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HEALTH OF THE NATION

At the present time it can be stated with a reasonable degree of certainty that better records will be achieved in several diseases in 1939 than for the year 1938.

Diphtheria incidence has maintained a consistent recession during 1939. Only 22,564 cases have been reported for the first 49 weeks of the year as compared with 28,034 cases for the first 49 weeks of 1938. Similarly encouraging records were made by meningococcus meningitis, with 1,851 cases for the first 49 weeks of 1939 as compared with 2,700 for the corresponding period in 1938; scarlet fever with 151,214 against 175,202 for 1938; smallpox with 9,279 as compared with 13,885 in 1938; typhoid fever, 12,416 as against 13,858; and whooping cough with 165,667 in comparison with 199,511 for the same period of the preceding year.

While the measles incidence of 366,393 cases reported for the first 49 weeks of 1939 suggests an impressive reduction when compared with the total of 785,071 in 1938, it must be remembered that the 1938 total exceeded that for any year since annual records have been published. The present record of measles already exceeds the total for each of the years 1936 and 1937. While there appears to be no let-up in the prevalence of measles, the death rate at present is about one-tenth of that of 1900. Mortality from measles is virtually confined to infancy and childhood and the only practical protection against measles is to delay exposure during the critical years of age, 1 to 5.

Due to the fact that poliomyelitis reached limited epidemic proportions in certain localities, its incidence to date exceeds that of the corresponding period of 1938. The reports total 7,134 cases for the first 49 weeks of 1939 against 1,657 for a like period of 1938; however, last year's total was the lowest on record. The total cases for the first 49 weeks of 1939 exceed the usual expectancy based on the total of the corresponding median weeks of the 1934–38 period by only 1,303 cases, far below the number which would suggest general epidemic proportions.

The trend of influenza will bear watching. For nine consecutive weeks the incidence has shown an appreciable increase each week.

A total of 4,325 cases was reported for the week ended December 9 as compared with 2,756 for the preceding week and with 1,701 for the median week. The accumulated total for the first 49 weeks of 1939 is 169,793 cases, as compared with 60,673 for the corresponding period in 1938.

The influenza prevalence of the country is usually sensitively reflected in the general death rate and the present period is no exception.

The Census reports from 88 large cities for the week ended December 9 indicate a death rate of 11.6 per 1,000 population, the same as for the preceding week and the highest rate from the same source since the week ended May 13, 1939. The average death rate for the 4-week period ended December 9, 1939, was 11.3 per 1,000 population as compared with 11.5 for the corresponding period of 1938. With a continued increase in influenza and the resulting increase in pneumonia, one may expect a correspondingly higher general death rate for the remaining weeks of this year.

It would at this point seem appropriate to emphasize the harmfulness of the unfortunate publicity given certain diseases such as poliomyelitis. The nature of the disease is such as to cause widespread fear, much of which is groundless, little of which is productive of well-considered action. During the past summer when localized outbreaks of poliomyelitis occurred in a limited number of areas, the appearance of a single case of the disease in a community frequently gave rise to disproportionate public concern throughout an entire State. Vacation and business trips were deferred; the propriety of opening schools on scheduled time entered into the discussion; thousands of inquiries reached the Public Health Service regarding the probability of the epidemic spread of the disease.

At the same time the public remained comparatively indifferent to the more definite menace of less well dramatized conditions, such as tuberculosis among young people. This in spite of the fact that there are as many deaths from tuberculosis each year as there were cases of poliomyelitis in the past 10 years. Approximately 8,000 persons under 20 years of age each year die of tuberculosis. Roughly 80 persons die of tuberculosis for every one who dies of poliomyelitis. It is well to face such facts and to substitute calm consideration of actual values for emotional responses to threats which though real have been built up out of all proportion to their factual importance.

TRENDS, GEOGRAPHICAL AND RACIAL DISTRIBUTION OF MORTALITY FROM HEART DISEASE AMONG PERSONS 5–24 YEARS OF AGE IN THE UNITED STATES DURING RECENT YEARS (1922–1936)

A PRELIMINARY REPORT[1]

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Rheumatic infection is the predominant etiological factor in heart disease among persons 5–24 years of age. According to a number of observers, at least 80 percent of heart disease during this age period is definitely of rheumatic origin, approximately 10 percent is due to congenital malformations, while the remainder consists of a number of miscellaneous forms often resulting from atypical rheumatic infection. Since deaths attributed to congenital cardiac lesions are not tabulated under heart disease but with congenital malformations, subtitle 157–C of the International List of Causes of Death, it is evident that most deaths attributed to heart disease in this age period are due to rheumatic heart disease. It is believed therefore that an analysis of heart disease mortality among persons 5–24 years of age over a number of years will serve as an index of rheumatic heart disease mortality in the United States.

Deaths among persons under 5 years of age are not included in this analysis because deaths from rheumatic heart disease do not occur very frequently during this age period and because there are greater opportunities for misdiagnosis among younger children. It is likely that a large number of deaths attributed to heart disease among children under 5 years of age are due to terminal cardiac insufficiency as a result of acute infectious diseases. Some of the deaths reported as due to acquired forms of heart disease are due to congenital malformations with terminal pneumonia, a frequent complication of congenital heart disease which may render differential diagnosis of seriously ill patients extremely difficult, if not impossible.

Types other than rheumatic and congenital heart disease are not commonly encountered during the 5–24-year age period, and play an even less important role as causes of death. Scarlet fever occasionally results in a mild degree of endocarditis. When severe heart disease occurs it is usually indistinguishable in clinical course and morbid anatomy from heart disease following rheumatic fever. It is extremely doubtful if there is any such entity as "scarlet fever heart disease" (*1*). Heart disease following diphtheria usually occurs within a few weeks and deaths from this cause are directly attributable to diphtheria. Late cardiac manifestations are rare. Other acute infectious diseases of childhood practically never cause heart disease.

[1] From the Office of Heart Disease Investigations, Division of Infectious Diseases, National Institute of Health, branch office, 133 South 36th St., Philadelphia, Pa.

Heart disease due to congenital syphilis is a rarity, as is also heart disease due to acquired syphilis in persons under 25 years of age (*2*, *3*). Deaths from essential hypertension or acute coronary occlusion occasionally occur but do not constitute important problems. Most cases of acute or subacute bacterial endocarditis among persons 5–24 years of age develop as complications of rheumatic heart disease, less often as complications of congenital cardiac malformations, while occasionally bacterial endocarditis occurs as a primary condition. The chief sources of error, in this age period, consist in mistaking deaths from terminal cardiac insufficiency (from a number of causes), tuberculous pericarditis (rarely a primary disease), and glomerulonephritis for deaths caused by heart disease. On the other hand, heart disease may be overlooked, especially if seen only during the final illness. Mistaken diagnoses of pneumonia for heart disease and vice versa are not uncommon.

Certain difficulties are inherent in analyses of mortality figures, especially over a number of years. There is no doubt that standards of diagnosis of heart disease have improved considerably during the period 1922–1936. The lack of strict comparability of reports applies also to almost any other disease. Furthermore, standards of diagnosis differ in various localities and sections of the country. Statistics obtained from large urban medical centers are on the whole better than those from rural areas.

METHODS OF ANALYSIS

This report is based on information abstracted from the official mortality statistics issued annually by the United States Bureau of the Census. During the period 1922–29 deaths from heart disease in the United States registration States were tabulated under titles 87–90 of the International List of Causes of Death of 1920, while during the period 1930–36 deaths from heart disease were tabulated under titles 90–95 of the International List of 1929. No attempt was made to break down the age period 5–24 years into further subdivisions.[2]

It is believed that the rates used in this study are reasonably accurate, in spite of certain defects. Inaccuracies arise from the fact that it is not possible to take into consideration internal migrations, and

[2] Annual death rates per 100,000 population among persons 5–24 years of age during 1922–29 are based on estimated populations obtained by simple linear interpolation of the number of persons in the 5–24-year age period, according to the United States Census of 1930 as compared with the Census figures for 1920. During 1931–36 the rates were based on population estimates obtained in a somewhat different manner. During this period the United States Bureau of the Census issued semi-annual estimates of the total populations of each State, based on changes in the population as a result of births, deaths, immigration, and emigration. The estimated populations 5–24 years of age upon which the death rates are based were determined by comparing the percentages of the total population for 1920 and 1930 in the 5–24-year age group, and extrapolating on an arithmetic or straight-line basis the annual percentage increase or decrease in these percentages from 1930 to the year for which an estimated population was desired.

that changes in the composition of the population during the intercensal years since 1930 may be greater than indicated by estimates based on extrapolated percentages. This is due to the rather sharp decline in the birth rate in many States since about 1925. Although the population of the United States is still increasing, the increase is becoming less each year. There may be fewer persons in the 5–24-year age period than these estimates indicate, and this in turn would result in slightly higher death rates than those shown, with consequently less apparent reduction in the disease. In consideration of the possibility of certain inaccuracies, these figures are offered as tentative estimates with the view of adjusting these rates and continuing the study to the end of the current decade when the 1940 census returns are complete.

During 1922–29 it was possible to determine the death rates among colored as well as white persons in the United States registration States in the East South Central, West South Central, and South Atlantic States with the exception of Delaware and West Virginia. Since 1930 this information has not been available.

During the period 1922–29 death rates from heart disease among persons 5–24 years of age in large cities in the United States were not determined because the method of tabulating mortality by age periods for cities was not the same as for States, nor was it comparable to the method employed for cities after 1930. During the period 1922–29 the census mortality tables of deaths by age for cities included only "other organic diseases of the heart" and not the total for heart disease. Therefore, no rates were computed for cities for this period.

Since 1930 deaths from heart disease in large cities have been tabulated in a manner comparable to that used in States. Unfortunately, annual estimates of the total populations of cities since 1930 are not available. The Bureau of the Census made an estimate of the population of urban places of 10,000 or more persons as of July 1, 1933. Later estimates were not made because it became evident that by reason of the unusual movement of population since 1930 any estimates based on mathematical formulae would be far from satisfactory.

In nearly all cities of over 100,000 population the increase between April 1, 1930, and July 1, 1933, was less than 5 percent. Washington, D. C., Detroit, Mich., and Los Angeles, Calif., are notable exceptions. In the majority the increase was less than 3 percent, while in many it was less than 1 percent. Some cities had a drop in the estimated population of July 1, 1933. Since the birth rates in cities are declining, the increase in population among persons 5–24 years of age is probably even less than for the general population. Table 3 shows the mean annual death rate among persons 5–24 years of age from heart disease in principal cities of the United States during 1930–32, based on the 1930 census figures. It was prepared to show the relative

incidence of deaths during this age period in different parts of the country, and not trends in mortality. By determining the mean rates for 3 years, annual variations are minimized. Since this period is so close to the 1930 census count, the error in population estimates is probably not very large.

TRENDS IN MORTALITY

A downward trend in heart disease mortality among young persons has been noted by several writers. Dublin and Lotka (*4*), in a study of the mortality experience among industrial policyholders of the Metropolitan Life Insurance Co., noted a decline of nearly 50 percent in mortality from organic heart disease among white policyholders aged 1 to 24 years in 1931–35 as compared with 1911–15. There was also a substantial decline among colored policyholders. This decline applied to policyholders as old as 45 years of age. Cohn and Lingg (*5, 6*) noted that among persons under 40 years of age mortality from heart disease has been falling steadily since 1900. Emerson (*7*) also comments on the decline in deaths from heart disease among young persons.

In table 1 death rates from heart disease among persons 5–24 years of age are shown, based on the estimated number of persons in that age group. Figures are incomplete in a number of States which were added to the registration area since 1922; Texas, for instance, became a member in 1933.

In every section of the country and in every State of the Union in which statistics were obtained there was a decline in the mean annual death rate in 1930–36 as compared with 1922–29. This is especially noticeable in the New England, Middle Atlantic, East North Central, and Pacific Coast States, in which sections the estimated decline was over 25 percent. Among States comprising the continental registration area in 1922, Massachusetts showed the greatest decrease during the current decade as compared with the preceding one. The estimated decrease in Massachusetts was 36.1 percent. Declines of over 30 percent were indicated in Vermont, New Jersey, Illinois, North Dakota, Maryland, Oregon, and California. Many other States showed decreases of at least 20 percent.

Comparing the rates in 1922 with those in 1936, a decrease is noted in every State except Montana, in which there was a very slight increase, Louisiana, and Florida, which showed an increase of about 30 percent. The increase in Florida may be due to nonresident deaths. In recent years there has been a tendency to send rheumatic cardiac patients south, especially to Florida, as a therapeutic measure. In each geographical section there was a decline in the last of this 15-year period as compared with the first year under study. Although the decline has been more precipitous since 1930, it began prior to that year in many States and geographical sections.

TABLE 1.—*Death rates from heart disease per 100,000 persons 5–24 years of age during 1922–36 by States and sections of the United States, based on estimated populations. Also percentage decrease in 1930–36 as compared with 1922–29*

Section and State	Specific death rates per 100,000 persons 5–24 years of age based on estimated populations															Mean annual death rate, 1922–29	Estimated mean annual death rate, 1930–36	Estimated percentage decrease, 1930–36 compared with 1922–29	Estimated mean annual death rate, 1922–36
	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936				
NEW ENGLAND STATES	20.1	19.0	21.7	22.8	19.9	22.1	18.5	18.6	16.6	15.8	14.6	13.7	13.8	12.6	13.2	20.3	14.3	29.6	17.4
Maine [1]	11.8	7.7	10.9	9.4	10.4	15.8	10.7	5.7	8.0	12.8	9.2	7.4	7.3	5.9	8.8	10.5	8.5	19.0	9.3
New Hampshire [1]	12.5	11.1	13.6	16.1	18.6	12.1	13.9	12.6	10.5	15.2	12.0	10.6	11.1	10.9	11.4	14.2	11.7	17.6	12.6
Vermont [1]	16.2	4.0	9.6	15.2	15.1	11.1	12.6	10.2	16.3	12.3	6.1	7.5	8.9	4.4	2.9	11.9	8.2	31.1	10.0
Massachusetts [1]	24.6	23.8	25.4	28.3	22.4	27.1	20.8	21.9	18.0	18.6	16.2	15.7	16.0	14.8	15.3	24.3	16.4	36.1	20.5
Rhode Island [1]	23.8	17.0	23.6	19.5	17.5	20.1	17.0	22.0	17.5	16.7	17.5	14.7	10.7	12.3	12.3	20.2	14.5	28.2	17.7
Connecticut [1]	14.4	18.7	21.8	20.5	20.6	18.8	19.7	18.5	18.8	11.1	14.8	13.6	14.8	12.9	13.5	19.2	14.2	26.0	16.7
MIDDLE ATLANTIC STATES	27.4	28.1	29.8	29.5	26.7	27.5	26.1	26.2	23.4	21.8	20.6	20.3	18.0	19.0	17.6	27.6	20.1	27.2	24.3
New York [1]	30.1	30.0	32.6	31.6	28.7	29.2	28.0	27.2	24.6	22.4	22.2	22.3	19.5	19.5	18.8	29.7	21.3	28.3	26.2
New Jersey [1]	29.3	30.5	28.8	31.1	26.7	23.3	29.1	27.5	24.3	21.8	18.8	18.5	17.9	21.5	16.9	28.9	19.9	31.1	24.9
Pennsylvania [2]	23.7	25.1	27.0	26.5	24.4	25.2	22.7	24.5	21.7	21.0	19.8	18.9	16.4	17.5	16.5	24.9	18.8	24.5	22.0
EAST NORTH CENTRAL STATES	19.5	20.3	20.6	20.3	20.1	19.8	18.8	19.1	16.7	15.8	13.7	14.2	13.3	13.7	12.9	19.8	14.3	27.8	17.5
Ohio [2]	17.6	20.0	18.5	20.1	18.0	17.4	17.4	15.5	14.4	13.0	12.5	12.7	12.5	13.1	12.5	18.0	12.9	28.3	15.9
Indiana [1]	17.1	18.1	17.5	18.7	17.3	16.2	14.8	18.6	15.1	14.5	11.5	12.2	11.9	11.6	13.1	17.3	12.8	26.0	15.1
Illinois [2]	24.7	23.5	24.3	24.3	25.1	25.1	23.7	23.4	19.7	18.8	16.4	17.3	15.6	16.3	15.1	24.3	17.0	30.0	21.2
Michigan [1]	18.5	21.3	23.5	18.6	20.8	20.0	19.3	20.2	17.0	16.5	13.1	14.6	14.5	13.1	12.6	20.2	14.5	28.2	18.1
Wisconsin [2]	15.0	14.6	15.2	15.3	14.0	15.4	13.4	14.8	14.9	14.3	13.0	11.2	8.4	11.1	8.5	14.7	11.6	21.1	13.5
WEST NORTH CENTRAL STATES	14.9	13.8	15.3	14.5	13.1	14.3	12.9	12.9	12.7	12.1	11.2	9.9	10.4	11.0	10.5	[3] 13.9	11.1	20.1	[3] 12.0
Minnesota [2]	15.9	13.7	18.0	15.0	14.3	14.7	12.5	13.3	13.4	11.0	11.6	8.1	10.6	9.2	10.9	14.7	10.7	27.2	12.8
Iowa	.....	13.4	11.5	12.3	11.4	13.6	10.2	10.8	11.4	10.2	10.1	8.7	8.7	9.7	11.2	[3] 11.9	10.0	16.0	[3] 10.9
Missouri [2]	14.4	15.0	17.7	17.8	14.8	16.1	16.1	15.4	12.2	14.4	11.0	10.9	10.5	11.3	9.3	15.9	11.6	27.0	13.7
North Dakota	.....	.....	13.0	14.6	14.9	12.0	11.6	11.2	7.1	9.0	8.3	9.6	9.2	10.7	8.1	[3] 12.8	8.9	30.5	[3] 10.7
South Dakota	.....	.....	.....	.....	.....	.....	.....	.....	13.8	11.0	10.6	9.9	9.2	11.6	9.5	.....	10.8	.....	[3] 10.8
Nebraska [2]	18.8	12.2	15.8	13.2	10.9	16.4	13.8	11.9	14.9	11.1	9.5	8.6	10.4	11.1	11.4	14.2	11.0	22.5	12.8
Kansas [2]	11.3	13.5	12.5	11.1	11.3	10.8	11.1	12.0	9.2	9.5	7.8	9.0	8.8	9.7	8.3	11.8	8.9	24.6	10.5

See footnotes at end of table.

