....	21				19	11
Detroit.....	1					1
Talmage.....	2				2	.....
Chapman.....	2					2
Doniphan County—						
Bendena.....	3					3
Wathena.....	1					1
Douglas County—						
Lawrence.....	9			2	2	5
Ellis County—						
Ellis.....	1				1	.....
Ellsworth County—						
Langley.....	3				2	1
Finney County—						
Garden City.....	9		1	1	5	2
Pierceville.....	5				5	.....
Ford County—						
Bucklin.....	3				1	2
Dodge City.....	3					3
Franklin County—						
Ottawa.....	10			1	1	8
Gray County—						
Cimarron.....	1					1
Charlestown.....	1				1	.....
Greenwood County—						
Eureka.....	1				1	.....
Virgil.....	2				2	.....

## SMALLPOX—Continued.

## Colorado and Kansas Reports for May, 1920—Vaccination Histories—Continued.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Vaccinated within 7 years preceding attack.	Last vaccinated more than 7 years preceding attack.	Never successfully vaccinated.	History not obtained or uncertain.
Kansas—Continued.						
Hamilton County—						
Syracuse.....	1					1
Harvey County—						
Newton.....	16				3	13
Haskell County—						
Satanta.....	4					4
Hodgeman County—						
Scott City.....	6			1	3	2
Jefferson County—						
Perry.....	3				3	
Jewell County—						
Esbon.....	25			1	10	14
Johnson.....	3				2	1
Labette County—						
Parsons.....	12		1	2	3	6
Lane County—						
Healy.....	10				3	7
Manning.....	1					1
Leavenworth County—						
Leavenworth.....	1			1		
Linn County—						
Mound City.....	1					1
Boicourt.....	1					1
Lyon County—						
Neosho Rapids.....	1				1	
Emporia.....	11			1	10	
Marshall County—						
Marysville.....	2				1	1
Lillis.....	1				1	
Frankfort.....	1				1	
Herkimer.....	1				1	
McPherson County—						
McPherson (R. F. D. 1).....	3				1	2
Meade County—						
Plains.....	1			1		
Miami County—						
Fontana.....	3					3
Montgomery County—						
Liberty.....	1					1
Cherryvale.....	15				1	14
Coffeyville.....	1				1	
Independence.....	5				4	1
Morton County—						
Elkhart.....	4				4	
Richfield.....	1				1	
Nemaha County—						
Centralia.....	1					1
Norton County—						
Norton.....	1				1	
Osage County—						
Osage City.....	2				1	1
Pawnee County—						
Larned.....	12					12
Phillips County—						
Arga.....	9					9
Woodruff.....	1				1	
Republic City (Nebr.).....	1					1
Logan.....	2					2
Pottawatomie County—						
St. Marys.....	1					1
Reno County—						
Hutchinson.....	1					1
Republic County—						
Hardy (Nebr.).....	6				3	3
Courtland.....	5				5	
Republic.....	1					1
Scandia.....	2				2	

## SMALLPOX—Continued.

## Colorado and Kansas Reports for May, 1920—Vaccination Histories—Continued.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Vaccinated within 7 years preceding attack.	Last vaccinated more than 7 years preceding attack.	Never successfully vaccinated.	History not obtained or uncertain.
Kansas—Continued.						
Rice County—						
Sterling.....	1					1
Riley County—						
Manhattan.....	1					1
Rush County—						
La Crosse.....	1					1
Nekoma.....	3					3
McCracken.....	4					4
Saline County—						
Salina.....	1					1
Scott County—						
Scott City.....	2					2
Sedgwick County—						
Garden Plain.....	3				3	
Viola.....	1				1	
Colwich.....	2				1	1
Cheney.....	1				1	
Wichita.....	62		1			61
Shawnee County—						
Topeka (I R F. D.).....	24		4		12	8
Sherman County—						
Kanardo.....	3					3
Goodland.....	14		1		5	8
Smith County—						
Smith Center.....	16				2	14
Fellaire.....	1					1
Sumner County—						
Milan.....	8				8	
Wellington.....	8				7	1
Wabaunsee County—						
Eskridge.....	2					2
Washington County—						
Hanover.....	2					2
Wichita County—						
Leoti.....	2				2	
Wilson County—						
Fredonia.....	5				1	4
Wyandotte County—						
Rosedale.....	2					2
Kansas City.....	14			1	6	7
Total.....	561		9	17	190	345

## State Reports for May, 1920.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Arkansas:					
Baxter County.....	1		Arkansas—Continued.		
Benton County.....	1		Perry County.....	2	
Carroll County.....	1		Pope County.....	1	
Clay County.....	6		Sevier County.....	11	
Conway County.....	5		St. Francis County.....	2	
Franklin County.....	6		Total.....	87	
Greene County.....	17				
Hempstead County.....	15				
Jackson County.....	1		Idaho:		
Lonoke County.....	1		Ada County.....	32	
Madison County.....	2		Boise.....	18	
Miller County.....	12		Bannock County—		
Mississippi County.....	3		Pocatello.....	2	

## SMALLPOX—Continued.

## State Reports for May, 1920—Continued.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
<b>Idaho—Continued.</b>			<b>Michigan—Continued.</b>		
Bingham County—			Cheboygan County.....	2	
Aberdeen.....	69		Crawford County.....	2	
Blaine County.....	1		Delta County.....	1	
Boise County—			Eaton County.....	4	
Quartsburg.....	1		Emmet County.....	1	
Bonner County.....	16		Genesee County.....	8	
Sandpoint.....	1		Gogebic County.....	7	
Bonneville County—			Gratiot County.....	3	
Idaho Falls.....	11		Hillsdale County.....	1	
Canyon County—			Houghton County.....	14	
Nampa.....	11		Huron County.....	1	
Camas County.....	2		Ingham County.....	31	
Caribou County.....	5		Ionia County.....	4	
Custer County—			Isabella County.....	6	
Mackay.....	1		Jackson County.....	7	
Clearwater County.....	2		Kalamazoo County.....	3	
Franklin County—			Kent County.....	12	
Preston.....	3		Lake County.....	1	
Idaho County—			Lapeer County.....	7	
Grangeville.....	1		Lenawee County.....	2	
Jefferson County—			Macomb County.....	2	
Laclede.....	3		Manistee County.....	7	
Roberts.....	1		Marquette County.....	15	
Jerome County—			Mecosta County.....	2	
Hasleton.....	1		Monroe County.....	1	
Kootenai County—			Montcalm County.....	4	
Rathdrum.....	1		Muskegon County.....	6	
Latah County—			Oakland County.....	20	
Moscow.....	7		Oceana County.....	11	
Potlatch.....	6		Ontonagon County.....	1	
Nez Perce County—			Ottawa County.....	4	
Lewiston.....	4		Presque Isle County.....	8	
Owyhee County—			Saginaw County.....	2	
Hot Springs.....	1		Schoolcraft County.....	7	
Shoshone County—			Shiawassee County.....	1	
Mullan.....	1		St. Clair County.....	11	
Twin Falls County.....	15		St. Joseph County.....	10	
Twin Falls.....	3		Washtenaw County.....	9	
Buhl.....	3		Wayne County.....	318	
Teton County.....	1				
Washington County—			<b>Total.....</b>	<b>607</b>	
Welser.....	6				
<b>Total.....</b>	<b>229</b>		<b>Wyoming:</b>		
<b>Michigan:</b>			Albany County.....	10	
Alger County.....	6		Big Horn County.....	3	
Antrim County.....	1		Campbell County.....	25	
Baraga County.....	1		Fremont County.....	72	
Barry County.....	1		Goshen County.....	16	
Bay County.....	1		Laramie County.....	1	
Benzie County.....	1		Lincoln County.....	1	
Berrien County.....	22		Natrona County.....	15	
Branch County.....	6		Sheridan County.....	12	
Calhoun County.....	9		Uinta County.....	19	
Cass County.....	3		<b>Total.....</b>	<b>174</b>	

