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INFLUENZA AND PNEUMONIA EXCESS MORTALITY AT SPECIFIC AGES IN THE EPIDEMIC OF 1943–44, WITH COMPARATIVE DATA FOR PRECEDING EPIDEMICS[1]— Concluded

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AGE CURVES OF EXCESS MORTALITY BASED ON CALENDAR YEARS

Registration States, 1910–44.—Almost the only available mortality data by age for earlier epidemics in the United States are for entire calendar years. The age curves of mortality from influenza and pneumonia in various calendar years in which epidemics occurred are shown on logarithmic vertical scales in figure 7, along with a nearby calendar year which was relatively free from influenza and can be assumed to show the age curve for a relatively normal year. The years relatively free from influenza in the United States that were used as "normal" in these computations were 1914, 1924, 1930,[7] and 1934. Table 4 shows by age both the actual death rates and the excess obtained by subtracting rates for corresponding ages in the nearby normal year from the rates for the calendar year which included the epidemic. Since all rates in the table are for single calendar years, the subtractions give results which represent actual excess rates (not annual basis), even though the original rates are designated as annual rates. The excess rates are plotted on arithmetic scales in figure 8 and on a logarithmic vertical scale in figure 9.

The great difference between the age curves of influenza and pneumonia mortality during the years 1918, 1919, and 1920 and those in more normal years is evident from figure 7 without any calculation of excess rates. However, in the more minor epidemics since 1920 it is not easy to judge accurately the nature of the age curve of excess death rates without the aid of figure 8 where the scales are arranged so that the various curves are comparable on a relative basis. Figure 9 with the logarithmic vertical scale further emphasizes the small variations at the low parts of the curves.

[1] This is the second and final section of a paper on influenza and pneumonia excess mortality. The first section appeared in the PUBLIC HEALTH REPORTS, 60: 821–835 (1945). The numbering of tables, figures, and footnotes is consecutive throughout. References will be found at the end of the first section.

[7] The death rate from influenza and pneumonia in 1927 was practically identical with that in 1930 but the latter year was used in the present calculations. The small epidemic of the winter of 1930–31 was practically all in 1931.

Excess rates in 1918–19 show the well-known curve of that pandemic with the highest peak in the young adult ages at 25 to 29 years. The next highest rate is among children under 5 years of age. The excess decreases rapidly as age increases above the young adult peak, and above 70 years there is no excess over the rate for 1914. In figure 7 it is seen that the relative age curves for 1918 and 1919 are similar.