TABLE 1.—*Death rates from heart disease per 100,000 persons 5–24 years of age during 1922–36 by States and sections of the United States, based on estimated populations. Also percentage decrease in 1930–36 as compared with 1922–29*—Continued

Section and State	Specific death rates per 100,000 persons 5–24 years of age based on estimated populations															Mean annual death rate, 1922–29	Estimated mean annual death rate, 1930–36	Estimated percentage decrease, 1930–36 compared with 1922–29	Estimated mean annual death rate, 1922–36
	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936				
SOUTH ATLANTIC STATES	15.1	15.5	15.3	14.8	15.6	14.5	14.1	14.4	14.9	13.0	12.1	10.9	11.9	11.2	12.3	[3] 14.8	12.3	16.9	[3] 12.1
Delaware [2]	22.1	15.8	21.7	26.3	23.8	25.9	18.7	18.6	10.3	18.0	17.7	17.5	16.2	9.6	16.9	21.2	15.2	28.3	18.3
Maryland,[2] total	24.5	22.3	22.1	22.9	22.0	19.9	19.5	16.4	17.9	15.7	15.8	11.4	12.2	14.6	16.4	21.2	14.8	30.2	18.4
White	22.3	19.2	19.3	21.4	23.2	19.3	18.3	15.3								19.7			
Colored	34.7	36.3	34.6	29.8	16.2	22.6	25.2	21.3								27.5			
District of Columbia,[1] total	29.3	33.3	24.3	24.8	24.7	26.5	22.4	19.7	23.5	26.1	25.3	19.4	24.2	16.7	16.4	25.4	21.5	15.4	22.5
White	25.6	28.4	17.0	18.9	13.2	21.6	18.8	11.2								19.3			
Colored	39.0	45.6	42.5	39.6	52.8	38.4	31.2	39.5								41.0			
Virginia,[2] total	14.4	14.3	14.2	14.4	13.7	13.4	13.4	12.1	13.1	12.8	11.4	10.7	11.1	9.7	11.2	13.7	11.4	16.8	12.4
White	12.4	11.3	11.1	10.6	10.5	11.8	9.5	9.2								10.8			
Colored	18.9	21.0	21.4	23.5	21.3	17.1	22.9	19.3								20.7			
West Virginia				10.7	11.7	11.3	11.8	11.4	12.0	10.7	9.5	8.4	11.2	11.1	8.8	[3] 11.3	10.2	9.7	[3] 11.0
North Carolina,[2] total	11.7	12.6	11.4	11.7	13.2	12.2	12.0	14.3	15.6	12.3	10.9	9.5	11.0	9.8	11.7	12.4	11.5	7.3	12.1
White	8.5	10.8	7.8	8.1	8.7	9.5	8.7	9.1								8.8			
Colored	18.8	17.0	19.0	19.6	22.8	17.9	19.1	25.6								20.0			
South Carolina,[2] total	14.6	15.3	15.0	15.6	16.2	12.5	15.5	19.4	15.5	16.2	12.6	12.6	12.7	12.6	11.8	15.5	13.4	13.5	14.3
White	10.7	10.0	10.9	6.5	6.6	7.0	9.7	8.9								8.7			
Colored	18.1	20.1	18.8	24.4	25.5	18.0	21.5	30.4								22.1			
Georgia, total							13.7	12.3	14.6	10.7	11.0	10.5	11.4	11.9	13.6	[3] 13.0	12.0	8.0	[3] 12.1
White							8.4	8.1								8.3			
Colored							21.7	18.9								20.2			
Florida,[2] total	9.2	12.3	16.5	13.3	18.9	18.6	13.7	16.4	15.2	11.9	13.6	12.6	11.6	9.4	12.0	15.0	12.3	18.0	14.1
White	7.2	9.5	10.0	10.8	16.7	12.5	11.2	11.9								11.4			
Colored	13.1	17.9	29.3	18.3	23.3	31.5	18.8	26.3								22.5			
EAST SOUTH CENTRAL STATES	10.8	10.9	11.6	11.1	11.4	10.4	11.3	11.6	11.6	10.4	9.3	9.3	9.6	9.0	9.1	[3] 11.3	9.7	14.2	[3] 9.9
Kentucky,[2] total	11.8	11.9	11.7	10.5	12.5	9.9	10.2	10.3	11.0	11.0	9.8	10.4	10.8	9.6	8.1	11.1	10.1	9.0	10.5
White	10.7	11.2	11.3	9.8	11.2	9.3	8.7	9.8								10.2			
Colored	23.9	19.5	16.2	18.6	28.2	16.6	27.5	16.9								20.9			
Tennessee,[2] total	10.1	9.6	10.5	10.4	11.4	10.7	11.5	11.4	9.4	8.7	8.5	7.2	9.4	8.2	8.3	10.7	8.5	20.6	9.6
White	8.5	8.0	8.5	8.4	9.2	9.3	9.0	10.0								8.9			
Colored	17.2	16.2	19.2	19.1	21.1	17.1	22.6	17.5								18.8			

Alabama, total	------	------	------	11.5	12.2	10.0	12.0	13.9	12.6	9.9	9.3	10.4	9.5	9.1	10.1	[3]12.0	10.1	15.8	[3]10.8
White	------	------	------	6.2	8.7	6.2	7.5	10.1	------	------	------	------	------	------	------	7.8	------	------	------
Colored	------	------	------	20.0	18.1	16.5	19.7	20.6	------	------	------	------	------	------	------	19.0	------	------	------
Mississippi,[2] total	10.4	11.2	12.7	12.3	9.0	11.0	11.3	10.1	13.7	12.6	10.1	9.1	8.3	9.1	10.4	11.0	10.5	4.5	10.9
White	8.1	7.2	7.4	7.5	5.3	7.6	6.5	5.5	------	------	------	------	------	------	------	6.9	------	------	------
Colored	12.4	14.8	17.4	16.7	12.4	14.1	15.8	14.4	------	------	------	------	------	------	------	14.8	------	------	------
WEST SOUTH CENTRAL STATES	10.4	11.0	13.9	12.3	12.8	11.1	10.7	10.1	9.9	9.3	7.8	8.9	8.8	8.5	9.3	[3]10.2	8.9	12.7	[3]9.6
Arkansas, total	------	------	------	------	------	8.3	9.0	9.5	8.4	6.7	7.9	7.2	6.5	7.1	6.9	[3]8.9	7.2	19.1	[3]7.7
White	------	------	------	------	------	6.2	8.0	8.0	------	------	------	------	------	------	------	7.4	------	------	------
Colored	------	------	------	------	------	14.2	11.8	13.8	------	------	------	------	------	------	------	13.3	------	------	------
Louisiana,[2] total	10.4	11.0	13.9	12.3	12.8	13.7	13.3	13.0	14.2	12.0	9.1	12.6	12.9	12.3	12.1	12.6	12.2	3.2	12.4
White	6.2	7.4	7.7	5.9	6.6	7.2	7.8	7.6	------	------	------	------	------	------	------	7.1	------	------	------
Colored	16.9	16.5	23.6	22.6	22.7	24.1	22.1	22.0	------	------	------	------	------	------	------	21.3	------	------	------
Oklahoma, total	------	------	------	------	------	------	9.9	8.1	7.5	9.2	8.3	8.3	7.8	7.1	8.1	[3]9.0	7.8	13.3	[3]8.4
White	------	------	------	------	------	------	9.1	7.9	------	------	------	------	------	------	------	8.5	------	------	------
Colored	------	------	------	------	------	------	15.8	9.8	------	------	------	------	------	------	------	12.7	------	------	------
Texas, total	------	------	------	------	------	------	------	------	------	------	------	8.5	8.5	8.4	9.8	------	[3]8.8	------	[3]8.8
White	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Colored	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
MOUNTAIN STATES	27.6	23.1	24.5	25.2	23.9	24.6	22.1	22.1	21.1	18.2	18.3	17.0	16.6	18.4	18.1	[3]22.6	18.2	19.5	[3]19.2
Montana [3]	17.3	16.2	21.1	22.5	14.9	20.3	21.2	20.6	22.6	12.2	11.2	11.6	17.3	13.4	17.5	19.5	15.1	22.6	17.2
Idaho [3]	25.8	17.7	14.7	16.9	19.0	18.4	21.0	22.6	20.1	16.5	17.9	16.5	10.6	19.5	20.2	19.7	17.3	12.2	18.1
Wyoming [3]	22.7	28.8	15.4	22.6	22.2	22.9	13.0	19.8	18.4	15.9	22.5	16.7	11.0	16.3	17.3	21.1	16.8	20.4	19.1
Colorado [3]	28.6	20.7	26.5	26.7	29.1	27.4	24.5	24.2	22.7	22.3	18.8	22.0	17.3	20.7	16.9	26.0	20.1	22.7	23.3
New Mexico	------	------	------	------	------	------	------	16.0	17.0	14.8	19.8	12.6	13.2	14.8	17.0	[3]16.0	15.6	2.5	15.6
Arizona	------	------	------	------	13.8	17.1	11.9	13.3	14.0	11.8	13.9	7.9	19.0	11.0	13.3	14.0	13.0	5.8	13.4
Utah [3]	39.3	36.7	36.2	33.2	35.6	35.1	31.4	31.9	28.9	27.4	25.9	24.5	25.7	28.6	25.0	[3]34.9	26.6	23.8	[3]31.2
Nevada	------	------	------	------	------	------	------	27.7	13.6	9.9	12.9	12.7	3.1	12.2	12.0	[3]27.7	10.9	60.6	[3]13.8
PACIFIC STATES	17.9	17.6	20.4	15.5	15.9	16.2	14.5	14.8	13.9	13.2	13.0	10.3	9.8	9.8	11.1	16.5	11.6	29.7	14.5
Washington [3]	17.9	14.2	17.6	14.7	17.0	14.1	14.8	13.7	16.1	10.8	14.3	10.3	10.9	8.4	11.6	15.4	11.7	24.0	13.8
Oregon [3]	15.1	16.9	29.3	19.3	16.0	18.9	11.3	18.2	11.6	14.4	12.5	10.6	8.5	11.9	13.0	17.1	11.8	31.0	14.6
California [3]	18.6	19.0	32.0	15.1	15.5	16.3	15.0	14.5	13.7	13.6	12.8	10.3	9.8	9.8	10.6	16.7	11.5	31.1	14.7
Total, United States	19.7	19.6	20.8	20.2	18.9	19.0	17.6	17.8	15.6	14.5	13.4	13.3	12.8	13.0	12.9	19.2	13.9	27.6	15.3
Total, 10 original Registration States and District of Columbia	24.5	24.9	26.5	26.1	23.9	24.7	23.1	23.1	20.5	19.1	17.5	17.5	16.5	16.3	15.7	24.6	17.6	28.5	21.1
Total, 36 States and District of Columbia in registration area in 1922	19.7	19.8	21.1	20.5	19.5	19.8	18.7	18.9	17.4	16.3	14.9	14.4	13.7	13.9	13.6	19.7	14.9	24.4	17.4

[1] 10 States and District of Columbia in original U. S. registration States before 1900.
[2] 26 other States added to U. S. registration States by 1922.
[3] Data incomplete—from States admitted to U. S. registration States since 1922.

In the 10 original registration States and the District of Columbia the death rate from heart disease among persons 5–24 years of age was 15.7 per 100,000 in 1936, as compared with 24.5 per 100,000 in 1922. The mean annual death rate from this cause during the age period under study was 17.6 per 100,000 in 1930–36, as compared with 24.6 per 100,000 during 1922–29, a decrease of 28.5 percent. The highest death rate, 26.5 per 100,000, occurred in 1924. The rate has been decreasing since that year, the decrease becoming more marked during recent years.

For the 36 States and the District of Columbia which made up the registration States of 1922, the death rate was 19.7 per 100,000 in 1922, as compared with only 13.6 per 100,000 in 1936. The mean annual death rate per 100,000 was 14.9 during 1930–36, as compared with 19.7 per 100,000 during 1922–29, a decline of 24.4 percent.

During 1922–29 it was possible to determine the mortality rates from heart disease among persons 5–24 years of age according to color in a large number of States in the southern part of the country. These rates invariably indicated a higher mortality among colored persons. In most States the rates were twice as high in the colored as in the white race. With the exception of Maryland and possibly Kentucky, there was no tendency for the death rate from heart disease among colored persons of this age period to decline. In several Southern States, notably South Carolina, Florida, and Louisiana, it appeared to be increasing.

A considerable decline among white persons was indicated in Maryland, the District of Columbia, and Virginia, while in other Southern States little or no decline was observed during these 8 years.

The number of deaths upon which the rates in table 1 are based is shown in table 1A. Although the use of numbers to denote trends in mortality is liable to result in erroneous conclusions, in this instance it offers several features worth noting. Despite an increase in the estimated population of the registration States from 109,248,393 persons in 1922 to 128,024,000 in 1936, there was a decrease of from 6,631 to 6,321 in deaths from heart disease among persons 5–24 years of age. In the 36 States and the District of Columbia comprising the registration area in 1922 the number of deaths decreased from 6,631 during that year to 5,328 in 1936, a decline of 19.7 percent. The largest number of deaths, 7,339, was reported in this area in 1924. Since then there has been a decline of 27.4 percent. In the 10 original registration States and the District of Columbia the number of deaths decreased from 2,540 to 1,947, or 23.3 percent, during the 15 years under study. The largest number of deaths, 2,864, was reported in 1925. Between that year and 1936 there was a decline of 32.0 percent in the original registration area.

TABLE 1A.—*Number of deaths reported as due to heart disease, by States and sections of the United States during 1922–36, among persons 5–24 years of age*

Section and State	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	Total
NEW ENGLAND	534	510	591	629	555	626	530	539	487	468	435	412	421	389	411	7,537
Maine [1]	32	21	30	26	29	44	30	16	23	37	27	22	22	18	27	404
New Hampshire [1]	19	17	21	25	29	19	22	20	17	25	20	18	19	19	20	310
Vermont [1]	20	5	12	19	19	14	16	13	21	16	8	10	12	6	4	195
Massachusetts [1]	337	330	356	401	321	393	306	326	269	280	244	239	246	231	240	4,519
Rhode Island [1]	52	39	55	46	42	49	42	55	44	42	44	37	27	31	31	636
Connecticut [1]	74	98	117	112	115	107	114	109	113	68	92	86	95	84	89	1,473
MIDDLE ATLANTIC	2,316	2,421	2,614	2,632	2,423	2,538	45 '20	2,498	2,259	2,117	2,030	2,009	1,792	1,910	1,774	33,783
New York [1]	1,150	1,172	1,298	1,281	1,186	1,228	1,200	1,185	1,080	990	983	990	870	873	844	16,330
New Jersey [1]	362	387	375	415	366	397	419	404	364	331	288	287	281	342	271	5,289
Pennsylvania	804	862	941	936	871	913	831	909	815	796	759	732	641	695	659	12,164
EAST NORTH CENTRAL	1,583	1,681	1,731	1,734	1,742	1,745	1,687	1,738	1,524	1,446	1,260	1,306	1,223	1,268	1,206	22,874
Ohio	374	432	406	449	410	401	408	370	345	314	303	308	305	321	306	5,452
Indiana [1]	186	199	194	209	195	185	170	216	177	172	138	148	145	143	163	2,640
Illinois	604	583	612	622	650	660	633	634	539	516	450	477	430	452	419	8,281
Michigan [1]	265	316	360	293	338	334	331	357	300	289	229	253	253	233	227	4,378
Wisconsin	154	151	159	161	149	165	145	161	163	155	140	120	90	119	91	2,123
WEST NORTH CENTRAL	508	597	706	671	609	669	606	608	600	576	533	473	498	527	508	8,689
Minnesota	148	128	169	142	136	140	120	128	130	107	113	79	103	90	107	1,840
Iowa	------	120	103	111	103	123	92	98	104	93	92	80	80	89	103	1,391
Missouri	185	193	228	230	191	209	209	201	162	192	168	149	145	156	129	2,747
North Dakota	------	------	37	42	43	35	34	33	21	27	25	29	28	33	25	412
South Dakota	------	------	------	------	------	------	------	------	39	31	30	28	26	33	27	214
Nebraska	97	63	82	69	57	86	73	63	79	59	50	45	54	58	59	994
Kansas	78	93	87	77	79	76	78	85	65	67	55	63	62	68	58	1,091
SOUTH ATLANTIC	651	677	677	766	821	772	948	982	1,030	912	858	780	859	819	907	12,459
Delaware	18	13	18	22	20	22	16	16	9	16	16	16	15	9	16	242
Maryland, total	138	127	127	133	129	118	117	99	109	96	97	70	75	90	101	1,626
White	103	90	91	102	112	94	90	76	78	68	74	58	51	66	79	1,232
Colored	35	37	36	31	17	24	27	23	31	28	23	12	24	24	22	394

See footnotes at end of table.

TABLE 1A.—*Number of deaths reported as due to heart disease, by States and sections of the United States during 1922–36, among persons 5–24 years of age*—Continued

Section and State	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	Total
SOUTH ATLANTIC—Continued.																
District of Columbia,[1] total	43	49	36	37	37	40	34	30	37	42	42	33	43	31	31	565
White	27	30	18	20	14	23	20	12	17	25	26	15	21	14	13	295
Colored	16	19	18	17	23	17	14	18	20	17	16	18	22	17	18	270
Virginia, total	145	144	144	147	140	137	138	125	138	137	123	118	124	109	128	1,997
White	87	80	79	76	76	86	70	68	68	80	68	68	66	62	64	1,098
Colored	58	64	65	71	64	51	68	57	70	57	55	50	58	47	64	899
West Virginia				74	82	81	86	84	90	81	73	65	88	88	71	963
North Carolina, total	147	162	150	158	182	171	172	210	233	187	168	149	175	157	190	2,611
White	71	92	70	74	82	91	85	91	108	95	79	86	95	73	91	1,283
Colored	76	70	80	84	100	80	87	119	125	92	89	63	80	84	99	1,328
South Carolina, total	119	125	123	129	134	104	130	163	132	140	110	111	113	114	108	1,855
White	41	39	43	26	27	29	41	38	41	40	32	36	28	36	28	525
Colored	78	86	80	103	107	75	89	125	91	100	78	75	85	78	80	1,330
Georgia, total							180	162	194	143	148	142	155	163	187	1,474
White							67	65	72	52	60	52	66	54	84	572
Colored							113	97	122	91	88	90	89	109	103	902
Florida, total	41	57	79	66	97	99	75	93	88	70	81	76	71	58	75	1,126
White	21	29	32	36	58	45	42	46	35	40	33	42	39	34	43	575
Colored	20	28	47	30	39	54	33	47	53	30	48	34	32	24	32	551
EAST SOUTH CENTRAL	314	319	342	459	475	435	477	493	501	454	413	414	431	409	418	6,354
Kentucky, total	121	123	122	110	132	105	109	111	120	122	111	119	125	113	96	1,739
White	100	106	108	94	108	91	86	97	96	110	93	102	101	89	85	1,466
Colored	21	17	14	16	24	14	23	14	24	12	18	17	24	24	11	273
Tennessee, total	105	100	111	111	123	117	126	126	106	99	98	84	112	99	101	1,618
White	71	68	73	73	81	83	81	91	62	67	69	61	79	67	68	1,094
Colored	34	32	38	38	42	34	45	35	44	32	29	23	33	32	33	524
Alabama, total				131	141	116	141	165	152	120	114	130	120	116	129	1,575
White				45	63	45	56	76	66	64	65	56	62	54	61	713
Colored				86	78	71	85	89	86	56	49	74	58	62	68	862
Mississippi, total	88	96	109	107	79	97	101	91	123	113	90	81	74	81	92	1,422
White	32	29	30	31	22	32	28	24	45	35	28	27	33	21	34	451
Colored	56	67	79	76	57	65	73	67	78	78	62	54	41	60	58	971
WEST SOUTH CENTRAL	86	92	118	106	111	187	291	277	275	260	219	475	466	456	501	3,920
Arkansas, total						67	73	77	69	56	67	62	56	62	61	650
White						37	48	48	45	31	43	43	34	42	36	407
Colored						30	25	29	24	25	24	19	22	20	25	243
Louisiana, total	86	92	118	106	111	120	118	117	128	108	82	113	115	109	107	1,630
White	31	38	40	31	35	39	43	42	51	36	32	49	48	56	47	618
Colored	55	54	78	75	76	81	75	75	77	72	50	64	67	53	60	1,012

Oklahoma, total							100	83	78	96	70	87	83	75	86	758
White							81	71	70	81	55	75	71	63	73	640
Colored							19	12	8	15	15	12	12	12	13	118
Texas, total												213	212	210	247	882
White												142	152	170	182	645
Colored												71	60	40	65	236
MOUNTAIN	275	233	250	260	287	299	273	323	310	268	272	253	250	279	276	4,108
Montana	34	32	42	45	30	41	43	42	46	25	23	24	36	28	37	528
Idaho	45	31	26	30	34	33	38	41	37	31	34	32	21	39	41	513
Wyoming	17	22	12	18	18	19	11	17	16	14	20	15	10	15	16	240
Colorado	101	74	96	98	108	103	93	93	88	87	74	87	69	83	68	1,322
New Mexico								29	31	27	36	23	24	27	31	228
Arizona					22	28	20	23	24	20	23	13	31	18	22	244
Utah	78	74	74	69	75	75	68	70	64	61	58	55	58	65	57	1,001
Nevada								8	4	3	4	4	1	4	4	32
PACIFIC	364	372	450	356	378	399	371	391	374	358	359	287	277	279	320	5,335
Washington	87	70	88	75	88	74	79	74	88	60	80	58	62	48	67	1,098
Oregon	43	49	60	58	49	59	36	59	38	48	42	36	29	41	45	692
California	234	253	302	223	241	266	256	258	248	250	237	193	186	190	208	3,545
Total, United States	6,631	6,902	7,479	7,613	7,401	7,670	7,633	7,849	7,360	6,859	6,379	6,409	6,217	6,336	6,321	105,059
Total, 10 original registration States and District of Columbia	2,540	2,633	2,854	2,864	2,677	2,810	2,684	2,731	2,445	2,292	2,115	2,123	2,013	2,011	1,947	36,739
Total, 36 States and District of Columbia registration area in 1922	6,631	6,782	7,339	7,255	7,010	7,220	6,907	7,087	6,554	6,162	5,697	5,533	5,313	5,418	5,328	96,236

[1] Ten States and District of Columbia in original U. S. registration States.

In table 2 are shown, by geographical sections, mortality rates from heart disease per 100,000 persons 5–24 years of age in the 36 States and the District of Columbia which were members of the registration area at the beginning of 1922. This gives a more uniform group than is shown in table 1, in which the States which subsequently became members are also included. In the New England, Middle Atlantic, East North Central, and Pacific sections, all of the States were in the continental registration area in 1922. In other sections one or more States were admitted to the registration area after that time. In the West South Central section, Louisiana was the only State in the registration area in 1922. With the exception of this section, which is limited to reports from a single State, the rates and percentage of decrease are not dissimilar to those found in table 1.

GEOGRAPHICAL DISTRIBUTION

The highest mean annual death rates from heart disease among persons 5–24 years of age during 1922–36 were encountered in the Middle Atlantic States, where the rates were higher than in New England, long supposed to have the highest incidence of rheumatic heart disease (table 1). The Mountain and the East North Central States, too, have a higher reported mortality from heart disease during the age period under study than New England. The Pacific Coast, South Atlantic, West North Central, East South Central, and West South Central States follow New England in the order mentioned.

Utah, New York, New Jersey, Colorado, the District of Columbia, Pennsylvania, Illinois, and Massachusetts had the highest rates, in the order listed. All of these States had death rates from heart disease of over 20 per 100,000 population among persons 5–24 years of age during the 15-year period. The exceptionally high rate in Utah is in accord with the clinical studies of Viko (*8*) who found that 44 percent of heart disease among clinic, hospital, and private patients seen at Salt Lake City was of the rheumatic type. He noted that even among patients in rural areas 39.3 percent had rheumatic heart disease as compared with 49.4 percent of patients from Salt Lake City. This high incidence is probably influenced by the younger age distribution of the population. The death rate from all heart disease in Utah is relatively low.

A high rate of endocarditis was found among draftees from Utah during the World War. Love and Davenport (*9*) state that Utah ranked next to the State of Washington in rejections from this cause. The high incidence of endocarditis, acute articular rheumatism, and chronic tonsillitis in Utah was observed during a child health survey conducted by the United States Public Health Service during 1921 (*10*).