## City Reports for Week Ended June 19, 1920.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Aberdeen, S. Dak.....	1		Canton, Ohio.....	2	
Akron, Ohio.....	17		Cedar Rapids, Iowa.....	2	
Alexandria, La.....	1		Charleston, S. C.....	10	
Appleton, Wis.....	7		Charlotte, N. C.....	3	
Ashtabula, Ohio.....	1		Cheyenne, Wyo.....	1	
Atlanta, Ga.....	10		Cincinnati, Ohio.....	1	
Aurora, Ill.....	1		Cleveland, Ohio.....	3	
Bedford, Ind.....	5		Council Bluffs, Iowa.....	2	
Birmingham, Ala.....	2		Dallas, Tex.....	5	
Bluefield, W. Va.....	6		Danville, Ill.....	1	
Boise, Idaho.....	5		Dayton, Ohio.....	1	
Braddock, Pa.....	1		Decatur, Ill.....	1	

## SMALLPOX—Continued.

## City Reports for Week Ended June 19, 1920—Continued.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Denver, Colo.	17	.....	Nashville, Tenn.	1	.....
Des Moines, Iowa.	3	.....	New Orleans, La.	5	3
Detroit, Mich.	29	.....	Norfolk, Va.	1	.....
Dubuque, Iowa.	10	.....	North Little Rock, Ark.	1	.....
Duluth, Minn.	2	.....	Oklahoma City, Okla.	3	.....
East St. Louis, Ill.	1	.....	Omaha, Nebr.	9	.....
El Paso, Tex.	2	.....	Oshkosh, Wis.	3	.....
Flint, Mich.	4	.....	Peoria, Ill.	1	.....
Fond du Lac, Wis.	1	.....	Pittsburgh, Pa.	1	.....
Fort Scott, Kans.	1	.....	Portland, Oreg.	30	.....
Fort Smith, Ark.	1	.....	Portsmouth, Va.	2	.....
Fort Wayne, Ind.	1	.....	Pueblo, Colo.	1	.....
Galesburg, Ill.	5	.....	Raleigh, N. C.	1	.....
Gary, Ind.	3	.....	Reno, Nev.	5	.....
Habbing, Minn.	4	.....	Richmond, Ind.	1	.....
Hoquiam, Wash.	1	.....	Riverside, Calif.	1	.....
Houston, Tex.	1	.....	Roanoke, Va.	2	.....
Huntington, Ind.	2	.....	Rockford, Ill.	1	.....
Huntington, W. Va.	1	.....	Rock Island, Ill.	1	.....
Independence, Mo.	9	.....	Sacramento, Calif.	1	.....
Indianapolis, Ind.	7	.....	Saginaw, Mich.	2	.....
Jacksonville, Ill.	3	.....	St. Cloud, Minn.	3	.....
Janesville, Wis.	2	.....	St. Joseph, Mo.	8	.....
Kansas City, Kans.	3	.....	St. Louis, Mo.	2	.....
Kansas City, Mo.	10	.....	St. Paul, Minn.	3	.....
Kenosha, Wis.	17	.....	Salt Lake City, Utah.	33	.....
Knoxville, Tenn.	5	.....	Sandusky, Ohio.	5	.....
Kokomo, Ind.	9	.....	San Francisco, Calif.	2	.....
La Salle, Ill.	1	.....	Seattle, Wash.	8	.....
Lima, Ohio.	5	.....	Sioux City, Iowa.	3	.....
Lincoln, Nebr.	4	.....	South Bend, Ind.	3	.....
Logansport, Ind.	4	.....	Spartanburg, S. C.	1	.....
Long Beach, Calif.	3	.....	Spokane, Wash.	12	.....
Los Angeles, Calif.	5	.....	Springfield, Ill.	2	.....
Louisville, Ky.	1	.....	Springfield, Ohio.	2	.....
Lynchburg, Va.	1	.....	Stockton, Calif.	3	.....
Mankato, Minn.	1	.....	Superior, Wis.	19	.....
Marion, Ind.	1	.....	Topeka, Kans.	3	.....
Marion, Ohio.	3	.....	Virginia, Minn.	1	.....
Marquette, Mich.	2	.....	Walla Walla, Wash.	1	.....
Marshalltown, Iowa.	3	.....	Wausau, Wis.	1	.....
Milwaukee, Wis.	5	.....	Wichita, Kans.	8	.....
Minneapolis, Minn.	32	.....	Yakima, Wash.	4	.....
Missoula, Mont.	1	.....	Youngstown, Ohio.	1	.....
Mobile, Ala.	6	.....			

## TETANUS.

## City Reports for Week Ended June 19, 1920.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Baltimore, Md.	.....	1	Mobile, Ala.	.....	1
Berkeley, Calif.	1	.....	Nashville, Tenn.	.....	1
Brunswick, Ga.	.....	1	Oakland, Calif.	1	.....
Chicago, Ill.	.....	2	Rome, N. Y.	1	.....
Dallas, Tex.	1	.....	Wilmington, N. C.	.....	1
Detroit, Mich.	.....	1			

## TUBERCULOSIS.

See Telegraphic weekly reports from States, p. 1672, and Weekly reports from cities, p. 1688.



## TYPHOID FEVER.

## State Reports for May, 1920.

Place.	New cases reported.	Place.	New cases reported.
<b>Arkansas:</b>		<b>Kansas—Continued.</b>	
Ashley County.....	1	Montgomery County—	
Baxter County.....	3	Caney.....	1
Benton County.....	1	Coffeyville.....	2
Clark County.....	1	Independence.....	1
Crawford County.....	1	Pawnee County—	
Faulkner County.....	1	Larned.....	1
Madison County.....	1	Garfield.....	1
Mississippi County.....	1	Pratt County—	
Washington County.....	1	Pratt.....	1
<b>Total.....</b>	<b>11</b>	Reno County—	
<b>Colorado:</b>		Hutchinson (I R. F. D.).....	2
Arapahoe County.....	1	Saline County—	
Denver.....	2	Salina.....	1
Fremont County.....	7	Sedgwick County—	
Lincoln County.....	1	Wichita.....	1
<b>Total.....</b>	<b>11</b>	Smith County—	
<b>Idaho:</b>		Smith Center.....	1
Canyon County—		Sumner County—	
Nampa.....	2	Argonia.....	4
Kootenai County—		<b>Total.....</b>	<b>25</b>
Rose Lake.....	1	<b>Michigan:</b>	
Nez Perce County—		Allegan County.....	2
Lewiston.....	3	Alpena County.....	11
Lewis County.....	1	Bay County.....	11
Latah County—		Calhoun County.....	2
Moscow.....	1	Clare County.....	1
<b>Total.....</b>	<b>8</b>	Crawford County.....	1
<b>Kansas:</b>		Genesee County.....	1
Butler County—		Grand Traverse County.....	1
Augusta.....	1	Ingham County.....	1
El Dorado.....	3	Ionia County.....	1
Chase County—		Jackson County.....	5
Cedar Point.....	1	Kent County.....	2
Chautauqua County—		Midland County.....	1
Sedan.....	3	Montmorency County.....	1
Cherokee County—		Muskegon County.....	2
Galena.....	2	Newaygo County.....	1
Ellsworth County—		Sanilac County.....	2
Ellsworth.....	3	Saginaw County.....	6
Black Wolf.....	1	St. Clair County.....	3
Leavenworth County—		St. Joseph County.....	1
Tonganoxie.....	1	Wayne County.....	27
Lincoln County—		<b>Total.....</b>	<b>83</b>
Vesper.....	1	<b>Wyoming:</b>	
Linn County—		Hot Springs County.....	3
Centerville.....	2	Johnson County.....	1
Parker.....	1	Natrona County.....	1
		<b>Total.....</b>	<b>5</b>

## City Reports for Week Ended June 19, 1920.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Albany, N. Y.....	1	.....	Charleston, S. C.....	1	.....
Altoms, Pa.....	1	.....	Chicago, Ill.....	1	.....
Ann Arbor, Mich.....	1	.....	Chillicothe, Ohio.....	1	.....
Atlanta, Ga.....	.....	1	Cleveland, Ohio.....	2	1
Auburn, Me.....	1	.....	Columbia, S. C.....	1	.....
Baltimore, Md.....	4	.....	Columbus, Ohio.....	1	.....
Bangor, Me.....	2	.....	Concord, N. H.....	.....	1
Baton Rouge, La.....	1	.....	Covington, Ky.....	1	.....
Beaumont, Tex.....	1	.....	Denver, Colo.....	.....	1
Billings, Mont.....	1	.....	Detroit, Mich.....	4	.....
Binghamton, N. Y.....	1	1	East St. Louis, Ill.....	2	1
Birmingham, Ala.....	2	1	Elizabeth, N. J.....	1	.....
Boston, Mass.....	3	.....	Elmira, N. Y.....	.....	1
Buffalo, N. Y.....	.....	3	El Paso, Tex.....	2	.....

## TYPHOID FEVER—Continued.

## City Reports for Week Ended June 19, 1920—Continued.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Fall River, Mass.	2		Oakland, Calif.	1	
Flint, Mich.	1	1	Oklahoma City, Okla.	2	
Fresno, Calif.	1		Parsons, Kans.	2	
Grand Rapids, Mich.	1	2	Philadelphia, Pa.	3	1
Great Falls, Mont.	2		Pittsburgh, Pa.	1	
Greeley, Colo.	1		Portland, Me.	2	
Hammond, Ind.	2		Portsmouth, Va.	2	
Houston, Tex.	7		Pottsville, Pa.	2	
Huntington, Ind.	12		Providence, R. I.	2	1
Independence, Mo.	1		Pueblo, Colo.	1	
Indianapolis, Ind.	4		Quincy, Mass.	1	
Joplin, Mo.	6		Red Wing, Minn.	3	
Kansas City, Mo.	2	1	Richmond, Ind.		1
Lawrence, Mass.		1	Richmond, Va.	2	
Lexington, Ky.	1		Rochester, N. Y.	2	
Logansport, Ind.	1		Rock Island, Ill.	1	
Los Angeles, Calif.	2		Rome, Ga.	1	
Louisville, Ky.	4		Sacramento, Calif.	4	
Lowell, Mass.	3		St. Louis, Mo.	2	
Manhato, Minn.	1		Salt Lake City, Utah.	2	
Martinsburg, W. Va.	1		San Francisco, Calif.	1	
Mattom, Ill.	7		Savannah, Ga.	4	
Memphis, Tenn.		1	Superior, Wis.	1	
Mishawaka, Ind.	2		Toledo, Ohio.		2
Missoula, Mont.	2		Trenton, N. J.	1	
Mount Vernon, N. Y.	1		Virginia, Minn.	3	
Nashville, Tenn.	2		Washington, D. C.	1	
Newark, N. J.	1		Watertown, N. Y.	1	
New Haven, Conn.	3	1	Wheeling, W. Va.	2	
New London, Conn.	1		Wilkes-Barre, Pa.	1	
New Orleans, La.	3	1	Winston-Salem, N. C.	1	
New York, N. Y.	7		York, Pa.	1	
Norfolk, Va.	1				

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

## City Reports for Week Ended June 19, 1920.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Aberdeen, S. Dak.	15,926	4			3		1			
Aberdeen, Wash.	21,392				4				1	
Adams, Mass.	14,406	2								
Akron, Ohio.	93,604	52	3		10		5		6	
Alameda, Calif.	28,433	10	2							1
Albany, N. Y.	103,632		1		37		1		5	
Alexandria, La.	16,232	8	1		1					1
Alexandria, Va.	17,959	6								
Allentown, Pa.	65,199		1		18		1		2	
Alliance, Ohio.	19,581	11					1			1
Alton, Ill.	23,783	10			4					
Altoona, Pa.	59,712		2		1					
Amesbury, Mass.	10,200	4	1		6					
Anaconda, Mont.	10,631	4			12					
Ann Arbor, Mich.	15,041	12	1		2					1
Ansonia, Conn.	16,954	2	1						1	
Appleton, Wis.	18,005				3		3			
Arlington, Mass.	13,073	5	3		2		8		1	
Asbury Park, N. J.	14,629	6			21					
Ashtabula, Ohio.	22,008	6	1		3				2	1
Atlanta, Ga.	195,144	72			23				2	7
Atlantic City, N. J.	53,515	15	4		1				1	1
Attleboro, Mass.	19,776	4			7		1		1	
Auburn, Me.	16,607	4	1		1					1
Aurora, Ill.	34,795	16			22		1		1	1
Baltimore, Md.	594,687	192	8	1	131	2	15		34	23
Bangor, Me.	26,958				6		2		4	

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

City Reports for Week Ended June 19, 1920—Continued.

City.	Popula- tion as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Barberton, Ohio.....	14,187	8	1		2		1			
Barro, Vt.....	12,401				4					
Baton Rouge, La.....	17,544	6							2	2
Battle Creek, Mich.....	30,159		1		15		10			
Bayonne, N. J.....	72,204				17		1		2	
Beaumont, Tex.....	28,851	6							1	
Beaver Falls, Pa.....	13,749				4					
Bedford, Ind.....	10,613	4								1
Bellaire, Ohio.....	14,575				2		4			
Beloit, Wis.....	18,547				28		1			
Berkeley, Calif.....	60,427	8	1		2		2			
Berlin, N. H.....	13,892	4								
Bethlehem, Pa.....	14,353		4		37		1		4	
Beverly, Mass.....	22,128	1			1		1		1	
Biddeford, Me.....	17,700				1					1
Billings, Mont.....	15,123	1			4		1		1	
Biinghamton, N. Y.....	54,804	21	1		3		5		5	1
Birmingham, Ala.....	189,716	64			17		1		11	7
Bloomfield, N. J.....	19,013	4			2		2		1	
Bloomington, Ill.....	27,462	6					2		4	
Bloomington, Ind.....	11,661	2					1			1
Bluefield, W. Va.....	16,123	1			1					
Boise, Idaho.....	35,951	6			12					
Boston, Mass.....	767,813	177	45	3	116	1	23	1	68	28
Brad dock, Pa.....	22,060				2					
Bradford, Pa.....	14,544		1		8					
Brasil, Ind.....	10,472	3			1				3	
Bridgeport, Conn.....	124,724	23	1		1		1			2
Brockton, Mass.....	69,152	19	3		1		1		2	2
Brookline, Mass.....	33,526	9	1	1	41		1		2	1
Brunswick, Ga.....	10,984	4							1	
Buffalo, N. Y.....	475,781	103		1						7
Burlington, Iowa.....	25,144				5		2			
Burlington, Vt.....	21,802	2								
Butler, Pa.....	28,677				13		1			
Butte, Mont.....	44,057	12							2	3
Cadillac, Mich.....	10,158	4					1			
Cañero, Ill.....	15,995	6								1
Cambridge, Mass.....	114,293	29	7		33		7		4	4
Canton, Ill.....	13,674	2								
Canton, Ohio.....	62,566	16	2		23	1	1		2	
Carbondale, Pa.....	19,397		2		2					
Carlisle, Pa.....	10,795				9					
Carnegie, Pa.....	11,963		1		3					
Centralia, Ill.....	11,638	1								
Chambersburg, Pa.....	12,475		3		1					
Chanute, Kans.....	12,968	11								1
Charleston, S. C.....	61,041	37								5
Charleston, W. Va.....	31,060				3		1			
Charlotte, N. C.....	40,759	20								1
Chelsea, Mass.....	46,405		3		18		1			
Chester, Pa.....	41,857		1		13				1	
Cheyenne, Wyo.....	11,320	3					2			
Chicago Heights, Ill.....	22,863	9	1				2			
Chicago, Ill.....	2,547,201	553	98	2	351	3	102	2	203	61
Chicopee, Mass.....	29,950	5								
Chillicothe, Ohio.....	15,625	1			3		1			
Cincinnati, Ohio.....	414,248	114	13	2	36	3	17		18	11
Cleveland, Ohio.....	692,259	159	12		59		27	1	25	17
Clinton, Mass.....	13,075	6			1		1			3
Coatesville, Pa.....	14,998				2					
Coffeyville, Kans.....	18,331	4			1				1	
Cohoes, N. Y.....	25,292	5								
Colorado Springs, Colo.....	38,965	4	2		10				4	1
Columbia, S. C.....	35,165				3				1	
Columbus, Ohio.....	220,135	47	2		14	1	2		5	6
Concord, N. H.....	22,858	10			18					
Cornellsville, Pa.....	15,876				2					
Corpus Christi, Tex.....	10,789	1								
Cortland, N. Y.....	13,321	3								