TABLE 2.—*Death rates per 100,000 population from heart disease among persons 5–24 years of age by geographic sections of the United States, based on 36 States and the District of Columbia comprising the U. S. registration States in 1922*

Section	Number of United States registration States in 1922	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	Mean annual death rate 1922–29	Estimated mean annual death rate 1930–36	Percent of decrease 1930–1936 as compared with 1922–29
New England	6	20.1	19.0	21.7	22.8	19.9	22.1	18.5	18.6	16.6	15.8	14.6	13.7	13.8	12.6	13.2	20.3	14.3	29.6
Middle Atlantic	3	27.4	28.1	29.8	29.5	26.7	27.5	26.1	26.2	23.4	21.8	20.6	20.3	18.0	19.0	17.6	27.6	20.1	27.2
East North Central	5	19.5	20.3	20.6	20.3	20.1	19.8	18.8	19.1	16.7	15.8	13.7	14.2	13.3	13.7	12.9	19.8	14.3	27.8
West North Central	4	14.9	13.9	16.4	15.0	13.4	14.7	13.7	13.6	12.4	12.0	10.9	9.4	10.2	10.4	9.8	14.4	11.7	18.8
South Atlantic	[1] 7	15.1	15.5	15.3	15.4	16.2	14.9	14.5	15.5	15.4	14.0	12.9	11.4	12.1	11.0	12.5	15.3	12.7	17.0
East South Central	3	10.8	10.9	11.6	11.0	11.1	10.5	11.0	10.6	11.2	10.6	9.4	8.8	9.6	8.9	8.8	10.9	9.6	11.9
West South Central (Louisiana only)	1	10.4	11.0	13.9	12.3	12.8	13.7	13.3	13.0	14.2	12.0	9.1	12.6	12.9	12.3	12.1	12.6	12.2	3.2
Mountain	5	27.6	23.1	24.5	25.2	25.4	25.7	23.8	24.4	23.1	19.9	18.9	19.1	17.2	20.3	19.1	25.0	19.6	21.6
Pacific	3	17.9	17.6	20.4	15.5	15.9	16.2	14.5	14.8	13.9	13.2	13.0	10.3	9.8	9.8	11.1	16.5	11.6	29.7
Total	[1] 37	19.7	19.8	21.1	20.5	19.5	19.8	18.7	18.9	17.4	16.3	14.9	14.4	13.7	13.9	13.6	19.7	14.9	24.4

[1] Including the District of Columbia.

The high mortality rate from heart disease among persons 5–24 years of age in Utah is at variance with many of the current views concerning the geographic distribution and climatic factors predisposing to rheumatic infection. According to popular conception, rheumatic heart disease occurs most frequently in a cold, damp climate, and in places of low altitude. The climate of Utah is not excessively cold and the variations in temperature by no means as great as in the midwestern plains or eastern seaboard. It has the third lowest mean annual precipitation of any State in the Union, ranking next to Arizona and Nevada. The mean annual precipitation is about 11 inches; even at Salt Lake City it is only about 16 inches. The sun shines about 70 percent of the possible number of hours. The lowest elevation is about 4,000 feet above sea level. Furthermore, it is largely an agrarian State, having only one city of over 100,000 population.

The high rate in the District of Columbia is probably due to the large colored and entirely urban character of the population. The District of Columbia should be considered as a city rather than as a State. The mortality rate in the District of Columbia may be increased to a certain extent because of the large number of hospitals which draw nonresident patients from the surrounding parts of Virginia and Maryland. It is doubtful if this is an important factor. According to a report of the Bureau of the Census for 1936 (*11*), 54.8 percent of deaths from all causes in the District of Columbia occurred in hospitals, as compared with 50.2 percent in cities of over 100,000 population. Of these deaths in hospitals, 17.8 percent were among nonresidents of the District of Columbia. This is not high in comparison with other cities. Furthermore, heart disease ranks low among the causes of nonresident deaths.

In table 3 is shown the mean annual mortality rate per 100,000 population among persons 5–24 years of age during the 3-year period 1930–32 inclusive, based on the 1930 census, in cities of over 100,000 population. According to this table, the following 20 cities had the highest death rates from heart disease in this age group:

City	*Rate per 100,000 persons*
Buffalo, N. Y.	40. 3
Jersey City, N. J.	34. 6
Pittsburgh, Pa.	34. 3
Salt Lake City, Utah	33. 6
Boston, Mass.	31. 3
Paterson, N. J.	29. 8
Scranton, Pa.	28. 5
Denver, Colo.	28. 4
Spokane, Wash.	28. 0
New York City	28. 0
Fort Wayne, Ind.	27. 7
Chicago, Ill.	27. 2

City	Rate per 100,000 persons
Washington, D. C	26. 4
Springfield, Mass	26. 3
Jacksonville, Fla	26. 1
Elizabeth, N. J	25. 9
Philadelphia, Pa	25. 7
Hartford, Conn	25. 3
El Paso, Tex	25. 0
Memphis, Tenn	25. 0

In general, the cities with the highest mortality rates are located in the northern part of the country. Deaths of nonresidents may have influenced the rates for Salt Lake City and Denver, but it is doubtful whether this is an important factor (*11*).

Comparing table 1 and table 3, the mean annual death rates from heart disease among persons 5–24 years of age in large cities for the period 1930–32 was generally higher than in the States and geographic sections in which the cities are located. The mean annual death rate from heart disease in all cities over 100,000 population during this period was 22.5 per 100,000 population as compared with approximately 15.4 per 100,000 population in the country as a whole, based on the census of 1930. This indicates the importance of urbanization in relation to mortality from heart disease in this age period.

TABLE 3.—*Number of deaths from heart disease among persons 5–24 years of age during 1930–36 in cities of over 100,000 population in the United States and the mean annual death rate from heart disease per 100,000 persons 5–24 years of age during 1930–32, based on United States Census of 1930*

Geographical section and city	Number of deaths among persons 5–24 years of age							Mean annual death rates, 1930–32
	1930	1931	1932	1933	1934	1935	1936	
NEW ENGLAND	211	204	204	185	201	190	199	23. 3
Boston	84	80	88	67	79	79	69	31. 3
Cambridge	2	4	8	3	4	10	13	11. 8
Fall River	8	7	3	13	7	7	6	13. 5
Lowell	6	11	4	15	9	5	9	19. 7
Lynn	7	5	3	4	4	0	4	14. 4
New Bedford	6	9	4	2	14	5	11	15. 4
Somerville	8	4	5	5	5	8	9	16. 0
Springfield	10	14	16	12	18	12	16	26. 3
Worcester	12	13	13	15	12	10	10	18. 5
Providence	21	19	24	17	12	16	14	23. 4
Bridgeport	12	13	8	9	14	9	12	20. 1
Hartford	14	13	17	7	9	16	15	25. 3
New Haven	21	12	11	16	14	13	11	24. 1
MIDDLE ATLANTIC	1, 299	1, 203	1, 174	1, 161	1, 035	1, 074	1, 008	27. 2
Albany	10	8	9	4	3	10	7	23. 1
Buffalo	53	46	65	46	43	40	31	40. 3
New York, total	724	671	653	663	604	595	544	28. 0
White	680	620	605	615	557	549	489	27. 2
Colored	44	51	48	48	47	46	55	45. 0
Rochester	27	21	25	16	16	18	21	21. 7
Syracuse	13	15	16	14	11	13	13	20. 8
Utica	8	11	5	10	4	8	6	22. 2
Yonkers	11	12	13	14	9	6	7	24. 3
Camden	9	10	6	8	9	15	15	18. 2
Elizabeth	10	12	12	14	10	11	5	25. 9
Jersey City	39	46	40	37	43	41	37	34. 6

TABLE 3.—*Number of deaths from heart disease among persons 5–24 years of age during 1930–36 in cities of over 100,000 population in the United States and the mean annual death rate from heart disease per 100,000 persons 5–24 years of age during 1930–32, based on United States Census of 1930*—Continued

Geographical section and city	Number of deaths among persons 5–24 years of age							Mean annual death rates, 1930–32
	1930	1931	1932	1933	1934	1935	1936	
MIDDLE ATLANTIC—continued.								
Newark, total	51	33	26	53	37	44	42	22.0
White	43	32	25	45	35	38	34	21.8
Colored	8	1	1	8	2	6	8	23.5
Paterson	19	15	10	8	11	19	9	29.8
Trenton	7	13	11	13	11	12	15	22.2
Erie	11	5	11	9	7	8	11	20.4
Philadelphia, total	193	171	168	143	144	138	150	25.7
White	171	148	144	119	126	119	112	25.1
Colored	22	23	24	24	18	19	38	31.2
Pittsburgh, total	93	87	76	83	56	79	74	34.3
White	85	74	68	75	49	74	66	33.3
Colored	8	13	8	8	7	5	8	45.0
Reading	6	7	14	6	7	5	10	22.8
Scranton	15	20	14	20	10	12	11	28.5
EAST NORTH CENTRAL	778	735	578	666	587	653	614	21.1
Akron	12	11	11	11	8	10	11	11.9
Canton	6	6	4	9	5	8	6	14.0
Cincinnati, total	18	25	26	18	28	37	26	15.9
White	14	20	16	14	24	28	22	13.0
Colored	4	5	10	4	4	9	4	39.0
Cleveland, total	75	65	52	65	63	46	60	19.1
White	67	57	42	62	59	46	53	17.7
Colored	8	8	10	3	4	0	7	36.5
Columbus, total	29	18	16	17	16	21	21	22.2
White	25	16	11	12	13	14	20	20.6
Colored	4	2	5	5	3	7	1	34.5
Dayton	8	4	14	11	15	6	8	12.7
Toledo	23	14	14	23	5	13	13	17.2
Youngstown	12	13	6	7	12	14	24	15.5
Evansville	8	4	3	2	10	4	14	14.2
Fort Wayne	15	9	9	11	8	8	10	27.7
Gary	12	3	7	5	5	7	5	19.2
Indianapolis, total	18	27	13	22	21	19	26	16.2
White	16	24	11	21	16	17	20	17.1
Colored	2	3	2	1	5	2	6	15.7
South Bend	6	4	4	4	2	9	5	12.1
Chicago, total	349	347	264	304	262	285	258	27.2
White	310	307	243	272	224	247	221	23.8
Colored	39	40	21	32	38	38	37	41.6
Peoria	4	1	6	5	6	3	5	10.7
Detroit, total	120	133	89	116	89	111	89	20.5
White	101	116	78	105	76	99	78	18.1
Colored	19	17	11	11	13	12	11	37.8
Flint	5	12	6	6	3	8	8	13.1
Grand Rapids	14	9	5	3	9	9	3	15.6
Milwaukee	44	30	29	27	20	35	22	16.8
WEST NORTH CENTRAL	175	180	149	137	141	127	128	19.0
Duluth	7	4	7	1	6	4	3	16.4
Minneapolis	26	18	23	18	23	17	18	14.3
St. Paul	21	12	14	9	10	9	14	16.9
Des Moines	8	7	6	5	8	11	12	14.3
Kansas City, Mo., total	31	33	20	21	25	15	19	22.6
White	22	25	15	16	21	13	16	18.4
Colored	9	8	5	5	4	2	3	61.9
St. Louis, total	52	71	56	53	43	49	40	22.2
White	42	56	46	47	37	40	30	20.1
Colored	10	15	10	6	6	9	10	39.6
Omaha	17	14	14	14	12	13	14	20.4
Kansas City, Kans.	7	19	7	11	9	9	7	24.7
Wichita	6	2	2	5	5	0	1	8.4
SOUTH ATLANTIC	159	165	164	142	147	137	157	19.9
Wilmington	6	9	11	10	9	7	10	22.7
Baltimore, total	52	43	54	40	45	48	49	17.4
White	40	34	42	36	30	39	39	16.4
Colored	12	9	12	4	15	9	10	22.1
Washington, total	37	42	42	33	43	31	31	26.4
White	17	25	26	15	21	14	13	21.2
Colored	20	17	16	18	22	17	18	38.7
Norfolk, total	9	11	12	11	10	8	11	22.4
White	2	6	5	5	4	2	3	13.6
Colored	7	5	7	6	6	6	8	38.9

TABLE 3.—*Number of deaths from heart disease among persons 5–24 years of age during 1930–36 in cities of over 100,000 population in the United States and the mean annual death rate from heart disease per 100,000 persons 5–24 years of age during 1930–32, based on United States Census of 1930*—Continued

Geographical section and city	Number of deaths among persons 5–24 years of age							Mean annual death rates, 1930–32
	1930	1931	1932	1933	1934	1935	1936	
SOUTH ATLANTIC—continued.								
Richmond, total	9	16	5	7	5	12	13	15.0
White	3	9	1	3	1	5	5	9.2
Colored	6	7	4	4	4	7	8	28.2
Jacksonville, total	12	10	15	5	8	6	5	26.1
White	3	5	4	3	2	3	1	13.8
Colored	9	5	11	2	6	3	4	45.4
Miami, total	3	7	1	12	4	5	6	10.1
White	2	4	1	9	2	2	4	8.5
Colored	1	3	0	3	2	3	2	13.5
Tampa	7	4	6	3	6	3	4	14.7
Atlanta, total	24	23	18	21	17	17	28	20.9
White	12	3	3	6	3	3	13	8.5
Colored	12	21	15	15	14	14	15	42.9
EAST SOUTH CENTRAL	91	79	74	67	74	65	69	18.6
Louisville, total	17	20	20	21	19	13	18	18.3
White	11	17	14	16	15	10	13	15.6
Colored	6	3	6	5	4	3	5	34.2
Chattanooga, total	9	6	7	8	11	4	9	15.5
White	4	4	4	7	7	1	5	11.7
Colored	5	2	3	1	4	3	4	25.3
Knoxville	7	5	5	4	3	1	4	13.7
Memphis, total	24	27	15	8	13	18	21	25.0
White	5	14	8	3	4	6	12	16.3
Colored	19	13	7	5	9	12	9	39.7
Nashville, total	7	5	8	8	15	12	6	11.8
White	6	3	5	4	9	9	4	11.4
Colored	1	2	3	4	6	3	2	12.8
Birmingham, total	27	16	19	18	13	17	11	20.8
White	9	12	7	6	5	7	7	15.3
Colored	18	4	12	12	8	10	4	29.1
WEST SOUTH CENTRAL	99	94	94	110	95	96	96	14.2
New Orleans, total	29	30	30	42	31	36	35	17.8
White	15	11	11	18	15	21	16	10.4
Colored	14	19	19	24	16	15	19	35.5
Oklahoma City	8	11	12	11	14	14	9	15.1
Tulsa	7	7	5	8	6	5	5	12.5
Dallas, total	13	8	8	11	13	10	17	10.5
White	9	2	4	6	10	5	12	6.5
Colored	4	6	4	5	3	5	5	28.9
El Paso, total	12	7	11	9	6	9	6	25.0
White	1	3	5	4	1	8	6	9.3
Colored	11	4	6	5	5	1	0	88.4
Fort Worth, total	7	6	6	10	5	4	10	10.6
White	5	3	5	8	4	4	7	8.6
Colored	2	3	1	2	1	0	3	20.9
Houston, total	14	15	9	7	8	13	9	11.9
White	10	8	5	5	4	6	1	9.9
Colored	4	7	4	2	4	7	8	17.2
San Antonio, total	9	10	13	12	12	5	5	11.9
White	7	9	13	10	11	5	4	21.2
Colored	2	1	0	2	1	0	1	2.4
MOUNTAIN	43	46	45	43	45	38	37	30.4
Denver	26	26	26	28	23	24	16	28.4
Salt Lake City	17	20	19	15	22	14	21	33.6
PACIFIC	171	168	164	123	131	127	134	17.0
Seattle	18	13	20	12	12	10	11	15.0
Spokane	17	9	6	6	6	7	10	28.0
Tacoma	4	5	8	4	6	5	6	16.0
Portland	15	20	17	13	13	16	18	18.5
Long Beach	3	1	4	4	4	4	1	6.7
Los Angeles, total	55	61	55	38	53	48	41	15.9
White	47	48	41	29	44	40	39	15.3
Colored	8	13	14	9	9	8	2	18.7
San Diego	8	6	7	8	3	6	8	15.8
San Francisco, total	29	37	35	25	26	21	24	19.2
White	26	33	31	24	23	18	24	18.4
Colored	3	4	4	1	3	3	0	28.6
Oakland	22	16	12	13	8	10	15	18.9
Total	3,026	2,874	2,646	2,634	2,456	2,507	2,442	22.5

Referring to table 3, it should be noted that there was a numerical decline in deaths from heart disease among persons 5–24 years of age in most of the cities over 100,000 population during the period 1930–36. On the basis of geographic sections a decline was noted in the New England, Middle Atlantic, East North Central, West North Central, East South Central, and Pacific Coast States. In the South Atlantic, West South Central, and Mountain States, the number of deaths remained about the same. While numerical incidences can be regarded as only provisional figures, it seems evident that there has been a downward trend in urban communities and that mortality from rheumatic heart disease in young persons has continued to decline during the economic depression. This is in agreement with the experience of the past few years with death rates in general and mortality from infectious diseases in particular.

RACIAL DISTRIBUTION

The influence of race on mortality from heart disease among persons 5–24 years of age is shown in figure 1, a map showing mortality by States during 1922–29. This map also throws additional light on the geographical distribution. The highest rates were found in Massachusetts, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland, the District of Columbia, Michigan, Illinois, Wyoming, Utah, and Colorado. The combined rates for white and colored in the Southern States, while lower than in the Middle Atlantic and New England States, are nearly as high as in the Midwestern States (see table 1).

When the rates in the Southern States are broken down to show mortality by race, it is noted (fig. 1) that the death rate from heart disease among white persons 5–24 years of age is appreciably lower than the rates for both races in other parts of the country, especially the Middle Atlantic and New England States. The death rate in the deep South among white persons 5–24 years of age is approximately one-third that of all races in States along the eastern seaboard north of Maryland. The death rate from heart disease among colored persons 5–24 years of age in the South nearly equals that of the total population (mostly white) in other parts of the country.

During the 8-year period 1922–29 the death rate from heart disease among white persons 5–24 years of age in the 9 Southern States and the District of Columbia in the registration area (see fig. 1) was 10.3 per 100,000 population, while the rate among colored persons was 20.5 per 100,000 population, about twice as high. The death rate for both races in these States was 12.5 per 100,000. While it was not possible to obtain detailed information concerning mortality by color in other States, the Bureau of the Census furnishes this information for the registration States of 1920 in appendices to its annual reports.

Based on these figures the mean annual death rate from heart disease among white persons 5–24 years of age was 19.3 per 100,000 population, while the death rate among colored persons was 24.1 per 100,000

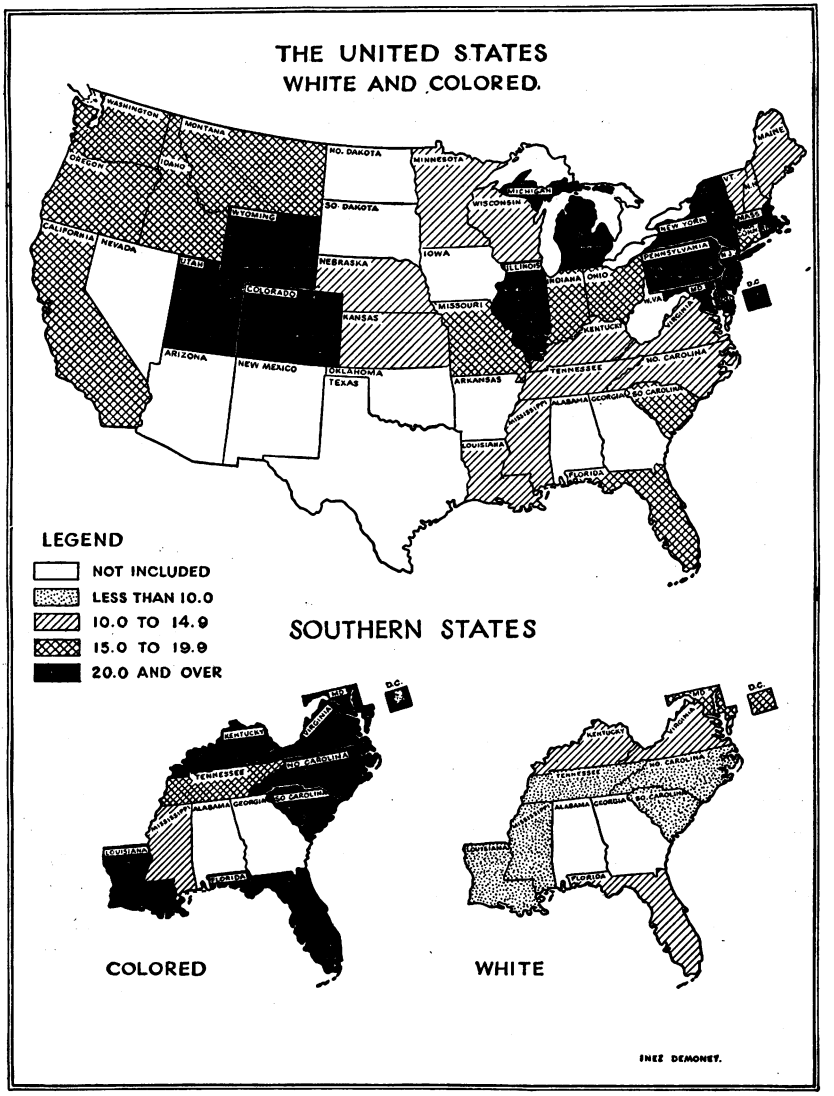

FIGURE 1.—Mean annual mortality from heart disease per 100,000 persons 5–24 years of age in the United States during 1922–29, based on the registration States of 1922. In 9 Southern States and the District of Columbia, death rates among white and colored populations are shown. In the figure for the entire United States the rates are shown for the population without respect to color.

population; for all races it was 19.8 per 100,000 population. By subtracting deaths occurring in the Southern States from the total registration States of 1920, it is possible to determine the rates in the

remainder of these registration States comprising largely the Middle Atlantic, New England, and East North Central States, which are the most populous States, and some States west of the Mississippi, most of which have very small colored populations. In the registration States of 1920 exclusive of the South, the death rate from heart disease among white persons in the age period under study was 21.3 per 100,000 population, while among colored persons it was 34.0 per 100,000 population; for all races it was 21.8 per 100,000 population.