<sup>1</sup> Population Apr. 15, 1910.

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

City Reports for Week Ended June 19, 1920—Continued.

City.	Popula- tion as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Council Bluffs, Iowa.....	31,838	7	—	—	2	—	2	—	—	1
Covington, Ky.....	59,623	19	1	—	2	—	2	—	2	2
Cranston, R. I.....	26,773	6	—	—	—	—	—	—	—	—
Dallas, Tex.....	129,738	39	1	1	20	—	2	—	6	5
Danville, Ill.....	32,969	7	—	—	2	—	1	—	—	—
Davenport, Iowa.....	49,618	—	1	—	5	—	—	—	2	—
Dayton, Ohio.....	128,939	31	—	—	2	—	—	—	8	—
Decatur, Ill.....	41,483	14	—	—	1	—	—	—	—	1
Dedham, Mass.....	10,618	1	—	—	—	—	3	—	—	—
Denver, Colo.....	268,439	70	4	—	96	2	4	—	2	14
Des Moines, Iowa.....	104,052	—	—	—	2	—	—	—	—	—
Detroit, Mich.....	619,048	285	69	7	77	4	50	1	52	23
Dover, N. H.....	13,276	2	—	—	—	—	—	—	—	—
Du Bois, Pa.....	14,994	—	—	—	1	—	—	—	—	—
Dubuque, Iowa.....	40,096	—	—	—	5	—	2	—	—	—
Duluth, Minn.....	97,077	10	1	—	12	—	1	—	—	1
Durham, N. C.....	26,160	7	—	—	—	—	1	—	—	3
East Chicago, Ind.....	30,286	13	—	—	—	—	—	—	—	2
East Cleveland, Ohio.....	13,864	—	1	—	—	—	—	—	—	—
Easton, Pa.....	30,854	—	—	—	39	—	1	—	—	—
East Orange, N. J.....	43,761	14	—	—	34	—	—	—	3	1
East St. Louis, Ill.....	77,312	17	—	—	1	—	1	—	—	1
Eau Claire, Wis.....	18,887	—	—	—	3	—	1	—	—	—
Elgin, Ill.....	28,562	4	—	—	38	—	2	—	—	—
Elizabeth, N. J.....	88,830	—	3	—	7	—	8	—	3	5
Elkhart, Ind.....	22,273	6	—	—	4	—	3	—	—	—
Elmira, N. Y.....	38,272	13	1	—	25	—	—	—	—	—
El Paso, Tex.....	69,149	40	—	—	—	—	6	—	—	6
Elwood, Ind.....	11,028	2	—	—	—	—	—	—	—	1
Englewood, N. J.....	12,603	1	4	—	1	—	—	—	—	—
Erie, Pa.....	76,592	—	—	—	74	—	6	—	18	—
Eureka, Calif.....	15,142	5	—	—	—	—	—	—	1	1
Evanston, Ill.....	29,304	7	1	—	1	—	2	—	—	—
Everett, Mass.....	40,160	7	—	—	—	—	1	—	—	—
Everett, Wash.....	37,205	—	—	—	61	—	—	—	—	—
Fall River, Mass.....	129,828	34	5	2	12	—	2	—	11	4
Fargo, N. Dak.....	17,872	7	—	—	2	—	—	—	—	1
Findlay, Ohio.....	11,858	4	—	—	7	—	—	—	—	1
Flint, Mich.....	57,386	20	2	—	1	—	7	—	—	—
Fond du Lac, Wis.....	21,486	—	—	—	11	—	1	—	—	—
Fort Scott, Kans.....	10,564	2	—	—	—	—	—	—	—	—
Fort Smith, Ark.....	29,390	—	1	—	3	—	2	—	—	—
Fort Wayne, Ind.....	78,014	24	2	—	54	1	3	1	—	1
Fostoria, Ohio.....	10,959	5	—	—	2	—	5	1	—	—
Framingham, Mass.....	14,149	6	1	—	24	—	—	—	1	1
Freeport, Ill.....	19,844	4	—	—	—	—	5	—	—	1
Fremont, Nebr.....	10,080	3	—	—	—	—	—	—	—	—
Fremont, Ohio.....	11,034	3	—	—	1	—	—	—	—	—
Fresno, Calif.....	36,314	12	—	—	1	—	—	—	—	1
Galesburg, Ill.....	24,629	5	—	—	2	—	—	—	—	—
Galveston, Tex.....	42,650	6	1	—	—	—	—	—	1	1
Gardner, Mass.....	17,534	1	1	—	11	—	—	—	1	1
Gary, Ind.....	56,000	13	—	—	7	—	4	—	1	—
Glens Falls, N. Y.....	17,160	5	—	—	—	—	—	—	—	—
Gloucester City, N. J.....	11,375	—	—	—	1	—	—	—	1	—
Grand Rapids, Mich.....	132,861	35	7	—	66	—	8	—	7	2
Granite City, Ill.....	15,890	5	—	—	4	—	2	—	—	—
Great Falls, Mont.....	13,948	6	—	—	4	—	2	—	—	—
Greeley, Colo.....	11,942	5	—	—	2	—	—	—	—	—
Green Bay, Wis.....	30,017	—	—	—	2	—	—	—	—	—
Greenfield, Mass.....	12,251	3	5	—	21	—	—	—	—	—
Greensboro, N. C.....	20,171	4	—	—	—	—	—	—	—	—
Greensburg, Pa.....	15,881	—	—	—	1	—	1	—	—	—
Greenwich, Conn.....	19,594	3	1	—	3	—	—	—	1	—
Hackensack, N. J.....	17,412	—	1	—	33	—	—	—	—	—
Hammond, Ind.....	27,016	15	2	1	4	—	2	—	—	—
Harrisburg, Pa.....	78,276	—	—	—	6	—	3	—	—	—
Harrison, N. J.....	17,345	—	—	—	5	—	2	—	—	—
Haverhill, Mass.....	49,180	10	1	1	34	—	1	—	2	—
Hazleton, Pa.....	28,981	—	—	—	1	—	4	—	—	—

<sup>1</sup> Population Apr. 15, 1910.

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

City Reports for Week Ended June 19, 1920—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Hibbing, Minn.	17,550	6			2		1			
Highland Park, Mich.	33,859	12			12		3			
Hoboken, N. J.	78,324	13	3						1	2
Holland, Mich.	13,459	2			18					
Holyoke, Mass.	66,503	19			14				4	3
Hot Springs, Ark.	17,690	19								1
Hudson, N. Y.	12,898	40	5		5				5	3
Huntington, Ind.	10,982	3	1	1						
Huntington, W. Va.	47,686	11			2					
Hutchinson, Kans.	21,461		1		6		1		2	1
Independence, Mo.	11,964	9	1		1				1	1
Indianapolis, Ind.	283,622	92	3		97		11		5	9
Iowa City, Iowa.	11,626		3		3				1	
Ironton, Ohio.	14,079	1			13				2	
Ironwood, Mich.	15,095	3			21					
Irrington, N. J.	16,710		2		8		2		1	
Ishpeming, Mich.	12,448	1	1							
Ithaca, N. Y.	16,017	7			1		1		3	
Jacksonville, Ill.	15,506	15	1		1					1
Jamestown, N. Y.	37,431	9	2		27		1		4	
Janesville, Wis.	14,411				4					
Jefferson City, Mo.	13,712	1								
Jersey City, N. J.	312,557		21		16		4		13	
Johnstown, Pa.	70,437		2		4		1		1	
Joplin, Mo.	33,400				2					
Kalamazoo, Mich.	50,408	19	1		31		9		1	
Kankakee, Ill.	14,270	4			7					
Kansas City, Kans.	102,096		1		22				10	
Kansas City, Mo.	305,816	90	4	1	6		1		7	7
Kearny, N. J.	24,325	0			8				3	
Keene, N. H.	10,725	3			4		3		3	1
Kenosha, Wis.	32,833		3		9					
Knoxville, Tenn.	59,112						3		4	4
Kokomo, Ind.	21,929	5	3		1		1			1
Lackawanna, N. Y.	16,219	4			6				1	
La Fayette, Ind.	21,481	7			7					
Lake Charles, La.	14,930	5			1					
Lancaster, Ohio.	16,086	4								
Lancaster, Pa.	51,437		2		20					
La Salle, Ill.	12,332	4			5				5	
Laurel, Miss.	12,313		1							
Lawrence, Kans.	13,477	3								
Lawrence, Mass.	102,923	21	7		41		3		5	3
Leavenworth, Kans.	19,363	7								
Lebanon, Pa.	20,947						1		2	
Leominster, Mass.	21,365	3			2				4	1
Lexington, Ky.	41,997	5			9					1
Lima, Ohio.	37,145	16			10		1			2
Lincoln, Nebr.	46,957	22	1		7					
Lincoln, R. I.	10,473				2					
Little Rock, Ark.	58,716						1		3	
Lockport, N. Y.	20,028	1			2				1	
Logansport, Ind.	21,338	2			2		1			
Long Beach, Calif.	29,163	16	1		13				1	
Long Branch, N. J.	15,733	1	1		2		4			
Lorain, Ohio.	38,266				3				1	
Los Angeles, Calif.	535,485	140	54	2	104	24	7		62	
Louisville, Ky.	240,808	52	4		15		1		11	5
Lowell, Mass.	114,286	21	1		31		1		4	3
Lynchburg, Va.	33,497	6			28					
Lynn, Mass.	104,534	13	4		8		9		2	2
McKees Rocks, Pa.	20,795				4					
Madison, Wis.	31,315				2					
Mahanoy City, Pa.	17,709		1							
Malden, Mass.	52,243	13								1
Manchester, Conn.	15,859	1			3	1				
Manchester, N. H.	79,607	10	3		21				4	1
Manitowoc, Wis.	13,931						2		1	
Manikato, Minn.	10,365	8			1					
Marion, Ind.	19,923	9			1					
Marion, Ohio.	24,129				7					

<sup>1</sup> Population Apr. 15, 1910.

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

City Reports for Week Ended June 19, 1920—Continued.

City.	Popula- tion as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Marquette, Mich.	12,555	1			22					
Marshalltown, Iowa.	14,519	9			6					
Martinsburg, W. Va.	12,984				1		1			
Mattoon, Ill.	12,764								1	
Medford, Mass.	26,681	6			17		2		1	
Melrose, Mass.	17,724	5			10					
Memphis, Tenn.	151,877	77	1	1	1		8		11	5
Meriden, Conn.	29,431				9		1			
Methuen, Mass.	14,320	5			8					
Middletown, N. Y.	15,890				1		2			
Middletown, Ohio.	16,384	5	1							
Milwaukee, Wis.	445,008	83	7		305	1	17	1	23	10
Minneapolis, Minn.	373,448	83	14	1	142	2	9		12	4
Mishawaka, Ind.	17,083	3			1		4			
Missoula, Mont.	19,075	4			7				1	
Mobile, Ala.	59,201	18					1			2
Monessen, Pa.	23,070		3							
Monmouth, Ill.	10,346	0	1				1			
Montclair, N. J.	27,087	4			7				2	
Montgomery, Ala.	44,039	29					1			5
Morgantown, W. Va.	14,444	5			6	1			1	1
Morristown, N. J.	13,410	7								
Moundsville, W. Va.	11,513	2								
Mount Carmel, Pa.	20,709				1				3	
Mount Vernon, N. Y.	37,991	11			2					1
Muncie, Ind.	25,653				3		1		3	
Muscatine, Iowa.	17,713	4								
Nashville, Tenn.	118,136	38			16		1		6	6
Newark, N. J.	418,789	78	10		94	1	9		31	12
New Bedford, Mass.	121,622	26	2				7		5	2
New Britain, Conn.	55,385	10	1	1	5		4			1
New Brunswick, N. J.	25,855								2	
Newburyport, Mass.	15,291	8	1		24				1	
New Castle, Pa.	41,915		1		1				1	
New Haven, Conn.	152,275	41	7		6		7		6	2
New London, Conn.	21,199								1	
New Orleans, La.	377,610	137	2						22	14
Newport, R. I.	30,585	5			3					
Newton, Mass.	44,343	8	3		51		4		1	
New York, N. Y.	5,757,492	1,171	273	18	324	7	90	1	489	144
Niagara Falls, N. Y.	38,466	14	2		1		4			1
Norfolk, Va.	91,148				8				10	
Norristown, Pa.	31,969		1		2					
North Adams, Mass.	122,019	3			11				1	1
Northampton, Mass.	20,006	10	4	2	4					
North Tonawanda, N. Y.	14,060	6	2		1					1
Norwalk, Conn.	27,332	8			1		1		1	1
Norwich, Conn.	21,923	2			2	1			1	1
Norwood, Ohio.	23,269	4					4			
Oakland, Calif.	206,405	40	3	1	1		8		1	7
Oak Park, Ill.	27,816	12	3		15		8			
Ogdensburg, N. Y.	16,845	2								
Oil City, Pa.	20,162		1		2		1			
Oklahoma City, Okla.	97,588	21	1		2					
Olean, N. Y.	16,927	2		1						
Omaha, Nebr.	177,777	38			17		3			8
Orange, Conn.	14,393	3					1			1
Orange, N. J.	33,636	8	3		3		2		1	
Oshkosh, Wis.	36,549				4		1			
Parkersburg, W. Va.	21,059	5			1					
Pasadena, Calif.	49,620	4	1		20		1		1	
Passaic, N. J.	74,478	13	1		23				5	1
Paterson, N. J.	140,512		3		63				6	
Pawtucket, R. I.	60,666	15	1		5	1				1
Peekskill, N. Y.	19,034	8		1						
Peoria, Ill.	72,184	27	1		34		5			3
Perth Amboy, N. J.	42,646	11			17		2			
Petersburg, Va.	25,817	7			19		2		5	2
Philadelphia, Pa.	1,735,514	433	71	9	223	6	56		52	38
Phillipsburg, N. J.	15,879	2								

<sup>1</sup> Population Apr. 15, 1910.