On this basis it should be noted that the mortality among young colored persons is considerably higher than among white persons regardless of geographic location. It should also be noted that the rate among white persons in registration States not in the South was twice that of the Southern States.

According to table 3, the death rates from heart disease among young colored persons in cities of over 100,000 population was higher in nearly every city in which mortality was computed on the basis of race during 1930–32. This was true not only in the South, but also in the large northern cities. Since heart disease mortality among colored persons 5–24 years of age is greater than among white persons in every State and nearly every city in which this computation was made, it cannot be attributed to diagnostic errors peculiar to any part of the country.

These findings are in agreement with those of other writers. Atwater (*12*), Mills (*13*), and Dublin and Lotka (*4*) have noted that mortality from rheumatic fever is higher among colored persons. The experience of the industrial department of the Metropolitan Life Insurance Co. indicates that heart disease mortality is higher among colored persons. Dauer (*14*), in a study not dissimilar in certain respects to this study, also observed a higher mortality from heart disease among young colored persons.

The problem of heart disease among Negroes 5–24 years of age has nowhere received the attention it deserves. Presumably most of these deaths are due to rheumatic heart disease. There is no reason to believe that congenital cardiac diseases are more frequent in the colored race (*15*, *16*). Although the percentage of error in diagnosis is probably higher than that among white persons, this factor is counterbalanced to a certain extent by missed cases.

DISCUSSION

At the present time the cause of rheumatic fever and consequently rheumatic heart disease is unknown. There is no proved method of combating this disease by means of public health measures. Clinical management is frequently unsatisfactory despite certain improvements in treatment during the past decade. Clinicians are more alert to detect early signs of rheumatic infection and to insist upon

prolonged bed rest. The lay public is becoming cognizant of the importance of this disease and is more willing to cooperate in the tedious treatment required to ward off or minimize cardiac damage.

The decline in mortality reported as due to heart disease among persons 5–24 years of age is a source of some satisfaction but it should not blind the reader to the seriousness of the problem. In Philadelphia during 1936 (*17*) there were more deaths from rheumatic heart disease among persons under 20 years of age than from whooping cough, measles, diphtheria, scarlet fever, meningococcus meningitis and anterior poliomyelitis combined during this age period. It resulted in more deaths than pulmonary tuberculosis, and nearly as many as from all forms of tuberculosis in persons less than 20 years of age. In New York City during the 4-year period 1933–36, mortality from heart disease (mostly rheumatic heart disease) exceeded that from all other causes of death among girls 5–14 years of age, while among boys it was exceeded only by accidents. Among males 15–24 years of age it ranked third, exceeded only by tuberculosis of the respiratory system and accidents. Among females 15–24 years of age it was exceeded as a cause of death only by tuberculosis. Collins (*18*) noted that in 1929–30, mortality from heart disease among males 5–14 years of age in the United States was exceeded only by accidents, pneumonia, and appendicitis. Among females 5–14 years of age it was exceeded only by accidents. Among males 15–24 years of age heart disease was exceeded by accidents, tuberculosis, and pneumonia, while among females it was exceeded only by tuberculosis and diseases of the puerperal state.

It is possible that the decline in mortality from heart disease among persons 5–24 years of age during 1930–36 as compared with 1922–29 is not as great as some of these figures (tables 1 and 2) indicate, owing to a fall in birth rate which may result in inaccuracies in estimated populations based on extrapolated percentages. Since the population of the United States is still increasing, but at a slower rate, it seems evident that there has been a significant actual decline in mortality from heart disease.

There is also the possibility that with improvement in diagnostic methods physicians are not as likely to make diagnoses of heart disease as formerly. This has some support in school (*19*) and college surveys (*20*) where it was noted that with more careful examinations, less heart disease was found. The recognition of heart disease in supposedly healthy individuals is not comparable to diagnosis of seriously ill patients. Among students it often rests on the detection of diastolic murmurs, which may be difficult, the determination of cardiac enlargement, which may require roentgen-ray visualization, or the interpretation of systolic murmurs, which requires considerable experience. Heart disease in the bed-ridden patient usually presents

such an unmistakable clinical picture that a diagnosis of heart disease is not difficult except among patients *in extremis*.

On analyzing causes of death, it is necessary to consider the influence of change in diagnostic expressions by physicians and of administrative procedures for classifying and tabulating causes of death. Apparently neither of these factors has participated to any great extent. The decline was not due to more deaths being certified as caused by rheumatic fever. Deaths reported as due to rheumatic fever declined from 3.2 per 100,000 persons 5–24 years of age in 1922 to 2.2 per 100,000 in this age period in 1936. Atwater (*12*) and Dublin and Lotka (*4*) noted that this decline in mortality from rheumatic fever began many years before the beginning of this study.

Granting that there has been a decline in mortality from heart disease among persons 5–24 years of age, and that most of these deaths are due to rheumatic heart disease, it appears desirable to consider possible causes for this decline. Here is a disease in which there seems to have been a certain reduction in mortality despite the fact that the cause is unknown. Organized preventive measures on an adequate scale have not been instituted, and clinical treatment is frequently unsatisfactory. Such a situation is not, however, unique in the annals of medical history. Tuberculosis, leprosy, and scarlet fever were declining in incidence or severity before their etiology was determined or control measures begun. The experiences of the United States Army and Navy (*21*) and the British Army and Navy (*22*) indicate declines in the incidence of acute rheumatic fever.

Were the factors responsible for the apparent decline in mortality from rheumatic heart disease better understood it might be possible to take advantage of them to accelerate a further decline. Experience with other diseases has shown that it is not necessary to obtain perfection in preventive methods to break the backbone of a disease as a public health problem. For instance, while 100 percent immunization against smallpox or diphtheria is highly desirable, these diseases can be controlled as major public health problems without approaching this ideal.

The following possibilities are suggested as responsible in varying degrees for the decline in mortality from heart disease among persons 5–24 years of age:

1. Rheumatic fever may be becoming milder, resulting in less heart disease or less severe heart disease with fewer deaths during this age period. It is the impression of many of the older clinicians that this is true. The classical picture of rheumatic fever described in the older textbooks is not commonly seen today.

2. Diagnosis and treatment of rheumatic fever and rheumatic heart disease may have improved to the extent that fewer cases of severe heart disease are developing, or at least more lives are being

prolonged. This is probably an important factor and will require additional studies. It is notable that the decline in mortality has been most precipitous in parts of the country in which physicians are more alert to this problem.

3. Widespread removal of diseased tonsils may be in part responsible for this decline. Much has been written pro and con during the past 15 years on the value of tonsillectomy in the prevention or treatment of rheumatic fever. Much of this discussion seems beside the point. Although many tonsils have been removed needlessly since the beginning of the present century, many a child's health has been improved by the enucleation of diseased tonsils. Furthermore, the effects of tonsillectomies on a large scale may now be affecting the second generation. There is some reason to believe that rheumatic fever is often spread within the family group (*23*). Young children are less often exposed to parents with quinsy and other forms of acute or chronic tonsillar infection than a generation ago.

4. There may be some factor in the changing diet of the American people that is responsible for the reduction in mortality presumably from rheumatic heart disease during this age period. Although efforts have been made to incriminate lack of vitamins or minerals as causative factors, these have not been successful. The field has not been fully explored. Most students of this disease believe that rheumatic fever, especially in its more fulminating forms, is more common among the poorer classes. The high mortality from heart disease among Negroes 5–24 years of age in the North as well as in the South supports this view.

There is no denying that greater attention is being paid to the diet of young children, even of the poorer classes, than a generation ago. The reduction in the visible effects of rickets is a case in point. While the diets among the poorer classes often do not contain optimum vitamin, mineral, and protein requirements, there has been some improvement as witnessed by increased consumption of dairy products.

5. Although more difficult to evaluate at the present time, improvement in housing may be in part responsible for this apparent decline. Owing to better transportation facilities more families are living in the suburbs. In the heart of cities, among the extremely poor, housing conditions do not seem to have improved during the period 1922–36. In fact, regression has probably occurred, since slums are essentially dwellings occupied by people with incomes insufficient to prevent depreciation of property. If slum clearance in the United States is ever conducted on a large scale, well-controlled studies should be made to determine the effects of this measure on rheumatic fever. Due regard should be paid to the possibility that rentals may be so high that poor families may have to reduce their standards of living in other respects.

6. The decline in mortality from heart disease among persons 5–24 years of age may be attributable to more careful attention to general health problems of children. It is a well-known public health observation that improvement in water supply often results in a decline in diseases not directly due to water-borne infections. Similarly, it is possible that better child hygiene may favorably influence certain diseases.

To the student of rheumatic fever the millennium is constantly fading. At present the horizon may be scanned in vain for even an indication that an active immunizing agent may be forthcoming in the near future. Since the turn of the century many microorganisms—streptococci, filterable viruses, and recently pleuropneumonia-like microorganisms—have been suggested by various research workers as factors responsible for the pathogenesis of this disease. Based on experience with other chronic infections and the nature of these organisms it appears not unlikely that were any of them proved to be the cause of rheumatic fever, it might still be impossible to solve this problem by active immunization. The chronic nature of rheumatic infection, its tendencies to recurrences and recrudescences, its insidiousness and the protean characteristics of its clinical manifestations all militate against this likelihood.

This is not to be interpreted as an attempt to deprecate the value of researches directed at unravelling the microbiology of this disease. Compared to other diseases too little is being done. All the money and effort expended in these endeavors would be fully justified by the development of a simple objective test for rheumatic infection, even though no preventive or therapeutic measures resulted.

It is doubtful to what extent the reduction in human tuberculosis has been dependent upon the discovery of the microbacterium of tuberculosis or the practical application of bacteriological principles. Even the tuberculin test has at no time been indispensable or of as much value as other diagnostic measures concurrently employed. The causes of the reduction of human tuberculosis are still not fully understood. It seems to be due to an attenuation of the severity of tuberculosis or to the development of some sort of natural immunity by certain racial groups for some unexplained reason, together with better living conditions, earlier diagnosis, isolation of patients with open sources of infection, and progressive improvement in medical and surgical therapeutic procedures.

In this apparent reduction in mortality from rheumatic heart disease there is at least a ray of hope. Is it not possible that by the intelligent application of methods now at the disposal of the medical profession the tendency toward decline could be given a further impetus? The writer is of the opinion that researches should be directed along these lines.

With regard to the geographic distribution, mortality from heart disease among white persons 5–24 years of age appeared to be less common (table 1 and figure 1) in the South than in the North. The difference is not as great as might have been expected. To a certain extent the medical writers of the North have been educating the physicans of the South not to look for rheumatic heart disease. In the South Atlantic, East South Central, and West South Central States the mean annual mortality rates from heart disease among white persons 5–24 years of age ranged from 6.9 in Mississippi to 19.7 in Maryland. In most States in the deep South it ranged from 7 to 10 per 100,000 population. While this is less than in the New England and Middle Atlantic States, it is possible that climate is not the only responsible factor.

Many clinicians have the impression that rheumatic heart disease is less common among Negroes than white persons. This is based on reports from a few clinics in the South and may be due to a higher incidence of other forms of heart disease rather than to a lower incidence of rheumatic heart disease. Furthermore, these studies do not take into consideration that, even in the South, colored persons usually account for a smaller proportion of the population. It is probable that many colored persons are unable to attend clinics for minor grades of heart disease because clinics may not be available, because they have to work, because their parents have to work and are unable to bring them, and for financial reasons.

Carefully conducted surveys of heart disease among both white and colored children in Southern States are sorely needed to determine the incidence of rheumatic heart disease. School medical examinations have never been utilized to the fullest extent of their potentialities as a public health weapon or for case finding in any disease.

SUMMARY

1. Since most deaths from heart disease among persons 5–24 years of age are due to rheumatic heart disease, the use of mortality rates during this age period is suggested as an index of trends and the racial and geographical distribution of mortality from rheumatic heart disease.

2. The estimated mean annual death rates among persons 5–24 years of age during 1930–36 were less than the mean annual rates during 1922–29 in every section of the country and in every State in the registration States. For the registration States a decrease of 27.6 percent was indicated. While these decreases may not have been as great in some States as indicated, because of doubtful population estimates, there seems to be little doubt that there has been a substantial reduction in heart disease mortality among persons 5–24 years of age during the 15 years under study.

3. In the United States as a whole there has been since 1930 a numerical decrease in deaths from heart disease among persons 5–24 years of age. In the original registration area and in the States comprising the registration area in 1922 there has been a decline in the number of deaths in this age period since about 1925.

4. The decline in both numbers of deaths and death rates from heart disease among persons 5–24 years of age has been more marked since 1930. Mortality from heart disease has continued to decline during the recent economic depression.

5. While the decline has been general throughout the United States, it has been greater in those parts of the country in which the greatest attention has been paid to rheumatic heart disease.

6. The death rates from heart disease are higher among colored persons 5–24 years of age in every State and nearly every city in which deaths are tabulated according to color. Since this applies to the cities of the North as well as the cities and States of the South it is interpreted as indicating a higher mortality rate from rheumatic heart disease among young Negroes.

7. Death rates from heart disease were appreciably lower among white persons 5–24 years of age in the deep South than for both races in the Middle Atlantic and New England regions (mostly white) and among the white populations of most southern as compared with northern cities.

8. Rates in cities of over 100,000 population tended to be significantly higher than the States and geographical sections in which they are located. This was especially evident in cities of over 500,000 population. It is doubtful whether deaths of nonresidents are a very important factor. Large colored populations probably adversely influence mortality rates from heart disease among persons 5–24 years of age in the larger cities.

9. The need for school surveys of heart disease, especially in the South, is emphasized.

10. Researches should be conducted to determine the reason for this apparent decrease in mortality from rheumatic heart disease among young persons, with the view to accelerating further the decline.

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CHLOROPICRIN AS A PREWARNING GAS IN SHIP FUMIGATION

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The fumigation of ships with such a highly lethal gas as hydrocyanic acid presents certain hazards to human life which can be obviated only by the personnel so engaged exercising the utmost care in the performance of their duties and by the use of any and all available mechanical and chemical precautions.

Past experience has shown that the greatest single hazard is the presence of unauthorized persons hidden in unusual and remote places in the ship's superstructure or inaccessible parts of the ship's holds where they are protected from observation by cargo or excess dunnage. Despite painstaking searches by the ship's crew and by the fumigating crew, such persons are sometimes undetected. In order to minimize this hazard, studies were undertaken at the New York Quarantine Station for the purpose of developing a practical method of applying a prewarning gas immediately preceding the introduction of the lethal

gas, which would act in such a manner as to bring any hidden person into the open without at the same time subjecting him to a harmful concentration of gas.

Of the various gases studied, chloropicrin seemed to offer the greatest possibilities for the reason that an irritating effect could be produced which was unbearable in a concentration far below the lethal dosage. The application of this gas in the form of chloropicrin discoids was found to have three satisfactory features: (1) The final and ultimate concentration of gas was not reached too quickly, thus permitting sufficient time for movement and egress by a person in hiding before the full irritating effect on the eyes was attained; (2) eth operator could determine fairly exact dosages simply by counting the discoids introduced; (3) the danger of chemical burns was minimized.

Description.—Chloropicrin discoids are lightly compressed, wood fiber disks, 3½ inches in diameter and averaging one-tenth inch in thickness, in which is absorbed liquid chloropicrin up to a degree of saturation which permits the absorbent to retain all the liquid after being hermetically sealed within a metal container.

Prewarning period.—Past experience has shown that in ship fumigation the most practical prewarning period is the 30-minute interval immediately preceding the introduction of the hydrocyanic acid gas. This is sufficient time to permit chloropicrin to diffuse and exert its full irritating effect, but does not materially prolong the time necessary for fumigation. In the tests with which this report deals, all determinations have been based on a 30-minute prewarning period.

Tests.—Some of the tests were undertaken on shipboard during the course of actual fumigation and others were applied in a compartment ashore in which heating facilities permitted variations in temperature.

In the conduct of tests on board ships, the observer remained in the bottom of the hold or as far down as the position of the cargo would permit while the chloropicrin was being introduced through an opening at one corner of the covered hatch. The observer remained in this position as long as he could without using a gas mask. To afford a classification of the effects on man, three degrees of irritation were arbitrarily selected, as follows:

1. A slight effect corresponding to a faint odor and beginning lachrymation, but without the production of enough discomfort to cause withdrawal in 30 minutes.

2. Sufficient concentration of gas to produce a definitely disagreeable odor and taste accompanied by moderate irritation and lachrymation, causing the observer to withdraw after 5 or 10 minutes' exposure.

3. Sufficient concentration of gas to produce irritation and lachrymation of such intensity as to force immediate withdrawal by the observer and to prevent entrance to the compartment without the protection of a gas mask.

In determining the rate of effusion of gas from chloropicrin discoids, a series of tests was undertaken in a room containing 3,546 cubic feet of air space. The method of procedure was to expose discoids on a prearranged flat surface resting on a carefully balanced scale. Weight readings were taken at the beginning of the tests and at 10-minute intervals up to and including 30 minutes. The residue was then preserved and reweighed at intervals until no further loss of weight was registered. From a computation of figures obtained in these tests, the percentage of chloropicrin evolved during each succeeding 10-minute interval was calculated and the lachrymatory effect noted. The following tables give the results of prewarning tests conducted on shipboard and of evaporation tests undertaken on shore.

TABLE 1.—*Time in which slight, moderate, and pronounced warnings are conveyed by chloropicrin to persons in ship's compartments containing different cargoes (prewarning tests on ships (discoids))*

Number of test	Compartment tested	Temperature, °F.	Cubic feet of space per ounce[1]	Time, in minutes, for prewarning			Cargo
				Slight	Moderate	Pronounced	
1	Hold	30	21,357	4	30		None.
2	do	43	10,264	5	10		Do.
3	do	43	2,411	1	3	5	Cocoa beans and wax.
4	do	44	5,098	4	12	20	None.
5	do	45	6,944	5	10	24	Do.
6	do	47	6,950	3	5	9	Tobacco.
7	Forepeak	50	2,750			12	Excess dunnage.
8	'Tween deck	50	5,568	5	10	20	Linseed.

[1] Reference to table 2 will indicate the amount of chloropicrin probably actually liberated.

TABLE 2.—*Percentage of chloropicrin, by weight, evolved from discoids in 10, 20, and 30 minutes under varying temperatures*

Number of tests made	Temperature range, °F.	Average percent chloropicrin			Number of tests made	Temperature range, °F.	Average percent chloropicrin		
		10 minutes	20 minutes	30 minutes			10 minutes	20 minutes	30 minutes
3	31–34	6.6	10.3	17.0	3	58–62	16.0	26.0	37.3
2	35	6.8	12.0	16.6	2	65–70	16.8	33.7	55.0
2	39–41	5.0	10.2	14.4	2	73–74	17.8	34.5	50.0
2	51	17.3	31.0	46.5	3	78–82	18.0	36.0	54.6

In conducting the evaporation tests there was found to be a significant relationship between temperature and the rate and degree of effusion of gas from the discoids, i. e., the higher the temperature, the more rapid and complete was the effusion within the 30-minute period allotted for the test. This correlation of the rate of effusion with temperature permits an approximation of the gas concentration which may be secured within a 30-minute period.

The discoids used in these tests were taken from the original container without discrimination as to their thickness. A considerable variation was found to occur as to the number of disks per container

and the thickness of the individual disks and weight of chloropicrin contained. It was found that in all tests where the effusion rate did not rise in proportion to the temperature, disks thicker than the average had been used. Effusion from the heavier disks took place at a much slower rate than from the thinner ones. Since these tests were made the manufacturer has overcome a large part of the variation in effusion rate by eliminating the use of the thicker disks.

Tests for toxicity.—In order to establish the probable safety of human life to an adequate prewarning dosage of chloropicrin gas, an attempt was made to obtain information relative to the lethal qualities by conducting tests in which white rats were exposed to varying concentrations of gas generated by spraying liquid chloropicrin into a compartment.

These tests showed that concentrations of less than 1 ounce of chloropicrin gas per 1,000 cubic feet of space was not lethal to rats, and in some instances 2 ounces per 1,000 cubic feet produced no observable symptoms. The rats exposed to 5 ounces per 1,000 cubic feet of air space died within a period of 12 hours. Of the 9 rats exposed to concentrations varying from ⅛ ounce to 2 ounces per 1,000 cubic feet, 8 had no symptoms and were alive and well 1 year after exposure. One rat exposed to a concentration of 1 ounce per 1,000 cubic feet died on the 34th day after exposure with symptoms suggesting a severe pulmonary congestion. However, in considering this fatality, the fact that a rat subjected to a double dosage survived without symptoms suggests that other factors than gas may have been the cause of death.

The minimum lethal dose as indicated by these tests is approximately 16 times greater than the gas concentration recommended in table 3.