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

City Reports for Week Ended June 19, 1920—Continued.

City.	Popula- tion as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Phoenixville, Pa.	11,871		1							
Piqua, Ohio.	14,275	6								
Pittsburgh, Pa.	599,196		7		384		17		35	1
Pittsfield, Mass.	39,678	11			7				1	
Plainfield, N. J.	24,330	2			6					
Plymouth, Mass.	14,001	7				2				
Plymouth, Pa.	19,439						1			
Pontiac, Mich.	18,006	16			1		2			1
Port Huron, Mich.	118,863	4	1				2			
Portland, Me.	64,720	15			33		1			2
Portland, Oreg.	308,399	56	3		80		11		9	2
Portsmouth, N. H.	11,730				21					
Portsmouth, Va.	40,693	17	1		2				4	
Pottstown, Pa.	16,987		1		8					
Poughkeepsie, N. Y.	30,786	6							1	
Providence, R. I.	259,995	60	8	1	28	1	10			7
Pueblo, Colo.	56,084		1		22		1			2
Quincy, Mass.	39,022	2			11		3		1	
Racine, Wis.	47,465		1		10		8		2	
Rahway, N. J.	10,361	0			1		1			
Raleigh, N. C.	20,274	7			5					1
Reading, Pa.	111,607		4		2		1		1	
Redlands, Calif.	14,573	3								1
Reno, Nev.	15,514	4								
Richmond, Ind.	25,080	10					3			
Richmond, Va.	158,702	48	4		92	1	1		8	4
Riverside, Calif.	20,496		2							
Roanoke, Va.	46,282	8			1		1		2	
Rochester, N. Y.	264,714	58	24	2	22	1	22	1	15	3
Rockford, Ill.	56,739	12	3		6		7			
Rock Island, Ill.	29,452	9			9		1			2
Rocky Mount, N. C.	12,673	7								
Rome, Ga.	15,607				2					
Rome, N. Y.	24,259				17				1	
Rutland, Vt.	15,038				24		1			
Sacramento, Calif.	68,984	21	2		3					2
Saginaw, Mich.	56,469	21			2				1	3
St. Cloud, Minn.	12,013				1				2	
St. Joseph, Mo.	86,498	34	4	1						2
St. Louis, Mo.	708,630	196	50	4	63	1	13	1	33	12
St. Paul, Minn.	252,465	46	6		31		1		12	6
Salem, Mass.	49,348	18	2		25		2			3
Salt Lake City, Utah.	121,823	24	2		40		1			1
San Bernardino, Calif.	17,616	3			1					
San Diego, Calif.	56,412	35	2	1	1				4	3
Sandusky, Ohio.	20,226	6			1					
Sanford, Me.	11,217									
San Francisco, Calif.	471,023	100	12	2	3		4		35	9
Santa Barbara, Calif.	15,960	5	1							
Santa Cruz, Calif.	15,150	2	3		6					
Saratoga Springs, N. Y.	13,839	3			1				3	
Sault Ste. Marie, Mich.	14,130	3					3			
Savannah, Ga.	69,250	30	1			1				4
Schenectady, N. Y.	103,774	19	1		135				3	1
Scranton, Pa.	149,541				13				5	
Seattle, Wash.	366,445		5		29		11			
Shamokin, Pa.	21,274						3			
Sharon, Pa.	19,156		1		12					
Sheboygan, Wis.	28,907		2		5		5			
Sioux City, Iowa.	58,568						3			
Somerville, Mass.	88,618	11	1		15		4		1	2
South Bend, Ind.	70,967	8	1		2				3	
Southbridge, Mass.	14,465	0							1	
Spartanburg, S. C.	21,985	6	1							
Spokane, Wash.	157,656		2		19		2			
Springfield, Ill.	62,623	22			17		2			
Springfield, Mass.	108,668	24	3	1	43		3		4	2
Springfie'd, Mo.	41,169	10								
Springfield, Ohio.	52,296	7			21				2	2
Stamford, Conn.	21,810		2		2		13		2	
Staunton, Va.	11,823	4								

<sup>1</sup> Population Apr. 15, 1910.

# DIPHThERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS— Continued.

City Reports for Week Ended June 19, 1920—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Steelton, Pa.	15,759	7	1		1					
Steubenville, Ohio.	28,259	0								
Stillwater, Minn.	10,198	12			1					3
Stockton, Calif.	36,209	5					2			
Superior, Wis.	47,167	38	7	1	260		2		4	
Syracuse, N. Y.	158,569	11	1				2		2	
Taunton, Mass.	36,610	20	1		9		2		2	2
Terre Haute, Ind.	67,361	79	7	1	3		12	1	10	13
Toledo, Ohio.	202,010	24	2		39		1			2
Topeka, Kans.	49,538	11							2	2
Traverse City, Mich.	14,090	39	5		1		2		2	3
Trenton, N. J.	113,974	1								
Trinidad, Colo.	14,413	20							8	1
Troy, N. Y.	78,094									
Uniontown, Pa.	21,600				3		1			
Vallejo, Calif.	13,803						2			
Vancouver, Wash.	13,905				4		1		1	
Virginia, Minn.	15,954				4					
Waco, Tex.	34,615	13	1	2	28				1	
Wakefield, Mass.	12,947						2		2	
Walla Walla, Wash.	26,067		3	1	19		4		2	
Waltham, Mass.	31,611				2					
Warren, Pa.	15,083									
Washington, D. C.	369,282	98	2		11		6		35	13
Washington, Pa.	22,076		2		4					
Waterbury, Conn.	89,261		4	1	2		5		11	1
Watertown, Mass.	15,188	3	2		4		1			
Watertown, N. Y.	30,404	1					1			
Wausau, Wis.	19,666	2	1				4		1	1
West Chester, Pa.	13,403				29					
Westfield, Mass.	18,769	1	1		1					
West Hoboken, N. J.	44,386	10							1	
West New York, N. J.	19,613	2			4		2		1	
West Orange, N. J.	13,964	4	1		23					1
Wheeling, W. Va.	43,657	6	2		18				1	1
White Plains, N. Y.	23,331	4			4		3			1
Wichita, Kans.	73,597	23	1		6		1			1
Wilkes Barre, Pa.	78,334		4		3				1	
Wilkesburg, Pa.	23,899									
Williamsport, Pa.	34,123				16					
Wilmington, Del.	95,369	26	2		14		3	2		
Wilmington, N. C.	30,400	9	1		2				1	
Winchester, Mass.	10,812	1			4				1	
Winona, Minn.	18,583	5	1		1		1		1	1
Winston-Salem, N. C.	33,136	15			8				7	2
Winthrop, Mass.	13,105	2			4		3			
Woburn, Mass.	16,076	5								1
Worcester, Mass.	106,106	43	4				11		13	4
Yakima, Wash.	22,058				16		8			
Yonkers, N. Y.	103,066	18	3		19					4
York, Pa.	52,770	7			1		1		1	
Youngstown, Ohio.	112,282	31			29		6	1	2	1
Zanesville, Ohio.	31,320	8	1		7				2	1

<sup>1</sup> Population Apr. 15, 1910.



## FOREIGN AND INSULAR.

### CHINA.

#### Further Relative to Cholera—Chungking.<sup>1</sup>

During the week ended May 22, 1920, there were reported at Chungking, China, 551 fatal cases of cholera.

### DANZIG.

#### Delousing—Disinfection.

During the week ended June 5, 1920, 300 new arrivals were deloused at the Troyl delousing station, Danzig, Gulf of Danzig. One hundred and ten persons left the station for the United States, by way of Rotterdam, Antwerp, and other ports. Since none of these immigrants had completed his 12 days' quarantine and since they did not leave under the control of the United States Public Health Service, they were not accredited nor given cards.

### GREAT BRITAIN.

#### Plague—Liverpool.

Information was received under date of June 24, 1920, of the occurrence of a suspect case of plague at Liverpool, England. The case was reported confirmed June 26, 1920.

### GREECE.

#### Plague—Piræus.

A case of plague was reported at Piræus, Greece, June 26, 1920.

### VIRGIN ISLANDS.

#### Contagious Diseases—May, 1920.

The occurrence of contagious diseases in the Virgin Islands during the month of May, 1920, has been reported as follows:

	Cases.	Remarks.
<b>In St. Thomas and St. John:</b>		
Chancroid.....	14	12 imported.
Gonorrhea.....	36	23 imported.
Pulmonary tuberculosis.....	6	
Sprue.....	1	
Syphilis.....	15	1 imported; 6 St. John.
Whooping cough.....	2	
<b>In St. Croix:</b>		
Dysentery, entamebic.....	1	
Filariasis.....	4	
Gonorrhea.....	2	
Influenza.....	1	
Pulmonary tuberculosis.....	2	
Syphilis.....	4	
Uncinariasis.....	2	

<sup>1</sup> Public Health Reports, June 25, 1920, p. 1560.

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER.****Reports Received During Week Ended July 9, 1920.<sup>1</sup>****CHOLERA.**

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Chungking.....	May 16-22.....	.....	551	
India.....				Apr. 18-24, 1920: Deaths, 1,767.
Indo-China—				
Saigon.....	Apr. 26-May 16....	56	41	Report for week ended May 9, 1920, not received.
Japan:				
Taiwan (Formosa).....	May 1-20.....	32	20	Entire island.
Java:				
West Java.....				Apr. 29-May 5, 1920: Cases, 4; deaths, 2.
Batavia.....	Apr. 29-May 5.....	4	2	
Philippine Islands:				
Provinces.....				May 16-22, 1920: Cases, 3; deaths, 2.
Cagayan.....	May 16-22.....	3	2	
Siam:				
Bangkok.....	Apr. 25-May 8.....	303	165	
Turkey:				
Amassia.....	Dec. 24.....	1	.....	Asiatic Turkey.
Kaiseri.....	Dec. 22.....	1	.....	Do.
Karasi.....	Jan. 3.....	1	.....	Do.
Mamuret-ul-Aziz.....	Dec. 31.....	1	.....	Do.
Panderma.....	Dec.-Jan.....	16	6	
Rodosto.....	Dec. 29.....	1	.....	European Turkey.
Smyrna.....	Dec. 22.....	3	2	Asiatic Turkey.

**PLAGUE.**

Brazil:				
Bahia.....	Apr. 25-May 22....	8	2	
Chile:				
Antofagasta.....	May 25-June 13....	3	.....	
Egypt:				Jan. 1-May 20, 1920: Cases, 241; deaths, 138.
Cities—				Three cases pneumonic.
Suez.....	May 13-18.....	10	5	
Provinces—				
Assiout.....	May 15-18.....	5	3	
Keneh.....	May 18.....	1	.....	
Minieh.....	May 15.....	2	1	Septicemic.
Great Britain:				
Liverpool.....	June 26.....	1	.....	
Greece:				
Piræus.....	.....do.....	1	.....	
India.....				May 2-8, 1920; Cases, 1,307; deaths, 1,018.
Bombay.....	Apr. 25-May 15....	26	22	Report for week ended May 8 not received.
Karachi.....	May 16-22.....	16	10	
Madras Presidency.....	.....do.....	43	30	
Indo-China:				
Saigon.....	May 10-16.....	1	1	
Mexico:				
Vera Cruz.....	June 14-20.....	11	1	
Siam:				
Bangkok.....	Apr. 25-May 1.....	3	3	
Straits Settlements:				
Singapore.....	May 2-8.....	9	8	

**SMALLPOX.**

Algeria:				
Departments—				
Algiers.....	May 21-31.....	9	.....	Algiers City, Apr. 1-30, 1920: Cases, 1.
Oran.....	.....do.....	15	.....	
Brazil:				
Bahia.....	Apr. 25-May 22....	3	3	
Canada:				
Ontario—				
Kingston.....	June 6-19.....	3	.....	
North Bay.....	June 23-29.....	1	.....	
Ottawa.....	June 13-26.....	26	.....	
Toronto.....	June 13-19.....	7	.....	

<sup>1</sup> From medical officers of the Public Health Service, American consuls, and other sources.

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

**Reports Received During Week Ended July 9, 1920—Continued.**

## **SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
Canada—Continued.				
Quebec—				
Montreal.....	do.....	1		
Saskatchewan—				
Regina.....	do.....	1		
Ceylon:				
Colombo.....	May 9-15.....	1		
China:				
Amoy.....	Apr. 25-May 20.....		5	
Antung.....	May 24-30.....	1		
Chungking.....	May 16-22.....			Present.
Foochow.....	do.....			Do.
Chosen:				
Chemulpo.....	Mar. 1-31.....	22	10	
Do.....	Apr. 1-30.....	18	11	
Fusan.....	Mar. 1-31.....	7	2	
Do.....	Apr. 1-30.....	6	3	
Seoul.....	Mar. 1-31.....	120	45	
Do.....	Apr. 1-30.....	109	18	
Great Britain:				
Glasgow.....	June 6-12.....	18	7	
Greece:				
Saloniki.....	Apr. 12-18.....	1		May 10-23, 1920: Deaths, 4.
India:				Apr. 18-24, 1920: Deaths, 1,175.
Bombay.....	Apr. 25-May 1.....	26	11	May 9-15, 1920: Cases, 23; deaths, 11.
Karachi.....	May 16-22.....	3	3	
Madras.....	do.....	6	2	
Indo-China:				
Saigon.....	May 10-16.....	7	2	
Italy:				
Messina.....	May 17-23.....	23	2	Province—Cases, 44; deaths, 6.
Milan.....	Mar. 1-31.....	24	5	
Naples.....	May 23-29.....	4	1	
Palermo.....	May 23-June 1.....	3		
Japan:				
Taiwan.....	May 1-20.....	10	5	
Tokyo.....	Apr. 21-May 10.....	5	4	May 31-June 6, 1920: Cases, 1; deaths, 2.
Java:				
West Java.....				Apr. 23-May 5, 1920: Cases, 53; deaths, 10.
Batavia.....	Apr. 29-May 5.....	4		
Mexico:				
Guadalajara.....	May 1-31.....	1		
Portugal:				
Lisbon.....	May 16-June 5.....		3	
Russia:				
Vladivostok.....	Jan. 1-Apr. 30.....	248	77	
Spain:				
Barcelona.....	May 19-June 12.....		4	
Valencia.....	May 31-June 5.....	1		
Vigo.....	May 31-June 6.....		1	
Switzerland:				
Geneva.....	May 9-15.....	7		
Tunis:				
Tunis.....	May 31-June 6.....		1	

## **TYPHUS FEVER.**

Algeria:				
Departments—				
Algiers.....	May 21-31.....	3		
Constantine.....	do.....	5		
Oran.....	do.....	42		
Chosen:				
Seoul.....	Mar. 1-31.....	1	1	
Do.....	Apr. 1-30.....	4		
Greece:				
Saloniki.....	Apr. 12-18.....	126	7	
Mexico:				
San Luis Potosi.....	June 8-14.....			Present.
Russia:				
Vladivostok.....				Jan. 1-Apr. 30, 1920: Cases, 1,264; deaths, 144.
Tunis:				
Tunis.....	May 31-June 6.....	1		

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

**Reports Received During Week Ended July 9, 1920—Continued.**

## **YELLOW FEVER.**

Place.	Date.	Cases.	Deaths.	Remarks.
Brazil: Bahia.....	Apr. 25-May 22...	3	.....	