Tests were also made to determine what, if any, deleterious effect chloropicrin gas would have on edible foods ordinarily carried on shipboard. A heavy concentration of 1 ounce per 1,621 cubic feet was produced and such foods as oranges, lemons, apples, carrots, onions, potatoes, radishes, dried prunes, various nuts, tea, coffee, and, in addition, tobacco in the form of cigarettes, were exposed for 3 hours at a temperature of from 64° to 70° F. Neither the taste nor the appearance of any of these food products was altered as a result of the exposure. Tea and coffee were brewed and drunk without ill effect immediately after exposure. The odor and taste of these delicate products were not affected. Generous samples of each of the food products were consumed without ill effect. Cigarettes were smoked 26 minutes after exposure and no change in the odor or taste of the tobacco could be detected.

As a check on the corrosive effect of chloropicrin gas, pieces of polished copper were exposed to the same high concentration of gas and no observable tarnishing resulted.

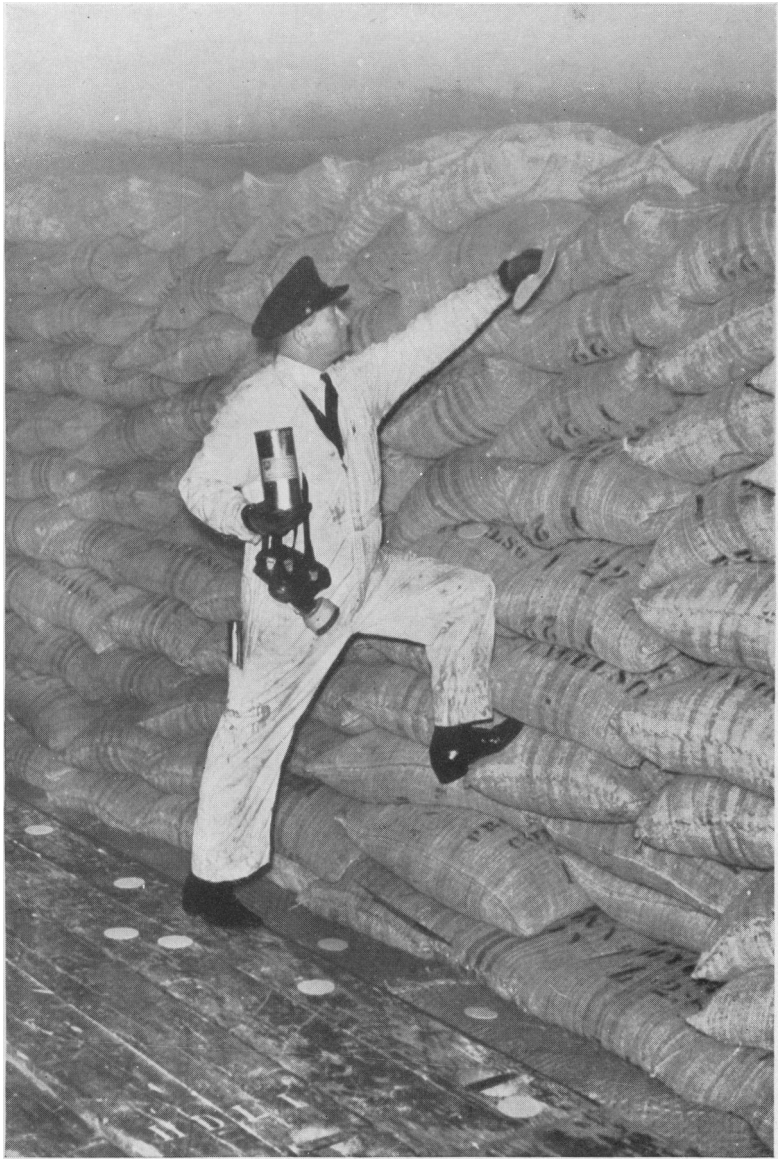

FIGURE 1.—Method of distributing chloropicrin discoids into recess above cargo in hold of ship.

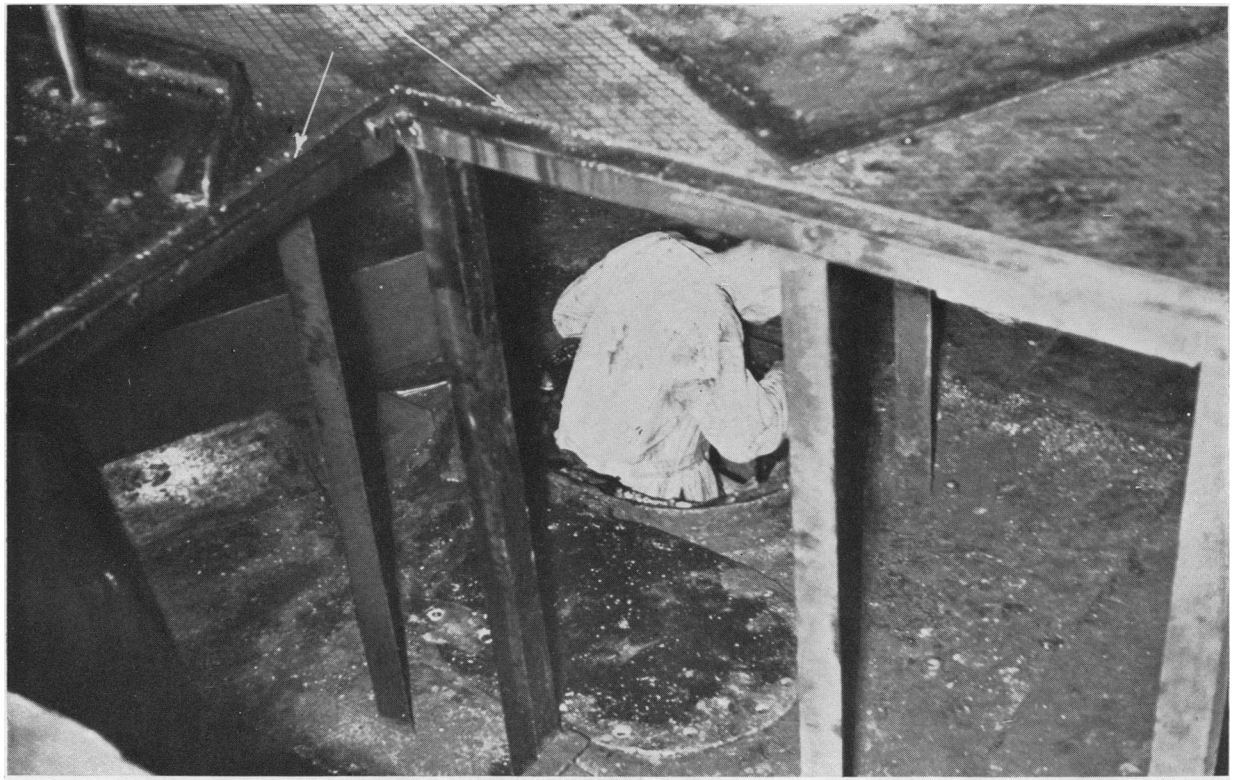

FIGURE 2.—Man emerging from tank where stowaways were found. Arrows indicate section of floor in engine room normally covered by removable steel plates.

The United States Public Health Service has for many years used chloropicrin as a warning gas during and after ship fumigation with hydrocyanic acid gas. Continued and frequent exposure of the fumigators to chloropicrin gas, although sufficient to produce considerable lachrymatory irritation, has never to the writer's knowledge caused any symptoms other than transitory lachrymation.

Dosage.—Based on the data obtained from the various tests performed, a dosing schedule has been developed for chloropicrin discoids which, while not exact, has proved satisfactory in actual ship fumigation. This schedule is recommended as meeting all practical requirements when this material is used for its prewarning effect in connection with fumigation. The following table gives the minimum dosage recommended for each of four ranges of temperature.

TABLE 3.—*Minimum amounts of chloropicrin required to obtain a concentration of 1 ounce to 16,000 cubic feet of space in 30 minutes under varying degrees of temperature*

Temperature, °F.	Dosage per cubic feet of space [1]	Approximate gas concentration in 30 minutes
Below 40°	1 oz. to 3,000	1 oz. to 16,000.
40°–60°	1 oz. to 6,000	Do.
60°–80°	1 oz. to 8,000	Do.
Over 80°	1 oz. to 10,000	Do.

[1] 4½ discoids contain approximately 1 ounce of chloropicrin.

Application.—The use of chloropicrin discoids as a prewarning agent in ship fumigation is accomplished by distributing the required number of discoids into the compartment to be fumigated. Prewarning gas should be distributed at a minimum of 30 minutes prior to the introduction of the fumigant. The dosage is predicated on the temperatures shown in table 3 and the fact that 4½ discoids contain approximately 1 ounce of chloropicrin. The gas should be evenly distributed throughout a compartment. This may be accomplished in a vessel's holds by throwing individual disks by hand over and behind cargo and into cracks and crevices. In distributing chloropicrin discoids, the hands should be protected by wearing either cotton or soft leather gloves in order to prevent chemical burns. Compartments which can be easily inspected and which offer no possibility for the hiding of unauthorized persons need not be treated with a prewarning agent.

Lives saved.—By the use of chloropicrin as a prewarning gas lives have been saved at the port of New York on three occasions. In one case a stowaway emerged from a bunker 20 minutes after the warning gas was introduced and just as the fumigating crew was about to proceed with the fumigation. In the second case 2 stowaways were driven out of the hold of a ship within 5 minutes, while the third instance was the dramatic rescue from fumigation of 10 stowaways

who had been hidden in an empty tank below the engine room. This tank, in an old ship, was not tight but had numerous holes opening into the bunkers through which seeped enough of the warning gas to inform the stowaways of their danger and set them to hammering on the plates above them. The HCN had been introduced into the ship when they were first heard, but the fumigating crew was able to locate them, remove the manhole cover, which had been bolted down, and haul all of them out and to safety before an amount of the fumigating gas sufficient to poison them seriously had seeped into their hiding place. In none of these instances did the victims suffer anything more serious from the fumigation than temporary irritation of the eyes, nose, and throat.

As an illustration of the greater effectiveness of chloropicrin used for prewarning as compared to the same material merely added to the fumigant, a case may be cited which occurred at New York several years ago at a time when the chloropicrin was incorporated in the HCN and introduced with it instead of being used prior to the HCN as described in this paper. A stowaway had been secreted in the crew's quarters and, when these were fumigated, was driven from his hiding place by the irritating effects of the chloropicrin. However, he was unable to save himself because the HCN gas, liberated at the same time as the chloropicrin, rendered him unconscious before he could even reach the door to the deck, a distance of only about 20 feet. By chance a fumigator heard the man fall, rushed in, and hauled him out on deck. He was unconscious, had stopped breathing, and was in convulsions, but by the prompt institution of artificial respiration, his life was saved. After several hours of unconsciousness and 2 days' hospitalization he recovered.

SUCCESSFUL TRANSFER OF THE LANSING STRAIN OF POLIOMYELITIS VIRUS FROM THE COTTON RAT TO THE WHITE MOUSE[1]

By CHARLES ARMSTRONG, *Senior Surgeon, United States Public Health Service*

In an earlier paper (*1*) the successful transmission of a strain of poliomyelitis to the eastern cotton rat, *Sigmodon hispidus hispidus*, was recorded. This strain has now been carried through 26 serial transfers in this species to which it has become progressively better adapted. The incubation period has shown a tendency to stabilize at from 3 to 5 days when the inoculating dose is maintained at 0.06 cc. of a 5 percent saline suspension of virus-infected fresh cord and brain, administered intracerebrally. Attempts to transmit the infection by the intranasal route have so far been without success. Cotton rats are apparently quite uniformly susceptible to intracerebral

[1] From the Division of Infectious Diseases, National Institute of Health.

inoculations. Eighty-nine cotton rats of various ages trapped in nature have been inoculated for the purpose of "carrying" the Lansing strain of virus from the seventh to twenty-fifth generations, of which 1 animal died of unknown cause, possibly poliomyelitis, on the fourth day, while of the remaining 88 only 1 failed to develop flaccid paralyses. The clinical and pathological manifestations are more pronounced than in earlier transfers and the majority of rats die within 2 to 4 days after symptoms appear, unless sacrificed earlier.

Intracerebral inoculation into monkeys of brain and cord material (1 cc. of a 5 percent suspension) from the third, sixth, and fifteenth cotton rat transfers was followed by severe clinical and pathological poliomyelitis in all cases.

Three neutralization tests have been attempted employing cotton rats, recent passage strains of the virus, and poliomyelitis antisera, one of which sera (P. C. M. S. XII) was received through the courtesy of Dr. E. H. Lennette, one (M–1791) from Dr. Lloyd Aycock, and one of our own (M–409) from a monkey which had recovered from an attack of poliomyelitis following inoculation with the P. M. strain of virus.

These tests, while of a preliminary experimental character, all indicate that two of the sera possess neutralizing properties for the virus, while the serum from Dr. Aycock's monkey is apparently almost or completely inert. The results of the last trial are shown in detail in table 1. In this test a 1:15 emulsion in buffered saline, pH 7.6, of cord and brain from cotton rats 452 and 453 (23 transfers) was centrifuged at 1,200 r. p. m. for 5 minutes and 1 part of the supernatant fluid was added to 2 parts of the respective sera to be tested. The mixtures were incubated in the hot room at 37.5° C. for 2 hours, then placed at 5° to 8° C. for 45 minutes. Four cotton rats were each inoculated intracerebrally with 0.06 cc. of each serum-virus mixture.

TABLE 1.—*Antipoliomyelitis serum cotton rat virus neutralization test in cotton rats*

Serum source (2 parts)	Virus source (1 part)	Dose of serum virus mixture intracerebrally	Day of paralysis and of death of cotton rats (4 to each serum)	Number of rats alive 12 days
		cc.		
Normal monkey 609	C. R. 452	0.06	Paralysis: 5, 5, 6, 6	0
	C. R. 453		Death: 6, 7, 7, 8	
M–1791 (Aycock)	C. R. 452	.06	Paralysis: 6, 5, 5, 6	0
	C. R. 453		Death: 7, 6, 6, 7	
M–409 (N. I. H.)	C. R. 452	.06	Paralysis: 6, 7, 9	1
	C. R. 453		Death: 8, 8, 10	
P. C. M. S. XII (Lennette)	C. R. 452	.06	Paralysis: 7	3
	C. R. 453		Death: 9	

Attempts to adapt additional strains of poliomyelitis to the cotton rat are under way. One rat inoculated with our "Bush" strain isolated from a case of poliomyelitis at Niagara Falls, N. Y., in 1938,

developed paralysis in the right front leg, first noted on the forty-first day. Sufficient time has not yet elapsed to indicate whether or not subtransfers will succeed.

TRANSFER OF THE VIRUS TO WHITE MICE

Since it was thought that a strain of virus adapted to the cotton rat might be pathogenic for other rodent species, transfers were made into white mice. Suggestive results were not obtained until 30 days after the seventh cotton rat transfer of virus was so inoculated, when 1 of 5 intracerebrally inoculated mice was found to be paralyzed in the left front paw and left hind leg. The following day, October 20, 1939, the left front and both hind legs were completely paralyzed. Brain and cord emulsion from this mouse was transferred to 4 groups (2 Swiss and 2 ordinary) of 6 half grown to adult white mice and to cotton rat 353. Twelve of the 24 mice developed paralysis in one or more legs in from 3 to 12 days and the cotton rat developed typical symptoms on the eighth day and was completely paralyzed on the tenth day, when it was etherized and the brain and cord submitted for pathological study. Dr. R. D. Lillie reported poliomyelitis similar to that observed in direct cotton rat transfers.

Successful mouse inoculations have now been carried through 12 successive transfers. The virus is showing a tendency to affect a higher proportion of mice in later passages. For instance, of 36 mice inoculated on the ninth transfer, 28 developed paralyses on from the second to twentieth days. An incubation period of 3 to 7 days is most common.

The symptoms in mice consist of flaccid paralysis, most obvious when one or more legs or the respiratory muscles are involved. Except when respiration is affected, the mice usually appear to be sleek and without symptoms other than the paralyses.

Pathological examination of a limited number of affected mice has been made by Surgeon R. D. Lillie, who reports lesions consistent with those of poliomyelitis in other species.

Brain and cord emulsion from the fourth mouse transfer was injected intracerebrally into monkey 610 which developed a continuous fever from the fifth to eleventh days, reaching 41° C. on the sixth and seventh days. The animal was nervous and tremulous, but recovered without paralysis.

Monkey 618, similarly inoculated with sixth mouse transfer virus, developed fever on the fourth day with tremors and definite weakness of the hind legs. The animal was sacrificed on the eighth day and a subinoculation of cord emulsion was made into monkey 620 which developed severe symptoms followed by complete paralysis on the tenth day. Lesions typical of moderately severe and severe poliomyelitis were reported for the respective animals by Pathologist J. H. Peers.

An emulsion of cord from monkey 620 was transferred on December 11, 1939, to cotton rats 459 and 460 and to 5 white mice. The cotton rats developed typical symptoms on December 17 and 18 followed by complete paralysis and death on December 20 and 22, respectively. Up to December 26, 1939, two of the white mice had developed symptoms. One showed flaccid paralysis in both hind legs on December 17 and died on December 22. A second became paralyzed in the left front and right hind leg on December 25 and was still living on December 26.

That the virus in mice is the same as the cotton rat strain is further indicated by the successful transfer of the third, ninth, and eleventh mouse generations of virus again to cotton rats with the development of characteristic symptoms and pathology for that species and by the fact that primary mouse inoculations from the fourteenth, fifteenth, sixteenth, eighteenth, nineteenth, twenty-fourth, and twenty-fifth successive transfers in the cotton rat have uniformly produced flaccid paralysis in a portion of the inoculated mice.

The virus has certain marked similarities to, as well as marked differences from, the spontaneous mouse virus first described by Theiler in 1934 (*2*), with which it is hoped to compare it immunologically in the near future.

SUMMARY

The Lansing strain of poliomyelitis virus after adaptation to the eastern cotton rat has been successfully transmitted through twelve generations in white mice.

REFERENCES

(*1*) Armstrong, Charles: The experimental transmission of poliomyelitis to the eastern cotton rat, *Sigmodon hispidus hispidus*. Pub. Health Rep., 54: 1719–1721 (1939).

(*2*) Theiler, Max: Spontaneous encephalomyelitis of mice—a new virus disease. Science, **80**: 122–124 (1934).

DEATHS DURING WEEK ENDED DECEMBER 9, 1939

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Dec. 9, 1939	Corresponding week, 1938
Data from 88 large cities of the United States:		
Total deaths	8,554	8,818
Average for 3 prior years	[1] 8,695	
Total deaths, first 49 weeks of year	403,584	397,910
Deaths under 1 year of age	488	514
Average for 3 prior years	[1] 529	
Deaths under 1 year of age, first 49 weeks of year	24,323	25,631
Data from industrial insurance companies:		
Policies in force	66,500,419	68,283,468
Number of death claims	12,202	11,995
Death claims per 1,000 policies in force, annual rate	9.6	9.2
Death claims per 1,000 policies, first 49 weeks of year, annual rate	9.9	9.2

[1] Data for 86 cities.

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

In these and the following tables, a zero (0) indicates a positive report and has the same significance as any other figure, while leaders (----) represent no report, with the implication that cases or deaths may have occurred but were not reported to the State health officer.

Cases of certain diseases reported by telegraph by State health officers for the week ended December 16, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median

Division and State	Diphtheria				Influenza				Measles			
	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median
NEW ENG.												
Maine	12	2	23	2	----	----	----	----	314	52	5	42
New Hampshire	0	0	0	0	----	----	----	----	10	1	0	7
Vermont	0	0	0	0	----	----	----	----	281	21	13	13
Massachusetts	6	5	5	5	----	----	----	----	387	329	212	195
Rhode Island	8	1	0	1	----	----	----	----	664	87	1	3
Connecticut	3	1	6	5	3	1	7	5	178	60	68	93
MID. ATL.												
New York	9	22	27	37	[1] 20	[1] 29	[1] 14	[1] 14	170	425	836	662
New Jersey	11	9	19	22	18	15	5	13	25	21	30	54
Pennsylvania	14	27	32	37	----	----	----	----	26	51	67	198
E. NO. CEN.												
Ohio	10	13	34	34	42	54	----	25	21	27	16	129
Indiana	27	18	27	31	39	26	12	35	13	9	10	12
Illinois	29	44	48	48	9	14	14	21	12	18	34	34
Michigan [2]	11	10	16	16	6	6	3	3	413	391	155	155
Wisconsin	0	0	0	2	77	44	44	44	120	68	186	141
W. NO. CEN.												
Minnesota	2	1	1	5	2	1	1	----	252	130	399	47
Iowa	8	4	14	14	14	7	8	4	87	43	111	12
Missouri	17	13	11	35	3	2	62	62	9	7	4	5
North Dakota	0	0	4	4	621	85	12	11	7	1	354	11
South Dakota	38	5	3	0	----	----	1	----	53	7	163	5
Nebraska	8	2	4	4	----	----	----	----	31	8	8	8
Kansas	17	6	8	8	75	27	11	3	204	73	2	6

See footnotes at end of table.

Cases of certain diseases reported by telegraph by State health officers for the week ended December 16, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median—Continued

Division and State	Diphtheria				Influenza				Measles			
	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median
SO. ATL.												
Delaware	39	2	0	0	----	----	----	----	0	0	4	4
Maryland [2]	37	12	6	15	43	14	9	10	15	5	85	81
Dist. of Columbia	8	1	11	10	----	----	3	----	40	5	0	3
Virginia	86	46	47	44	277	148	164	----	56	30	18	32
West Virginia	48	18	15	25	5	2	15	52	24	9	25	25
North Carolina [2]	101	69	63	53	73	50	6	9	475	325	270	270
South Carolina [2]	60	22	4	7	6,427	2,353	448	410	19	7	11	11
Georgia [2]	23	14	7	20	543	327	77	----	37	22	10	0
Florida [2]	21	7	6	9	33	11	5	4	6	2	18	8
E. SO. CEN.												
Kentucky	30	17	14	29	10	6	42	29	12	7	10	14
Tennessee [2]	21	12	23	23	81	46	47	72	99	56	36	36
Alabama [2]	48	27	24	24	1,000	568	93	93	14	8	42	12
Mississippi [2 3]	38	15	10	15	----	----	----	----	----	----	----	----
W. SO. CEN.												
Arkansas	40	16	15	15	231	93	140	47	2	1	25	10
Louisiana [2]	34	14	32	27	22	9	10	14	2	1	26	13
Oklahoma	18	9	16	16	183	91	99	98	20	10	43	4
Texas [2]	41	50	59	78	283	341	385	385	39	47	26	26
MOUNTAIN												
Montana	9	1	0	1	5,130	548	7	14	75	8	238	15
Idaho	0	0	0	0	224	22	----	2	602	59	80	23
Wyoming	0	0	11	0	11,214	514	----	----	175	8	18	4
Colorado	34	7	12	8	496	103	23	----	29	6	7	11
New Mexico	62	5	13	6	----	----	----	----	12	1	21	49
Arizona	135	11	7	3	1,080	88	189	56	49	4	5	5
Utah [2]	20	2	0	0	6,059	610	33	----	1,053	106	18	12
PACIFIC												
Washington	0	0	6	3	----	----	1	1	2,754	893	160	38
Oregon	0	0	3	1	875	176	23	31	263	53	17	17
California [2]	27	33	49	49	28	34	34	34	98	120	929	171
Total	24	593	735	749	305	6,465	2,047	1,965	146	3,622	4,816	4,816
50 weeks	18	23,157	28,769	28,769	166	176,258	62,720	115,544	299	370,015	789,887	713,044

Division and State	Meningitis, meningococcus				Poliomyelitis				Scarlet fever			
	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median	Dec. 16 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median
NEW ENG.												
Maine	6	1	0	1	0	0	0	1	145	24	11	29
New Hampshire	0	0	0	0	0	0	0	0	30	3	3	8
Vermont	0	0	0	0	0	0	0	0	0	0	4	16
Massachusetts	1.2	1	1	2	1.2	1	0	0	103	88	116	170
Rhode Island	0	0	0	0	0	0	1	0	84	11	10	13
Connecticut	0	0	1	0	0	0	1	0	187	63	69	59
MID. ATL.												
New York	0.8	2	4	5	4	9	0	0	152	379	398	429
New Jersey	1.2	1	0	1	1.2	1	1	1	211	177	87	94
Pennsylvania	6	12	1	3	2.5	5	2	2	176	346	286	428

See footnotes at end of table.

Cases of certain diseases reported by telegraph by State health officers for the week ended December 16, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median—Continued

Division and State	Meningitis, meningococcus				Poliomyelitis				Scarlet fever			
	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median	Dec. 16 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median
E. NO. CEN.												
Ohio	1.5	2	1	4	0.8	1	1	1	175	228	332	332
Indiana	0	0	2	2	0	0	0	0	205	138	163	167
Illinois	0	0	0	2	0.7	1	1	1	227	346	349	512
Michigan [2]	0	0	2	1	2.1	2	0	1	313	296	492	363
Wisconsin	0	0	0	1	1.8	1	0	0	281	160	174	247
W. NO. CEN.												
Minnesota	0	0	0	0	16	8	1	1	250	129	140	140
Iowa	0	0	2	2	24	12	1	1	186	92	104	104
Missouri	0	0	0	1	1.3	1	0	1	62	48	116	140
North Dakota	0	0	0	0	7	1	0	0	336	46	29	59
South Dakota	0	0	0	0	8	1	0	0	278	37	31	31
Nebraska	0	0	0	0	0	0	2	0	115	30	31	31
Kansas	2.8	1	1	1	0	0	0	1	288	103	144	160
SO. ATL.												
Delaware	20	1	0	0	20	1	0	0	315	16	11	12
Maryland [2]	0	0	0	0	0	0	0	1	167	54	51	71
Dist. of Columbia	0	0	0	0	0	0	0	0	97	12	8	16
Virginia	1.9	1	0	2	0	0	0	0	84	45	44	58
West Virginia	5	2	4	3	2.7	1	0	0	191	71	66	71
North Carolina [2]	0	0	0	1	0	0	1	0	131	90	65	65
South Carolina [2]	14	5	1	1	0	0	3	0	93	34	12	8
Georgia [2]	0	0	0	1	0	0	1	1	58	35	19	33
Florida [2]	0	0	0	0	0	0	0	0	18	6	0	5
E. SO. CEN.												
Kentucky	3	2	3	3	1.7	1	0	1	132	76	81	71
Tennessee [2]	0	0	5	3	0	0	0	1	153	87	60	60
Alabama [2]	1.8	1	0	2	1.8	1	1	1	106	60	11	20
Mississippi [2 3]	2.5	1	0	1	0	0	1	1	58	23	21	17
W. SO. CEN.												
Arkansas	22	9	1	1	0	0	1	1	50	20	39	19
Louisiana [2]	0	0	1	1	0	0	0	0	60	25	25	21
Oklahoma	2	1	0	2	2	1	2	1	34	17	40	27
Texas [2]	0.8	1	1	1	0.8	1	1	1	27	32	114	114
MOUNTAIN												
Montana	0	0	0	0	0	0	0	0	365	39	31	37
Idaho	0	0	0	0	61	6	0	0	133	13	13	13
Wyoming	0	0	0	0	0	0	0	0	196	9	7	12
Colorado	10	2	1	1	19	4	0	0	135	28	28	66
New Mexico	0	0	0	0	12	1	0	0	383	31	28	20
Arizona	0	0	3	0	37	3	0	0	61	5	8	10
Utah [2]	0	0	0	0	89	9	0	0	258	26	35	37
PACIFIC												
Washington	0	0	1	1	0	0	0	0	126	41	58	57
Oregon	5	1	0	0	5	1	0	1	109	22	47	59
California [2]	2.5	8	4	3	6	7	1	7	138	168	223	252
Total	2.0	50	40	80	3	81	23	50	152	3,829	4,234	4,806
50 weeks	1.5	1,901	2,740	5,226	6	7,215	1,680	7,197	123	155,043	179,436	214,311

See footnotes at end of table.

Cases of certain diseases reported by telegraph by State health officers for the week ended December 16, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median—Continued

Division and State	Smallpox				Typhoid and paratyphoid fever				Whooping cough		
	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases
NEW ENG.											
Maine	0	0	0	0	24	4	1	1	519	86	46
New Hampshire	0	0	0	0	0	0	0	1	41	4	0
Vermont	0	0	0	0	13	1	0	1	550	41	81
Massachusetts	0	0	0	0	1	1	1	2	206	175	226
Rhode Island	0	0	0	0	0	0	0	0	260	34	45
Connecticut	0	0	0	0	3	1	1	1	267	90	86
MID. ATL.											
New York	0	0	0	0	2	6	9	9	172	430	632
New Jersey	0	0	0	0	5	4	1	2	163	137	460
Pennsylvania	0	0	0	0	3	6	8	20	150	295	460
E. NO. CEN.											
Ohio	1	1	1	1	2	3	13	4	101	132	216
Indiana	6	4	25	3	3	3	3	3	37	25	12
Illinois	1	2	6	6	3	4	8	6	60	91	494
Michigan [2]	1	1	3	0	0	0	7	7	170	161	272
Wisconsin	5	3	10	10	0	0	1	0	327	186	376
W. NO. CEN.											
Minnesota	12	6	38	8	0	0	3	0	130	67	12
Iowa	12	6	22	11	0	0	14	1	34	17	10
Missouri	1	1	7	2	10	8	3	3	33	26	9
North Dakota	7	1	5	5	0	0	2	0	66	9	4
South Dakota	98	13	2	6	0	0	1	1	0	0	0
Nebraska	4	1	4	4	4	1	0	0	11	3	2
Kansas	0	0	1	2	0	0	0	2	31	11	24
SO. ATL.											
Delaware	0	0	0	0	0	0	0	0	118	6	0
Maryland [2]	0	0	0	0	6	2	6	6	219	71	33
District of Columbia	0	0	0	0	8	1	1	1	154	19	23
Virginia	0	0	0	0	9	5	0	5	28	15	62
West Virginia	0	0	0	0	5	2	1	4	32	12	24
North Carolina [2]	1	1	0	0	3	2	2	4	89	61	269
South Carolina [2]	0	0	0	0	3	1	1	1	44	16	32
Georgia [2]	0	0	0	0	10	6	11	9	15	9	14
Florida [2]	0	0	0	0	6	2	1	3	12	4	0
E. SO. CEN.											
Kentucky	0	0	1	0	0	0	3	9	122	70	20
Tennessee [2]	0	0	1	1	0	0	1	6	34	19	54
Alabama [2]	0	0	0	0	4	2	0	2	37	21	69
Mississippi [2 3]	0	0	0	0	8	3	7	2	------	------	------
W. SO. CEN.											
Arkansas	2	1	2	1	15	6	4	5	27	11	10
Louisiana [2]	0	0	1	0	17	7	13	12	0	0	9
Oklahoma	10	5	8	1	14	7	2	7	0	0	4
Texas [2]	1	1	5	1	11	13	26	24	45	54	90
MOUNTAIN											
Montana	19	2	6	15	9	1	2	2	56	6	15
Idaho	0	0	5	2	10	1	0	0	0	0	0
Wyoming	0	0	1	2	0	0	0	0	175	8	2
Colorado	72	15	5	4	0	0	3	1	58	12	44
New Mexico	0	0	1	0	74	6	1	5	346	28	15
Arizona	0	0	1	0	0	0	0	0	12	1	5
Utah [2]	0	0	0	0	20	2	0	0	646	65	11

See footnotes at end of table.

Cases of certain diseases reported by telegraph by State health officers for the week ended December 16, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median—Continued

Division and State	Smallpox				Typhoid and paratyphoid fever				Whooping cough		
	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases	1934–38, median	Dec. 16, 1939, rate	Dec. 16, 1939, cases	Dec. 17, 1938, cases
PACIFIC											
Washington	0	0	2	12	3	1	0	1	65	21	15
Oregon	0	0	7	7	5	1	1	2	164	33	11
California [2]	2	2	4	4	11	13	1	8	112	137	104
Total	3	66	174	174	5	125	163	216	110	2,719	4,402
50 weeks	7	9,346	14,059	7,134	10	12,541	14,021	14,827	136	168,386	203,913

[1] New York City only.
[2] Period ended earlier than Saturday.
[3] Typhus fever, week ended Dec. 16, 1939, 52 cases as follows: North Carolina, 5; South Carolina, 2; Georgia, 22; Florida, 2; Tennessee, 4; Alabama, 9; Mississippi, 3; Louisiana, 2; Texas, 1; California, 2.

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Diphtheria	Influenza	Malaria	Measles	Meningitis, meningococcus	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid and paratyphoid fever
November 1939										
Alabama	161	497	609	20	6	15	6	192	1	14
Arkansas	110	226	251	19	3	62	8	86	4	43
California	170	99	18	779	5	7	110	849	8	93
Idaho	2	1	-------	46	4	-------	16	46	2	8
Kentucky	90	31	3	15	6	2	44	377	0	30
Maryland	42	21	-------	16	-------	1	4	181	0	18
Michigan	45	9	7	676	3	-------	20	1,088	32	15
Minnesota	14	11	-------	278	1	-------	33	489	50	3
New Jersey	88	46	1	42	6	-------	15	446	0	10
Pennsylvania	172	-------	4	151	11	1	58	1,246	0	56
South Dakota	13	8	-------	19	2	-------	7	133	7	-------
Vermont	0	-------	-------	192	0	-------	1	6	0	2

Summary of monthly reports from States—Continued

November 1939

	Cases
Actinomycosis:	
California	1
Michigan	1
Anthrax:	
California	1
New Jersey	1
Pennsylvania	4
Botulism:	
California	4
Chickenpox:	
Alabama	97
Arkansas	84
California	1,575
Idaho	92
Kentucky	408
Maryland	332
Michigan	1,786
Minnesota	819
New Jersey	1,081
Pennsylvania	2,959
South Dakota	101
Vermont	240
Dengue:	
Alabama	1
Arkansas	2
Diarrhea:	
Maryland	14
Dysentery:	
Alabama (amoebic)	1
Arkansas (amoebic)	2
Arkansas (bacillary)	9
California (amoebic)	26
California (bacillary)	335
Kentucky (amoebic)	1
Kentucky (bacillary)	5
Maryland (bacillary)	11
Maryland (unspecified)	1
Michigan (bacillary)	12
Minnesota (amoebic)	2
New Jersey (amoebic)	1
Pennsylvania (amoebic)	1
Pennsylvania (bacillary)	7
Encephalitis, epidemic or lethargic:	
Alabama	1
California	7
Kentucky	1
Maryland	1
New Jersey	2
Pennsylvania	1
Food poisoning:	
California	53
German measles:	
Alabama	2
Arkansas	1

November 1939—Continued

	Cases
German measles—Con.	
California	74
Idaho	4
Maryland	8
Michigan	32
New Jersey	36
Pennsylvania	36
Vermont	8
Granuloma, coccidioidal:	
California	5
Hookworm disease:	
Arkansas	3
California	1
Impetigo contagiosa:	
Maryland	25
Jaundice, epidemic:	
California	39
Leprosy:	
California	1
Mumps:	
Alabama	13
Arkansas	65
California	967
Idaho	33
Kentucky	31
Maryland	20
New Jersey	593
Pennsylvania	586
South Dakota	38
Vermont	44
Ophthalmia neonatorum:	
New Jersey	14
Pennsylvania	2
Puerperal septicemia:	
Arkansas	2
Rabies in animals:	
Alabama	8
Arkansas	25
California	16
Michigan	3
Minnesota	2
New Jersey	29
Rabies in man:	
Michigan	2
Relapsing fever:	
California	2
Septic sore throat:	
Arkansas	35
California	9
Idaho	1
Kentucky	61
Maryland	18
Michigan	43
Minnesota	289
New Jersey	10
South Dakota	2

November 1939—Continued

	Cases
Tetanus:	
Alabama	8
Arkansas	1
California	5
Maryland	1
Michigan	2
Trachoma:	
Arkansas	17
California	30
Maryland	1
New Jersey	1
Trichinosis:	
Arkansas	1
California	3
Michigan	1
Tularaemia:	
Arkansas	2
Kentucky	21
Maryland	2
Michigan	2
Minnesota	5
Pennsylvania	3
South Dakota	1
Typhus fever:	
Alabama	44
California	11
Maryland	1
New Jersey	1
Pennsylvania	1
Undulant fever:	
Alabama	3
Arkansas	1
California	27
Kentucky	2
Maryland	7
Michigan	13
Minnesota	12
New Jersey	2
Pennsylvania	20
South Dakota	1
Vermont	1
Vincent's infection:	
Maryland	11
Michigan	20
Vermont	3
Whooping cough:	
Alabama	90
Arkansas	46
California	551
Idaho	3
Kentucky	331
Maryland	230
Michigan	528
Minnesota	249
New Jersey	550
Pennsylvania	1,482
South Dakota	20
Vermont	295

MENINGO-ENCEPHALITIS IN ANACONDA, MONTANA

Thirty-nine cases of meningo-encephalitis have been reported as occurring in and around Anaconda, Mont., (population 13,000) with onsets between October 13 and December 4, 1939. Two deaths were reported, but in general the affection was mild and transient, similar to the Windber meningo-encephalitis noted in the Public Health Reports of August 16, 1935 (vol. 50, p. 1120). Neither outbreak resembled the St. Louis outbreak of encephalitis in age distribution, cerebral symptoms, or severity. Serum from 18 patients in Windber,

Pa., taken 32 to 116 days after onset and nearly as long after recovery from the outbreak, did not neutralize the virus of lymphocytic choriomeningitis. As at Windber, there has been no apparent association of the cases with water or with insects.

CASES OF VENEREAL DISEASES REPORTED FOR OCTOBER 1939

These reports are published monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The figures are taken from reports received from State and city health officers. They are preliminary and are therefore subject to correction. It is hoped that the publication of these reports will stimulate more complete reporting of these diseases.

Reports from States

	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Alabama	1,214	4.15	320	1.09
Arizona	188	4.50	104	2.49
Arkansas	623	3.00	234	1.13
California	1,613	2.58	1,344	2.15
Colorado	93	.86	80	.74
Connecticut	178	1.02	100	.57
Delaware	185	7.03	51	1.94
District of Columbia	440	6.92	327	5.14
Florida	1,973	11.61	125	.74
Georgia	2,031	6.52	30	.10
Idaho	66	1.32	21	.42
Illinois	2,356	2.98	1,497	1.89
Indiana	536	1.53	97	.28
Iowa	318	1.24	210	.82
Kansas	253	1.36	105	.56
Kentucky	689	2.33	319	1.08
Louisiana	493	2.30	64	.30
Maine	29	.34	52	.60
Maryland	1,026	6.09	325	1.93
Massachusetts	464	1.05	474	1.07
Michigan	910	1.86	537	1.10
Minnesota	231	.86	210	.79
Mississippi	2,195	10.76	2,511	12.31
Missouri	548	1.36	233	.58
Montana	33	.60	13	.24
Nebraska	68	.50	52	.38
Nevada	23	2.25	17	1.67
New Hampshire	18	.35	10	.20
New Jersey	1,024	2.35	329	.75
New Mexico	139	3.29	51	1.21
New York	3,733	2.87	1,677	1.29
North Carolina	2,325	6.59	429	1.22
North Dakota	28	.39	42	.59
Ohio	1,023	1.51	465	.69
Oklahoma	906	3.53	311	1.21
Oregon	176	1.70	140	1.35
Pennsylvania	1,424	1.39	117	.11
Rhode Island	122	1.79	56	.82
South Carolina	1,203	6.36	276	1.46
South Dakota	55	.80	40	.58
Tennessee	938	3.21	393	1.34
Texas	3,742	6.00	770	1.24
Utah	104	1.99	68	1.30
Vermont	11	.28	16	.41
Virginia	1,779	6.49	449	1.64
Washington	244	1.46	340	2.03
West Virginia	209	1.10	106	.56
Wisconsin	62	.21	139	.47
Wyoming	32	1.35	19	.80
Hawaii	100	2.47	90	2.22
Total	38,173	2.92	15,785	1.21

NOTE.—Rates based on 1938 estimated population.

Reports from cities of 200,000 population or over [1]

	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Akron, Ohio	45	1.64	35	1.27
Atlanta, Ga	369	12.29	74	2.46
Baltimore, Md	641	7.67	202	2.42
Birmingham, Ala	335	11.38	47	1.60
Boston, Mass	180	2.26	169	2.12
Buffalo, N. Y	113	1.88	39	.65
Chicago, Ill	1,431	3.90	961	2.62
Cincinnati, Ohio	170	3.60	135	2.86
Cleveland, Ohio	247	2.61	117	1.24
Columbus, Ohio	94	3.00	29	.93
Denver, Colo	56	1.86	70	2.32
Detroit, Mich	445	2.45	297	1.64
Houston, Tex	380	10.60	119	3.32
Indianapolis, Ind	17	.44	35	.91
Jersey City, N. J	21	.65	10	.31
Kansas City, Mo	106	2.45	50	1.16
Louisville, Ky	203	5.99	98	2.89
Memphis, Tenn	268	9.18	79	2.71
Minneapolis, Minn	61	1.22	43	.86
Newark, N. J	300	6.60	77	1.70
New Orleans, La	84	1.72	54	1.10
New York, N. Y	2,482	3.31	1,138	1.52
Omaha, Nebr	18	.80	25	1.12
Pittsburg, Pa	332	4.71	27	.38
Portland, Oreg	126	3.93	82	2.56
Providence, R. I	64	2.47	32	1.23
Rochester, N. Y	43	1.26	20	.58
St. Louis, Mo	232	2.75	166	1.97
St. Paul, Minn	21	.73	31	1.08
San Francisco, Calif	167	2.42	218	3.16
Seattle, Wash	85	2.20	157	4.06
Syracuse, N. Y	105	4.66	14	.62
Washington, D. C	440	6.92	327	5.14

[1] No reports were received from Dallas, Dayton, Los Angeles, Milwaukee, Oakland, Philadelphia, San Antonio, or Toledo.

WEEKLY REPORTS FROM CITIES

City reports for week ended December 9, 1939

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Data for 90 cities:											
5-year average	218	206	50	967	651	1,323	15	346	27	1,102	--------
Current week [1]	139	184	43	662	431	922	5	324	24	862	--------
Maine:											
Portland	1	------	0	5	4	1	0	1	0	12	20
New Hampshire:											
Concord	0	------	0	0	0	0	0	0	0	0	10
Manchester	0	------	0	0	1	0	0	0	0	0	9
Nashua	0	------	0	1	0	0	0	0	0	0	7
Vermont:											
Barre	------	------	------	------	------	------	------	------	------	------	------
Burlington	0	------	0	0	0	0	0	0	0	6	10
Rutland	0	------	0	0	0	0	0	0	0	------	2
Massachusetts:											
Boston	1	------	0	33	15	29	0	6	1	21	203
Fall River	0	------	0	0	0	0	0	1	0	15	24
Springfield	0	------	0	1	1	0	0	0	0	9	31
Worcester	0	------	0	2	7	1	0	1	0	7	41

[1] Figures for Barre and Atlanta estimated; reports not received.