**Reports Received from June 26 to July 2, 1920.<sup>1</sup>**

## **CHOLERA.**

Place.	Date.	Cases.	Deaths.	Remarks.
India.....				Apr. 11-17, 1920: Deaths, 1,197.
Calcutta.....	May 2-15.....	137	132	
Rangoon.....	May 2-8.....	3	2	
Philippine Islands:				
Manila.....	May 9-15.....	1	1	
Provinces.....				May 9-15, 1920: Cases, 3; deaths, 2.
Albay.....	May 9-15.....	2	1	
Cagayan.....	do.....	1	1	

## **PLAGUE.**

Ceylon:				
Colombo.....	May 2-8.....	1	1	
Chile:				
Antofagasta.....	May 17-23.....	1	.....	
India.....				Apr. 18-May 1, 1920: Cases, 5,215 deaths, 4,266.
Bombay.....	Apr. 18-24.....	26	23	
Calcutta.....	May 2-15.....	3	3	
Karachi.....	May 9-15.....	18	18	
Madras Presidency.....	do.....	2	4	
Rangoon.....	Apr. 25-May 8.....	35	30	
Java:				
East Java.....				Apr. 15-21, 1920: Cases, 4; deaths, 3. Surabaya Residency.
Peru.....				Mar. 1-31, 1920: Cases, 46; deaths, 29. Apr. 1-30, 1920: Cases, 36; deaths, 13. In coastal departments.
Callao.....	Mar. 1-31.....	6	3	
Do.....	Apr. 1-30.....	9	4	
Lima (city).....	Mar. 1-31.....	5	3	
Do.....	Apr. 1-30.....	4	4	
Lima (country).....	Mar. 1-31.....	1	1	
Do.....	Apr. 1-30.....	1	.....	
Mollendo.....	Mar. 1-31.....	13	9	
Paita.....	do.....	5	2	
Do.....	Apr. 1-30.....	2	.....	
Salaverry.....	Mar. 1-31.....	4	3	
Do.....	Apr. 1-30.....	1	.....	
San Pedro.....	do.....	6	1	
Trujillo.....	Mar. 1-31.....	5	2	
Do.....	Apr. 1-30.....	5	1	
Straits Settlements:				
Singapore.....	Apr. 25-May 1....	4	4	

## **SMALLPOX.**

Algeria:				
Departments—				
Algiers.....	May 11-20.....	7	.....	
Oran.....	do.....	15	.....	Data for departments of Constantine and South Territories not available.
Brazil:				
Pernambuco.....	Mar. 29-Apr. 11....	23	.....	
Rio de Janeiro.....	May 9-22.....	3	.....	

<sup>1</sup> From medical officers of the Public Health Service, American consuls, and other sources. For reports received from Dec. 27, 1919, to June 25, 1920, see Public Health Reports for June 25, 1920. The tables of epidemic diseases are terminated semiannually and new tables begun.

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

**Reports Received from June 26 to July 2, 1920—Continued.**

## **SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
<b>Canada:</b>				
Alberta—				
Calgary.....	June 3-9.....	1		
Manitoba—				
Winnipeg.....	May 29-June 5.....	3		
New Brunswick—				
Gloucester.....	May 31-June 5.....	1		
Nova Scotia—				
Sydney.....	.....do.....	2		
Ontario—				
Hamilton.....	June 13-19.....	2		
Ottawa.....	June 6-12.....	6		
Peterborough.....	Apr. 18-June 19.....	26		
Toronto.....	June 6-12.....	6		
<b>Chile:</b>				
Antofagasta.....	May 17-23.....			One case in interior.
<b>China:</b>				
Amoy.....	May 2-8.....		1	
Antung.....	May 9-16.....	2	2	
Chungking.....	May 2-15.....			Present.
Foochow.....	May 9-15.....			Do.
Nankin.....	May 9-22.....			Do.
Tsinanfu.....	May 9-15.....	1		
<b>Colombia:</b>				
Barranquilla.....	May 16-29.....			Do.
Santa Marta.....	May 31-June 5.....			Do.
<b>Egypt:</b>				
Alexandria.....	May 14-27.....	26	10	
Cairo.....	Apr. 2-8.....	4	2	
Port Said.....	.....do.....	6	1	
<b>France:</b>				
Brest.....	May 15-21.....	1		
<b>Great Britain:</b>				
Glasgow.....	May 25-June 5.....	66	9	
<b>India:</b>				
Bombay.....	Apr. 11-17.....			Apr. 11-17, 1920: Deaths, 1,600.
Calcutta.....		32	12	
Karachi.....	May 2-15.....	82	74	
Madras.....	May 9-15.....	3	2	
Rangoon.....	.....do.....	5	3	
	Apr. 25-May 8.....	13	4	
<b>Italy:</b>				
Genoa.....	May 17-23.....	12		In Province.
Messina.....	May 9-16.....	34	4	Do.
Palermo.....	May 11-24.....	4		
<b>Japan:</b>				
Kobe.....	May 9-23.....	5	2	
<b>Java:</b>				
West Java.....				
Batavia.....	Apr. 16-22.....	1	1	Apr. 16-22, 1920: Cases, 8; deaths, 2.
<b>Manchuria:</b>				
Mukden.....	May 2-8.....			Present.
<b>Mexico:</b>				
Mazatlan.....	May 19-25.....		1	
San Luis Potosi.....	May 31-June 6.....		1	
<b>Newfoundland:</b>				
St. Johns.....	June 5-11.....	3		Reported at two other localities.
<b>Spain:</b>				
Valencia.....	May 23-29.....	6		
<b>Tunis:</b>				
Tunis.....	May 25-30.....	3	3	
<b>Turkey:</b>				
Constantinople.....	May 16-22.....	1		

## **TYPHUS FEVER.**

<b>Algeria:</b>				
Algiers.....	May 11-20.....	13		Data for Constantine and South Territories not available.
Oran.....	.....do.....	66		
<b>Chile:</b>				
Caleta Coloso.....	May 10-16.....		2	
Valparaiso.....	May 2-22.....		9	

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

**Reports Received from June 26 to July 2, 1920—Continued.**

## **TYPHUS FEVER—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
Egypt:				
Alexandria.....	Apr. 14-27.....	102	30	
Cairo.....	May 2-8.....	123	44	
Port Said.....	do.....		1	
Great Britain:				
Dublin.....	May 23-June 5.....	2		
Glasgow.....	May 30-June 5.....		1	
Mexico:				
Ciuhuahua.....	May 31-June 6.....		1	
Tunis:				
Tunis.....	May 24-30.....	13	2	
Turkey:				
Constantinople.....	May 16-22.....	14		

## **YELLOW FEVER.**

Mexico:				
Vera Cruz.....	June 22.....		2	
Peru:				Mar. 1-31, 1920: Cases, 128. Apr. 1-30, 1920: Cases, 64.
Callao.....	Apr. 1-30.....	1		At Quarantine Station. From s. s. Huallaga.
Catacaos.....	Mar. 1-31.....	14		
Do.....	Apr. 1-30.....	2		
I a Huaca.....	Mar. 1-31.....	9		
Morropon.....	Apr. 1-30.....	37		
Munuelia.....	Mar. 1-31.....	12		
Do.....	Apr. 1-30.....	5		
Paita.....	Mar. 1-31.....	81		
Do.....	Apr. 1-30.....	14		
Piura.....	Mar. 1-31.....	1		
Do.....	Apr. 1-30.....	4		
Salitral.....	Mar. 1-31.....	2		
Sullana.....	do.....	9		
Do.....	Apr. 1-30.....	1		
Salvador:				
Esonsonate.....	May 22-June 9....	5	2	