City reports for week ended December 9, 1939—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Rhode Island:											
Pawtucket	0	------	0	0	0	1	0	0	0	2	19
Providence	1	------	0	80	1	9	0	3	0	14	73
Connecticut:											
Bridgeport	0	------	0	1	0	2	0	3	0	0	39
Hartford	0	------	0	2	5	2	0	0	0	23	44
New Haven	0	1	0	0	2	1	0	1	1	3	44
New York:											
Buffalo	0	------	0	4	8	5	0	5	0	8	106
New York	35	12	4	19	75	100	0	77	4	119	1,459
Rochester	0	------	0	1	6	11	0	0	0	9	90
Syracuse	0	------	0	0	2	6	0	0	0	21	37
New Jersey:											
Camden	2	------	0	0	0	11	0	1	0	0	23
Newark	0	3	0	5	6	12	0	6	0	31	115
Trenton	0	------	0	1	1	3	0	2	0	2	30
Pennsylvania:											
Philadelphia	2	2	3	10	20	54	0	20	1	63	460
Pittsburgh	3	------	0	2	14	22	0	2	0	7	156
Reading	0	------	0	2	1	0	0	2	0	1	23
Scranton	0	------	--------	0	-------	4	0	-------	0	0	--------
Ohio:											
Cincinnati	6	------	0	4	3	19	0	2	0	10	144
Cleveland	3	22	1	0	12	30	0	11	0	38	215
Columbus	15	4	4	0	7	11	0	4	0	0	88
Toledo	0	------	0	17	6	11	0	4	0	4	55
Indiana:											
Anderson	0	------	0	0	0	3	0	0	0	16	9
Fort Wayne	2	------	0	0	2	6	0	1	0	2	26
Indianapolis	1	------	3	5	5	15	0	4	0	21	104
Muncie	0	------	0	0	2	4	0	0	0	0	11
South Bend	0	------	0	0	0	0	0	0	0	3	13
Terre Haute	0	------	1	0	1	0	0	0	0	0	22
Illinois:											
Alton	0	------	1	0	0	1	0	0	0	1	6
Chicago	6	3	4	7	31	159	0	26	1	46	707
Elgin	0	------	0	0	4	1	0	0	0	3	16
Moline	0	------	0	0	0	2	0	0	0	0	8
Springfield	0	------	0	2	3	1	0	0	1	4	21
Michigan:											
Detroit	8	7	0	9	18	66	0	15	1	32	263
Flint	0	------	0	1	5	5	0	0	0	13	31
Grand Rapids	0	------	0	6	0	27	0	1	0	6	44
Wisconsin:											
Kenosha	0	------	0	0	0	1	0	0	0	2	9
Madison	0	------	0	1	0	0	0	0	0	17	16
Milwaukee	0	1	1	0	3	25	4	1	0	19	99
Racine	0	------	0	1	1	0	0	0	0	5	12
Superior	0	------	0	2	0	2	0	0	0	0	5
Minnesota:											
Duluth	0	------	0	16	0	0	0	0	0	0	21
Minneapolis	0	------	0	0	3	32	0	1	0	4	107
St. Paul	0	------	0	0	4	18	0	1	0	36	60
Iowa:											
Cedar Rapids	0	------	--------	5	-------	0	1	-------	0	5	--------
Davenport	0	------	--------	1	-------	5	0	-------	0	1	--------
Des Moines	0	------	0	5	0	14	0	0	0	0	27
Sioux City	0	------	--------	0	-------	5	0	-------	0	0	--------
Waterloo	2	------	--------	0	-------	2	0	-------	0	0	--------
Missouri:											
Kansas City	0	------	0	2	2	24	0	5	0	2	75
St. Joseph	1	------	0	0	2	2	0	1	0	0	26
St. Louis	2	------	1	4	11	15	0	7	3	12	220
North Dakota:											
Fargo	0	------	0	0	0	2	0	0	0	1	7
Minot	0	------	0	0	0	2	0	0	0	1	5
South Dakota:											
Aberdeen	2	------	--------	0	-------	2	0	-------	0	0	--------
Sioux Falls	0	------	0	0	0	3	0	0	0	0	7
Nebraska:											
Omaha	1	------	0	0	4	3	0	1	0	2	53
Kansas:											
Lawrence	0	------	0	0	2	0	0	0	0	0	8
Topeka	0	------	0	0	1	6	0	0	1	1	8
Wichita	1	------	0	35	2	7	0	0	1	2	31

City reports for week ended December 9, 1939—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Delaware:											
Wilmington	1	------	0	0	0	4	0	1	1	6	33
Maryland:											
Baltimore	3	7	3	2	15	14	0	9	0	52	211
Cumberland	0	------	0	0	1	1	0	0	0	0	9
Frederick	0	------	0	0	0	1	0	0	0	0	3
Dist. of Col.:											
Washington	2	2	2	1	6	2	0	8	1	10	172
Virginia:											
Lynchburg	0	------	0	0	1	4	0	1	0	5	12
Norfolk	4	9	0	9	4	2	0	1	0	3	28
Richmond	0	------	1	1	4	6	0	3	0	2	54
Roanoke	0	------	0	0	0	2	0	0	0	0	14
West Virginia:											
Charleston	0	------	0	0	0	1	0	0	0	0	17
Huntington	1	------	--------	1	-------	1	0	-------	0	0	-------
Wheeling	1	------	0	1	1	2	0	1	0	0	26
North Carolina:											
Gastonia	0	------	--------	0	-------	0	0	-------	0	0	-------
Raleigh	0	------	0	1	4	1	0	2	0	0	16
Wilmington	5	------	0	0	2	0	0	1	0	0	16
Winston-Salem	5	1	2	0	2	4	0	1	0	0	22
South Carolina:											
Charleston	1	42	1	0	2	0	0	1	1	0	21
Florence	0	------	1	0	3	0	0	0	0	0	19
Greenville	0	------	0	0	0	0	0	0	0	0	3
Georgia:											
Atlanta	-------	------	--------	-------	-------	-------	-------	-------	-------	-------	-------
Brunswick	0	------	0	0	0	0	0	0	0	0	4
Savannah	1	22	0	1	2	1	0	1	0	0	32
Florida:											
Miami	0	4	2	0	2	0	0	0	1	0	37
Tampa	2	2	2	0	2	0	0	1	1	0	29
Kentucky:											
Ashland	0	------	0	0	2	0	0	0	0	0	5
Covington	0	------	0	0	1	6	0	4	0	0	17
Lexington	1	------	0	0	0	1	0	1	0	0	20
Tennessee:											
Knoxville	0	------	1	0	2	19	0	3	0	0	34
Memphis	0	------	1	1	9	8	0	3	1	22	82
Nashville	0	------	0	4	4	4	0	3	0	10	61
Alabama:											
Birmingham	1	31	2	0	9	8	0	7	0	0	88
Mobile	1	2	0	0	1	4	0	3	0	0	12
Montgomery	0	------	--------	0	-------	3	0	-------	0	0	-------
Arkansas:											
Fort Smith	0	------	--------	0	-------	1	0	-------	0	0	-------
Little Rock	1	------	0	0	1	0	0	2	0	0	-------
Louisiana:											
Lake Charles	1	------	0	0	0	0	0	0	0	1	5
New Orleans	1	4	4	0	10	6	0	12	2	25	151
Shreveport	0	------	0	0	5	0	0	3	0	0	50
Oklahoma:											
Oklahoma City	0	2	1	0	8	3	0	3	1	0	48
Tulsa	0	------	--------	2	-------	1	0	-------	0	1	-------
Texas:											
Dallas	4	1	1	0	1	4	0	4	0	1	56
Fort Worth	0	------	0	0	4	5	0	3	0	4	34
Galveston	0	------	0	0	3	0	0	1	0	0	15
Houston	1	------	0	0	5	6	0	8	2	0	91
San Antonio	1	------	0	17	3	1	0	2	0	0	69
Montana:											
Billings	0	------	0	0	0	0	0	0	0	0	10
Great Falls	0	------	0	0	0	2	0	0	0	2	7
Helena	0	------	0	0	0	0	0	0	0	0	5
Missoula	0	------	0	0	0	3	0	0	0	1	3
Idaho:											
Boise	0	------	0	0	2	0	0	0	0	0	5
Colorado:											
Colorado Springs	0	------	0	0	0	3	0	1	0	0	12
Denver	8	------	0	2	7	8	0	2	0	6	84
Pueblo	0	------	0	0	1	3	0	0	0	0	5
New Mexico:											
Albuquerque	1	------	0	0	1	1	0	4	1	1	16
Utah:											
Salt Lake City	0	------	0	20	2	8	1	0	0	64	35

City reports for week ended December 9, 1939—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Washington:											
Seattle	0	------	0	15	6	4	0	1	0	1	96
Spokane	0	------	0	3	3	10	0	0	0	1	48
Tacoma	0	------	0	309	1	0	0	1	0	0	32
Oregon:											
Portland	0	------	0	2	4	9	0	3	0	5	76
Salem	0	------	--------	1	-------	2	0	-------	0	0	--------
California:											
Los Angeles	7	7	1	17	11	29	0	15	0	10	339
Sacramento	0	------	0	1	4	4	0	1	0	0	26
San Francisco	0	2	0	5	7	13	0	7	0	18	182

State and city	Meningitis, meningococcus		Poliomyelitis cases	State and city	Meningitis, meningococcus		Poliomyelitis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:				Iowa:			
Boston	0	0	1	Des Moines	0	0	1
Worcester	0	0	1	Kansas:			
Rhode Island:				Wichita	1	1	1
Providence	1	0	0	Maryland:			
New York:				Baltimore	2	0	1
New York	0	2	1	Texas:			
Pennsylvania:				San Antonio	1	0	0
Philadelphia	1	0	1	Colorado:			
Indiana:				Denver	0	0	1
Indianapolis	0	0	1	Oregon:			
Illinois:				Portland	0	0	1
Chicago	0	0	1	California:			
Springfield	1	0	0	Los Angeles	0	0	2
Michigan:				San Francisco	0	0	1
Detroit	0	0	2				

Dengue fever.—Cases: Charleston, S. C., 1.
Encephalitis, epidemic or lethargic.—Cases: New York, 2; Newark, 1; Wichita, 1; Denver, 1.
Pellagra.—Cases: Winston-Salem, 1; Savannah, 1; San Antonio, 1.
Typhus fever.—Cases: New York, 1; Baltimore, 1; Charleston, S. C., 1; Savannah, 6; Mobile, 2; Montgomery, 1; New Orleans, 3; Fort Worth, 1; Houston, 1.—Deaths: Baltimore, 1.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended November 25, 1939.—During the week ended November 25, 1939, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis			2	1						3
Chickenpox		34	3	249	380	49	22	20	133	890
Diphtheria		1	3	45	8	10	16	1		84
Dysentery									2	2
Influenza		26			8	1			13	48
Lethargic encephalitis					6					6
Measles				96	270	39	1		35	441
Mumps				35	94	7	2		16	154
Pneumonia		11			16	1	1		2	31
Poliomyelitis					3		1			4
Scarlet fever	4	21	33	169	170	22	2	21	12	454
Trachoma						1				1
Tuberculosis			20	72	39	3		1		135
Typhoid and paratyphoid fever				8	7	4	1			20
Whooping cough		60	22	135	62	52	22	32	10	395

CUBA

Habana—Communicable diseases—4 weeks ended November 18, 1939.—During the 4 weeks ended November 18, 1939, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria	9		Scarlet fever	1	
Malaria	22	1	Tuberculosis	1	1
Poliomyelitis	3		Typhoid fever	17	5

JAMAICA

Communicable diseases—4 weeks ended November 25, 1939.—During the 4 weeks ended November 25, 1939, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Chickenpox		5	Tuberculosis	31	76
Diphtheria	2	2	Typhoid fever	6	61
Puerperal fever	1	3			

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LATVIA

Notifiable diseases—July–September 1939.—During the months of July, August, and September 1939, cases of certain notifiable diseases were reported in Latvia as follows:

Disease	July	August	September	Disease	July	August	September
Botulism	5	----	1	Mumps	133	42	27
Cerebrospinal meningitis	8	10	3	Paratyphoid fever	10	24	67
Diphtheria	87	87	107	Poliomyelitis	2	8	4
Dysentery	----	1	1	Puerperal septicemia	3	5	2
Erysipelas	32	35	29	Scarlet fever	175	215	285
Influenza	31	28	36	Tetanus	1	4	5
Lead poisoning	2	4	3	Trachoma	30	26	38
Leprosy	1	----	2	Tuberculosis	306	250	206
Lethargic encephalitis	1	----	----	Typhoid fever	56	80	145
Malaria	----	1	----	Undulant fever	----	1	----
Measles	415	98	21	Whooping cough	65	33	28

SWITZERLAND

Notifiable diseases—September 1939.—During the month of September 1939, cases of certain notifiable diseases were reported in Switzerland as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	1	Paratyphoid fever	12
Chickenpox	53	Poliomyelitis	177
Diphtheria	59	Scarlet fever	334
German measles	4	Tuberculosis	219
Influenza	6	Typhoid fever	8
Malaria	8	Undulant fever	7
Measles	66	Whooping cough	190
Mumps	18		

YUGOSLAVIA

Communicable diseases—4 weeks ended November 5, 1939.—During the 4 weeks ended November 5, 1939, certain communicable diseases were reported in Yugoslavia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	39	4	Poliomyelitis	9	1
Cerebrospinal meningitis	21	6	Scarlet fever	510	6
Diphtheria and croup	1,175	109	Sepsis	3	----
Dysentery	106	5	Tetanus	46	17
Erysipelas	241	1	Typhoid fever	432	38
Favus	9	----	Typhus fever	8	----
Paratyphoid fever	21	1	Weil's disease	1	----

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

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

CHOLERA

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

Place		Apr. 30–May 27, 1939	May 28–June 24, 1939	June 25–July 29, 1939	July 30–Aug. 26, 1939	Week ended—											
						September 1939					October 1939				November 1939		
						2	9	16	23	30	7	14	21	28	4	11	18	25
Afghanistan	C	------	------	------	336	------	------	19	------	------	17	------	------	------	------	------	------	------
	D	------	------	82	144	------	[1] 58	------	------	------	------	------	------	[1] 244	------	------	------	------
Kandahar Province	C	------	------	------	101	[1] 107	------	------	------	------	------	------	------	------	------	------	------	------
Greshk	C	------	------	5	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Tchakhansour	C	------	------	P	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Ceylon: Batticaloa	C	------	------	1	------	------	------	------	------	2	2	2	------	------	------	------	------	------
China:																		
Canton	C	9	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	D	6	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Fatshan	C	P	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
	D	154	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Hainan Island	C	P	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Hankow	C	------	------	P	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Honan	C	P	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Hong Kong	C	25	113	214	189	17	5	12	18	27	21	11	11	4	10	1	1	------
	D	19	80	136	125	------	7	------	8	------	15	------	------	------	4	2	------	------
Macao	C	20	59	403	54	11	------	17	21	26	25	17	31	16	14	3	------	------
	D	12	33	183	22	9	------	------	------	------	------	------	------	------	7	2	------	------
Shanghai	C	------	1	2	3	36	64	93	71	60	22	22	29	19	4	1	1	------
Tientsin	C	------	------	------	1	------	------	------	------	------	------	------	------	------	------	[2] 33	------	------
Tsinan	C	------	------	------	------	------	------	------	------	3	------	------	------	------	------	------	------	------
Tsingtao	C	------	------	------	------	------	------	------	------	P	------	[2] 122	------	------	------	------	------	------
Whampoa	C	P	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
India	C	7,117	6,638	18,349	19,482	4,789	4,251	3,799	3,777	3,497	2,878	------	------	------	------	------	------	------
	D	3,337	2,877	8,283	9,618	2,464	2,281	1,905	2,008	1,965	1,507	------	------	------	------	------	------	------
Akyab	C	1	1	[2] 1	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Allahabad	C	1	[2] 1	24	39	10	2	6	2	1	1	1	------	------	------	------	------	------
Assam	C	405	321	76	18	6	------	5	5	15	2	------	50	6	12	3	34	25
	D	156	117	22	8	3	------	5	1	8	1	------	49	4	2	2	15	------

[1] For 2 weeks.
[2] For 6 weeks.
[3] Imported.

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

CHOLERA—Continued

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

Place		Apr. 30–May 27, 1939	May 28–June 24, 1939	June 25–July 29, 1939	July 30–Aug. 26, 1939	Week ended—											
						September 1939					October 1939				November 1939		
						2	9	16	23	30	7	14	21	28	4	11	18	25
India—Continued.																	
Bassein	C	6	5														
Bengal Presidency	C	3,193	2,040	3,732	2,086	454	420	377	427	462	408	186	397	595		1,226	1,097	781
	D	1,504	874	1,578	1,248	272	227	222	267	266	249	103	235	359		670	632	
Bihar Province	C	584	263															
	D	264	107															
Bombay Presidency	C	196	98	1,139	1,115	136	107	85	46	26								
	D	83	37	429	373	70	40	41	12	15								
Burma	C				43	16	3	5	15		2	6	6	16	15	10	9	15
	D				41		3	5	15		2	6	9	8	9	10	5	13
Calcutta	C	821	593	636	93	13	11	14	12	15	19	12	11	29	28	6	11	24
Cawnpore	C	4	10	5	94	18	9	11	7	5	12	3	2	1				
	D	2	4	4	28													
Central Provinces and Berar	C	194	34	79	600		180	488	382	306	351	205	208	109	151	164	52	62
Chittagong	C	9	3	13	7	1	1	1	5		2		2		1		2	
Delhi	C			1	2					1			67	67	14		2	
	D				2										1	1	2	
Howrah	C	420	257	311	123	8	6	1	4									
Madras Presidency	C	60	66	200	107	6	10	6	3	10				1				
	D	24	13	70	36	3	4	3	1	3								
Madras	C		1															
Orissa Province	C	111	173	719	736	387	527	658	891	976	868	653	530	720	732	602	546	
Punjab	C				6	2												
Rangoon	C	9	4															
Sind State	C						6	6										
India (French): Pondichery Territory	C				1													
India (Portuguese)	C								3	9	3	1	1					
Indochina (French): Tonkin Province	C			1														
Iran:																		
Khorassan	C			371	30													
Zabol	C			34														
Iraq: Basra	C				1							1						
Japan: Osaka	C																	
Thailand: Bangkok	C	1								1	1							

On vessels:																			
S. S. *Erinpura* at Rangoon from Calcutta	C	1																	
S. S. *Amra* at Calcutta from Rangoon	C		1																
S. S. *Tin How* at Singapore from Hong Kong	C			1															
S. S. *Essi* at Hong Kong from Calcutta	C			1															

[3] Imported.
[4] Suspected.

PLAGUE[1]

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

Place		Apr. 30–May 27, 1939	May 28–June 24, 1939	June 25–July 29, 1939	July 30–Aug. 26, 1939	Week ended—												
						September 1939					October 1939				November 1939			
						2	9	16	23	30	7	14	21	28	4	11	18	25
Argentina (see also table below)	C			2														
	D			2														
Belgian Congo	C	18		1	1	5	2	2	2			[2]8		10		2		
British East Africa:																		
Nyasaland	C			2														
Uganda	C	17	25	61	25	7	4	9	10	15	5	8	3					
	D	17	25	55	23	3	4	8	8	13	5	8	1					
China: Manchuria.[3] (See also table below.)																		
Dutch East Indies:																		
Java—																		
Batavia	C				[4]1													
Batavia Residency.[5]																		
Java and Madura	C	94	37	130	91	17	29	28										
	D	94	37	130	91	17	29	27										
Ecuador. (See table below.)																		
Egypt: Asyut Province	C	10	2															
Hawaii Territory: Plague-infected rats:																		
Hawaii Island—Hamakua District:																		
Hamakua Mill Sector		1		1			2			1	1		4		1	3		
Kapulena			1															
Paauhau Sector [6]				3		1		1					1	1			1	
Paauilo			1															

[1] Including plague in the United States and its possessions.
[2] For 2 weeks.
[3] A report dated Nov. 3, 1939, states that during the year to date 477 cases of plague with 332 deaths occurred in Manchuria, China.
[4] Imported.
[5] A report dated July 10, 1939, states that up to July 6, 1939, 84 deaths from pneumonic plague occurred in Batavia Residency, Java, Dutch East Indies.
[6] During the week ended December 2, 1939, 1 plague-infected rat was reported in Paauhau Sector, Hamakua District, Island of Hawaii, T. H.

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

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

Place		Apr. 30–May 27, 1939	May 28–June 24, 1939	June 25–July 29, 1939	July 30–Aug. 26, 1939	Week ended— September 1939 2	9	16	23	30	October 1939 7	14	21	28	November 1939 4	11	18	25
India	C	770	72	291	1,738	548	519	1,388	877	423	762							
	D	524	35	152	1,111	340	251	924	425	226	383							
Bassein	C		1	2	1		2	2					1					
Plague-infected rats					2			2										
Bihar Province	C	12																
	D	9																
Bombay Presidency	C	11	6	24	127	32	73	190	124	143								
	D	8	2	11	65	11	26	107	61	81								
Burma	C			44	40	32	17	9	24	20	10	22	29	17	16	15	27	37
	D			36	41		21	9	17	19	11	14	30	12	14	10	25	24
Calicut	C	1								2	1							
Central Provinces and Berar	C	198	6	7	137	47	76	140	130	135	148	137	165	112	118	145	154	121
Cochin	C																1	
Coorg Province	C	1	1	2														
Madras Presidency	C	14	14	12	18	7	13	10	8	15								
	D	8	6	2	6	2	5	5	4	3								
Rangoon	C		1		1							1					[4]1	
	D		1		1												1	
Indochina: Cambodia	C		1															
Madagascar. (See table below.)																		
Peru. (See table below.)																		
Thailand: Bichitr Province	C	4																
	D	1																
Union of South Africa	C				6		4											
Cape Province	C	1																
United States.[7]																		
Venezuela.[8]																		

Place		May 1939	June 1939	July 1939	August 1939	September 1939	October 1939
Argentina (see also table above):							
Jujuy Province	C					1	
Mendoza Province	C			1			
Salta Province	C						1
San Luis Province	C			1			
Tucuman Province	C						1
China: Fukien Province	C			[6] 467	285		
Ecuador: Guayquil and vicinity—							
Plague-infected rats				41			
Madagascar (central region)	C	16	12	21	25	34	
	D	14	12	19	22	32	
Peru	C	11	3	7	2	11	
Cajamarca Department	C					4	
Lambayeque Department	C	1					
Libertad Department	C	3	1		2	1	
Lima Department	C		1	7		1	
Piura Department	C	7	1			5	

[4] Imported.

[7] Last reported human case, Aug. 30, 1937, Fresno County, Calif. Intensive plague work is being conducted in the Western States and detailed reports of plague infection found in animals and insect hosts are published currently in the PUBLIC HEALTH REPORTS. The following summarizes recent reports for 1939: *California*—Insects, June and Sept. 30; *Idaho*—Insects. June 14; *Montana*—Ground squirrels, July 15; insects, July 15 and 17; *Oregon*—Ground squirrels, June; insects, May and June; *Washington*—Rabbit, May; insects. May; *Wyoming*—Insects, July 3.

[8] A report dated Dec. 7, 1939, states that 3 cases of plague were reported in Aragua State, Venezuela.

[9] Includes 92 cases of pneumonic plague.

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX

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

Place		Apr. 30–May 27, 1939	May 28–June 24, 1939	June 25–July 29, 1939	July 30–Aug. 26, 1939	Week ended— September 1939 2	9	16	23	30	October 1939 7	14	21	28	November 1939 4	11	18	25
Algeria: Oran Department	C	2	1	2														
Angola. (See table below.)																		
Belgian Congo. (See table below.)																		
Bolivia. (See table below.)																		
Brazil: **Porto Alegre**	C	7	6															
British East Africa:																		
Nairobi	C		26															
Nyasaland	C			1	17	1	4		3		14							
Tanganyika	C	9	48	19	31		33			18								
Canada:																		
Alberta	C		22															
Manitoba	C	2	1	1														
Saskatchewan	C		1	1														
China (see also table below):																		
Dairen	C	5	2	2														
Foochow	C	12	8	13	14				5	7						1		
Hong Kong	C	11	1	2														
	D	11	1	1												1		
Shanghai	C	18	8	3	1								2	1				
Tientsin	C	1	1															
Chosen (Korea). (See table below.)																		
Colombia (see also table below): **Cartagena**	C			1							3	3	5				12	1
Dahomey. (See table below.)																		
Dominican Republic	C				1													
Ecuador: **Guayaquil**	C		3	1														
	D		1															
Eritrea: Massaua	C		1	1														
French Equatorial Africa: Brazzaville	C				31													
French Guinea	C			40														
Gold Coast	C			45		[1] 95												
Accra	C			1														
Greece. (See table below.)																		
India	C	17,603	11,499	8,220	4,249	805	844	655	621	689	520							
	D	4,051	3,009	2,156	1,056	187	198	184	161	153	112							
Allahabad	C	1		1														
Assam	C	252	127	72	105	15	18	22	29	11	7	23	58	26	17	27	36	

Bengal Presidency	C	1,626	781	676	220	93	62	49	54	49	37	3	15	13	------	29	33	------
	D	605	295	240	77	29	13	22	14	11	15	------	3	7	------	12	9	------
Bihar Province	C	2,360	672	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Bombay Presidency	C	4,061	2,809	1,924	1,127	232	198	150	92	154	------	------	------	------	------	------	------	------
	D	598	415	423	229	44	41	32	13	23	------	------	------	------	------	------	------	------
Bombay	C	41	40	50	28	3	------	2	1	1	2	2	1	1	------	2	------	------
	D	17	21	32	17	------	------	------	------	------	------	------	------	------	------	2	------	1
Burma	C	------	------	8	18	7	3	------	2	14	12	4	6	4	3	2	6	13
	D	------	------	3	8	------	2	------	1	3	2	4	1	1	1	2	1	3
Calcutta	C	298	127	112	22	5	1	3	3	1	1	1	1	3	3	3	4	2
	D	235	95	77	17	3	------	1	------	------	2	------	------	------	------	------	2	------
Calicut	C	------	------	------	------	------	------	------	1	1	1	3	1	1	------	------	------	------
Cawnpore	C	16	3	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Central Provinces and Berar	C	904	757	367	126	23	3	37	1	10	9	5	12	34	18	15	16	44
Cochin	C	------	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Delhi	C	203	99	34	14	1	------	1	3	------	------	1	2	1	------	1	------	3
Howrah	C	103	87	73	14	18	11	16	5	6	3	------	------	------	------	------	------	------
Jodhpur	D	38	7	14	2	------	1	1	------	------	------	------	------	------	1	1	------	4
Karachi	C	8	1	6	7	1	3	------	1	------	1	1	------	------	1	------	------	------
Madras Presidency	C	545	465	705	638	121	158	115	121	------	------	------	------	------	------	------	------	------
	D	155	102	128	135	15	19	21	34	------	------	------	------	------	------	------	------	------
Madras	C	32	12	13	11	1	3	2	------	1	------	5	1	4	1	------	1	1
Negapatam	C	------	------	------	1	------	1	------	------	------	------	------	------	------	------	------	------	------
Northwest Frontier Province	C	86	165	95	21	9	7	8	9	29	9	4	21	59	52	15	40	103
Orissa Province	C	722	376	391	510	98	167	118	106	138	130	81	107	109	98	125	98	173
Punjab	C	214	214	80	1	5	6	9	5	------	1	------	------	------	------	------	------	3
Rangoon	C	14	10	4	16	7	3	------	2	14	10	1	6	3	1	1	1	5
Sind State	C	209	131	173	84	14	3	------	27	9	18	7	13	1	1	1	------	1
India (French):																		
Chandernagor Territory	C	3	------	2	------	1	------	------	------	1	------	------	------	------	------	------	------	------
Pondichery Territory	C	------	------	10	------	1	------	2	3	3	------	1	------	------	------	------	------	------
	D	------	------	5	------	1	------	1	1	1	------	1	------	------	------	------	------	------
Indochina (French) (see also table below):																		
Tonkin Province	C	135	54	3	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Hanoi	C	22	3	3	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Saigon-Cholon	C	------	------	------	------	------	------	------	------	------	1	1	------	------	------	------	------	------
Iran	C	3	3	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Teheran	D	------	------	6	1	------	------	------	9	4	6	------	1	------	------	------	------	------
Iraq	C	------	6	------	------	------	------	------	------	------	------	------	------	1	------	------	------	19
Baghdad	C	[1] 1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Japan:																		
Nagoya	C	------	------	1	1	------	------	------	------	------	------	------	------	------	------	------	------	------
Osaka	C	5	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Mexico (see also table below):																		
Mexico, D. F	C	3	5	3	1	------	2	------	------	------	------	------	------	------	------	------	------	------
Monterrey	C	------	------	------	1	------	------	------	------	------	1	------	1	------	------	4	6	14
San Luis Potosi	D	1	4	1	------	------	------	------	------	1	------	------	------	------	------	------	------	------
Tampico	C	------	------	------	1	------	------	------	------	------	------	------	------	------	------	------	------	------
Morocco. (See table below.)																		
Mozambique	C	32	1	1	------	11	4	3	------	------	------	------	------	------	------	------	------	------

[1] For 5 weeks.
[2] Imported.

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

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

Place		Apr. 30–May 27, 1939	May 28–June 24, 1939	June 25–July 29, 1939	July 30–Aug. 26, 1939	Week ended—											
						September 1939					October 1939				November 1939		
						2	9	16	23	30	7	14	21	28	4	11	18	25
Nigeria	C	514	76	116	83	58	25	21	23	12	14	21	23					
Calabar	C	44		1	2	1		1	1	1								
Lagos	C	4			1				1									
Port Harcourt	C		[3]1			1												
Niger Territory. (See table below.)																		
Northern Rhodesia	C						1	6		1		1						
Portugal (see also table below):																		
Lisbon	C	33	53	32	39	12	8	14	17	8	4	6	2	3	2			
Oporto	C	8	10	12	1		1				1	1			2	1		
Portuguese East Africa	C								7									
Portuguese Guinea. (See table below.)																		
Senegal. (See table below.)																		
Sierra Leone	C	20			2		[3]4		[3]1									
Society Islands: Tahiti	C			12														
Southern Rhodesia	C	11	3			6			3									
Spain (see also table below):																		
Barcelona	C			5														
Malaga	D			5	1			3	1	2	2	1	2					
Seville	D											[3]1						
Valencia	C		1		12	1		7		2	5	2	1	3	6	1		
Sudan (Anglo-Egyptian)	C	12	15	23	106	9	5			4					35	1		53
Thailand	C		1	3	2		1											
Bangkok	C			1														
Nan Province	C			24							70							
Turkey. (See table below.)																		
Union of South Africa. (See table below.)																		
Venezuela. (See table below.)																		

On vessels:

S. S. *Liebenfels* at Rangoon from Moulmein—1 case—June 2, 1939
S. S. *City of Pittsburgh*, Manila, P. I.—1 case—June 28, 1939
S. S. *Atalaya* at New Orleans—1 case—July 25, 1939

On vessels—Continued.

S. S. *Saturnia* at Jamaica, N. Y., from Lisbon—1 case—Aug. 3, 1939
S. S. *Erinpura* at Rangoon from Madras—1 case—Aug. 7, 1939

Place		May 1939	June 1939	July 1939	August 1939	September 1939	October 1939
Angola	C			[4] 36	22		
Belgian Congo	C	169	199				
Bolivia:							
Cochabamba Department	C		9	6			
La Paz Department	C	4	1				
Oruro Department	C		4	14			
Potosi Department	C						
Santa Cruz Department	C	2		1			
China: Harbin	C	1	1				
Chosen (Korea)	C			7	1	7	
Colombia (see also table above)	C	437	375	137	161		
Dahomey	C			8			15
Ecuador: Guayaquil and vicinity	C		5				
Greece	C	11					
Indochina (French) (see also table above)	C	671	178	103	149	93	
	D	109	31	21	30	19	
Mexico (see also table above):							
Aguascalientes State	D		[3] 3		[5] 5		
Chiapas State	D				[5] 1		
Chihuahua State	D		[3] 5		[5] 1		
Coahuila State	D		[3] 2	7			
Durango State	D				[4] 4		
Guanajuato State	D		[3] 246		[6] 270		
Guerrero State	D		[3] 3		[6] 3		
Hidalgo State	D		[3] 13		[6] 9		
Jalisco State	D		[3] 4		[6] 3		
Mexico, D. F.	D		5		1		

Place		May 1939	June 1939	July 1939	August 1939	September 1939	October 1939
Mexico (see also table above)—Con.							
Mexico State	D		[3] 146		[6] 41		
Michoacan State	D		[3] 137		[6] 79		
Morelos State	D		[3] 9		[6] 1		
Nayarit State	D		[3] 2				
Nuevo Leon State	D		[3] 1		[6] 2		
Oaxaca State	D		[3] 1		[6] 1		
Puebla State	D		[3] 20		[6] 32		
Queretaro State	D		[3] 34		[6] 31		
San Luis Potosi State	D		[3] 22		[6] 19		
San Luis Potosi	C		8	9		6	
	D		5	1		1	
Sinaloa State	D		[3] 7		[6] 1		
Tlaxcala State	D				[6] 2		
Vera Cruz State	D				[6] 1		
Zacatecas State	D		[3] 27		[6] 16		
Morocco	C	6					1
Niger Territory	C		3				
Portugal (see also table above)	C			79	180	102	
	D			3	7	14	
Portuguese Guinea	C		7				
Senegal	C	55	25	24	2	3	4
Spain (see also table above)	C	49		31	59		
Turkey	C	34				1	
Union of South Africa: Transvaal	C		81	56	7		
Venezuela	D	7	6	2		19	
Caracas	C			1	22	11	7

[3] Imported.
[4] For 2 weeks.
[5] For June and July.
[6] For May and June.
[7] For July and August.

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER

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

Place		Apr. 30–May 27, 1939	May 28–June 24, 1939	June 25–July 29, 1939	Week ended— August 1939				September 1939					October 1939				November 1939			
					5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25
Algeria:																					
Algiers Department	C	26	74	45	7	4	12	7	6	35	1	20			8			1	3		
Algiers	C	22	14	6											2	1			2		
Constantine Department	C	188	198	111	11	10	2	3	3	3		1	21	7	3	1	14		6		
Bone	C	1		1										1							
Constantine	C	52	34	57	6									1	3			5	4		
Philippeville	C	9	6	1																	
Oran Department	C	28	39	8	4	5					1				1			2	2		
Southern Territories	C	62	21																		
Australia:																					
Brisbane	C		1	1							1										
Queensland	C	1		4																	
Bolivia. (See table below.)																					
Bulgaria. (See table below.)																					
Chile	C	49	190	338	90	67	53	33	23	36	18										
Antofagasta Province	C	5	5	7	1			1		2	1										
Concepcion Province	C			2			2		1		2										
Curico Province	C	1		1																	
Nuble Province	C			3	1	3	3				1										
Santiago Province	C	37	102	311	84	59	45	27	19	16	11										
Valdivia Province	C	1	5		1			3		7											
Valparaiso	C	1		5	1		1				3		1		1	1					
China (see also table below):																					
Dairen	C	2		2	3	2					1				1						
Hankow	C	1	1																		
Shanghai	C	2	12	49	9	9	6	11	10	16	9	11	5	5	4	3	6	3	14		
Tientsin	C	1																			
Chosen (Korea). (See table below.)																					
Egypt:																					
Alexandria	C	26	12	4		1		1					1			1					
Asyut Province	C	15	5	1	1				1	1											
Beheira Province	C	64	21	33	9	2	3	3		3					2						1
Beni Suef Province	C	1		1	1			1							1						

Cairo	C	9	5	1				2							1				1					
Dakahliya Province	C	196	141	77	4	8	3			1			2	1										
Faiyum Province	C									1														
Gharbiya Province	C	216	112	130	4	3	6	4	4	7					1									
Girga Province	C	31	26	7	2		2		2	3			1											
Giza Province	C	22	28																					
Kalyubiya Province	C	45	26		4	1				1			2											
Minufiya Province	C	141	65	58	6	3	5	2		1														
Port Said	C					3																		
Qena Province	C	21	6		1																			
Sharkiya Province	C	24	24	10	2										1									
Suez	C								1	1					1		1							
Provinces	C	828	461	330	38	21	18	10	8	22	6	2	6	1	5	4	2		1	1				
Eritrea: Hamasien	C		5																					
Guatemala. (See table below.)																								
Hawaii Territory: Honolulu	C	1	1	3		1		1			2	4	6	3	1	2			2					
Hungary	C			1								3				2	2							
India: Coorg Province	C		3											4										
Iran	C	18	13																					
Tabriz	C		10	4	1	1	10					2					2							
Iraq	C			5																				
Arbil Province	C	1	4		4																			
Baghdad	C	2	1	5	1			2	4		1													
Kirkuk Province	C	7																						
Irish Free State: Louth County—																								
Drogheda	C			5																				
Libya. (See table below.)																								
Lithuania. (See table below.)																								
Mexico (see also table below):																								
Guadalajara	D									1				1										
Mexico, D. F	C	13	21	26						7							1							
Monterrey	C	1	3	5			1			1	1		1											
Saltillo	C		1																					
San Luis Potosi	D	1													1				1		2			
Torreon	D	1		4											1									
Morocco	C	145	87	21	3									3		2								
Casablanca	C		1	1																				
Nigeria: Kano Province	C			1																				
Palestine·																								
Haifa	C	4	3	3			1	2		4	3	1		4	4	4	4	4		5				
Jaffa	C	2	3	7	1			5	4		6	4		5	8		8	3		3	6			
Panama Canal Zone. (See table below.)																								
Peru. (See table below.)																								
Poland	C	437	327	186	24	18																		
	D	12	13	6	1	1																		
Portugal. (See table below.)																								
Rumania. (See table below.)																								
Spain. (See table below.)																								
Straits Settlements: Singapore	C										1													
Trans-Jordan	C	9	1	1																				1

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER—Continued

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

Place		Apr. 30–May 27, 1939	May 28–June 24, 1939	June 25–July 29, 1939	Week ended—															
					August 1939				September 1939					October 1939				November 1939			
					5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25
Tunisia:																					
Tunis	C	39	18	30	1	2	3	1	----	----	----	----	----	----	1	----	----	1	----	----	----
Provinces	C	1,006	967	998	109	52	44	29	----	----	----	[1] 31	----	10	24	23	----	----	----	----	----
Turkey. (See table below.)																					
Union of South Africa. (See table below.)																					
Venezuela. (See table below.)																					
Yugoslavia	C	62	35	26	1	4	----	----	----	2	3	2	3	1	1	2	2	----	----	----	----
On vessel: S. S. *Normandie* at Plymouth	C	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Place		May 1939	June 1939	July 1939	August 1939	September 1939	October 1939
Bolivia:							
De Beni Department	C			2			
La Paz Department	C	11	7	4			
Oruro Department	C	1		3			
Potosi Department	C	2	4	2			
Santa Cruz Department	C	2		1			
Bulgaria	C		8		16	4	
China: Manchuria—Harbin	C	16	14				
Chosen (Korea)	C	290	156	22	32	15	
Guatemala	C	4	8	9	21	46	3
Libya	C			1	26	7	
Lithuania	C	6		10	1	1	
Mexico (see also table above):							
Aguascalientes State	D		[2] 4		[2] 4		
Chihuahua State	D		[2] 1				
Coahuila State	D		[2] 2		[2] 5		
Durango State	D		[2] 2		[2] 4		
Guanajuato State	D		[2] 7		[2] 12		
Guerrero State	D		[2] 2				
Hidalgo State	D		[2] 15		[2] 19		
Jalisco State	D		[2] 3		[2] 7		
Mexico, D. F	C		27	31		25	
	D		11	5	[2] 9	3	
Mexico State	D		21		[2] 17		
Michoacan State	D		[2] 10		[2] 5		

Place		May 1939	June 1939	July 1939	August 1939	September 1939	October 1939
Mexico—Continued.							
Nuevo Leon State	D				[2] 1		
Oaxaca State	D		[2] 22		[2] 16		
Puebla State	D		[2] 24		[2] 24		
Queretaro State	D		[2] 4	1	[2] 1		
San Luis Potosi State	D		[2] 2		[2] 2		
Sonora State	D		[2] 2		[2] 1		
Tabasco State	D		[2] 1				
Tlaxcala State	D		[2] 2		[2] 3		
Vera Cruz State	D		[2] 3		[2] 3		
Yucatan State	D				[2] 1		
Zacatecas State	D		[2] 17		[2] 14		
Panama Canal Zone	C	1	1			1	
Portugal	C			5	1	3	
Rumania	C	40	75	13	7	10	23
Spain	C	14	9	7		8	
Turkey	C	49	35	15	1	11	
Istanbul	C		3			2	3
Union of South Africa:							
Cape Province	C	127		132	115		
Natal	C	7	7	12	1		
Orange Free State	C	4	4	5			
Transvaal	C	13	13	12	24		
Venezuela: Bolivar	C	3			3		2

[1] For 4 weeks.
[2] For May and June.
[3] For July and August.

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

YELLOW FEVER

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

Place		Apr. 30–May 27, 1939	May 28–June 24, 1939	June 25–July 29, 1939	Week ended— August 1939 5	12	19	26	September 1939 2	9	16	23	30	October 1939 7	14	21	28	November 1939 4	11
Brazil: [1]																			
Amazonas State	D			[2]1															
Bahia State	D			[2]1															
Espirito Santo State	D	[2]1																	
Para State	D	[2]1		2															
Cameroon: Bafia	C				[2]1														
Colombia: Antioquia Department:																			
Caracoli	D		1	1															
San Carlos	D			2					1		1				1				
French Equatorial Africa:																			
Bangui	C											[4]1							
Gabon	D			1															
French Guinea	C		2																
Gold Coast	C		1																
Ivory Coast [5]	C	[6]5	[7]9												1			1	
Nigeria [8]	C			1				[4]1										1	[4]1
Niger Territory:																			
Dosso	C																		3
Konni Circle	C		3																
Tahua	C	[4]1																	
Senegal:																			
Bambey	C		1																
Dakar	C																	[4]1	
Diourbel	C		6																
Louga [9]																			
Ziguinchor	C		10																
	D		5																
Sudan (French): Bandiagara	C		1																
Togo (French mandate): Anecho	C															1			

[1] See also reports of yellow fever in Brazil in preceding issues of the PUBLIC HEALTH REPORTS.
[2] Jungle type.
[3] Exact date not given.
[4] Suspected.
[5] During the week ended December 2, 1939, 1 suspected case of yellow fever was reported on Broumia Plantation near Abengourou, and 1 case of the same disease was reported near Daloa, Ivory Coast.
[6] Includes 1 suspected case.
[7] Includes 4 suspected cases.
[8] During the week ended December 9, 1939, 1 fatal case of yellow fever was reported in Ebba River, Nigeria.
[9] During the week ended December 9, 1939, 1 suspected case of yellow fever was reported in Louga, Senegal.

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