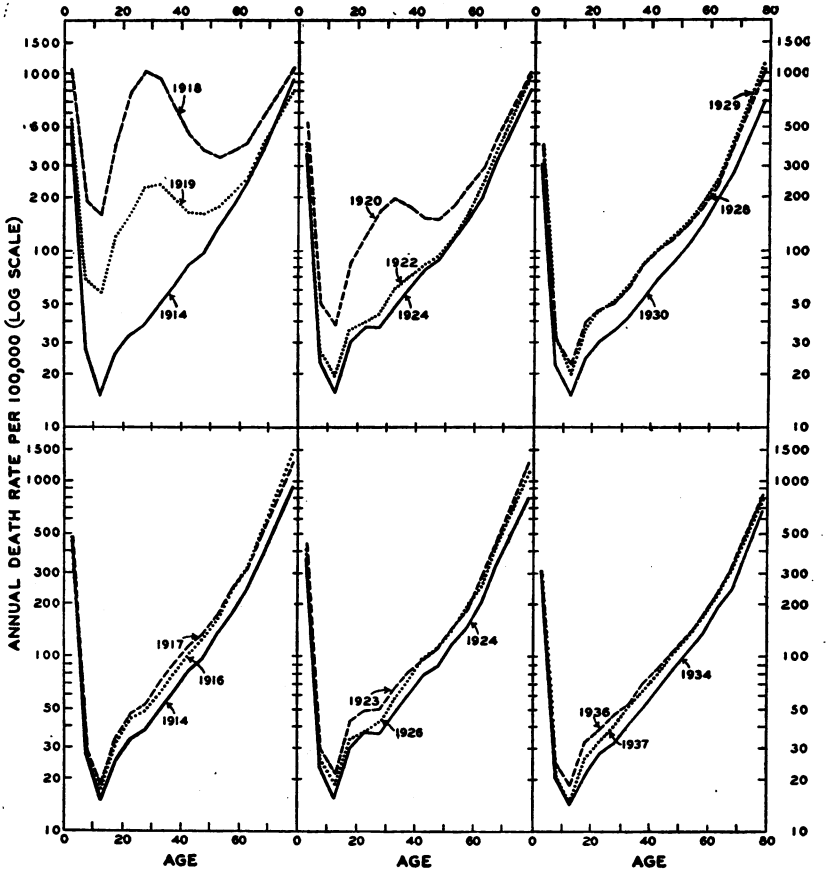

FIGURE 7.—Age-specific mortality from influenza and pneumonia in the United States during certain epidemic and nonepidemic calendar years, 1914–37. (Years 1914, 1924, 1930, and 1934 are used as "normal" years with which epidemic years in the same box of the chart are compared.)

Influenza and pneumonia mortality was on a somewhat lower level in nonepidemic months after 1919 than prior to 1918, but there was no large change during the next decade. The calendar year 1924 was therefore used as a normal year for comparsion with 1920. In terms of actual excess rates the whole 1920 curve is far below that of 1918–19. However, the 1920 curve shows a definite young adult peak at 30 to 34 years but it is not as high as the excess rate for children under 5 years or for persons above 70 years of age (figs. 8 and 9).

The 1920 curve of excess deaths from influenza and pneumonia, therefore, is similar to that of 1918–19 in its young adult peak, but similar to that of 1928–29 in having its greatest excesses among children and old people.

The age curve of excess mortality from influenza and pneumonia during the 1922 epidemic shows a very small peak at 30 to 34 years that looks somewhat like that of 1920, particularly on the relative basis of the semilogarithmic chart (fig. 9). However, the excess death rates among children under 5 and persons above 70 years of age greatly exceed the rates at this small young adult peak. The excess death rates for 1923 and for 1926 over those for 1924, and the excess of the rates for 1928 plus 1929 over twice the rate for 1930 show nothing that could be interpreted as a young adult peak, the highest excesses appearing in the youngest and oldest age groups. In each of these calendar years the excess rate for children under 5 is greater than in any age group under 60 years. However, the excess curve for 1936 plus 1937 over twice the rate for 1934 shows a relatively low rate for children under 5 years. The same is true of the excess during December–January 1943–44 over the same months of 1942–43 and also of the excess of 1917 over the rate for the calendar year 1914 (figs. 8 and 9). However, all of these epidemics were small in terms of mortality and the curves are subject to considerable chance variation.[8]

The preceding discussion and computations consider excess mortality rates in terms of the actual amount of the rate obtained by subtracting some normal rate from that during an epidemic. Excess mortality might be looked upon from the point of view of the percentage rather than the actual amount of the excess. For example, instead of computing the amount of the excess of 1920 over corresponding age groups of 1924, there might have been computed the percentage that the rates for 1920 were in excess of rates for corresponding age groups in 1924. Such percentages were computed for the several epidemics and are shown graphically in figure 10. Because it is the shape of the curves rather than the actual values that are being compared, the scales in figure 10 are adjusted to put the curves on the same relative basis.

[8] It might be thought that the chi-square (χ^2) test could be applied to the age distributions of deaths from influenza and pneumonia in pairs of years to determine whether distributions in the epidemic years were significantly different from those in nonepidemic years. However, the numbers of deaths in the registration States, even in the earlier years, are so large that a negligible variation from any practical standpoint comes out as "statistically significant," i. e., as more than would be expected by chance.

The chi-square test was applied to the age distributions of deaths from influenza, from pneumonia (all forms), and from influenza and pneumonia combined, with the following results:

(1) years 1915, 1916, 1917, 1918, and 1919 each paired with 1914.

(2) years 1920, 1922, 1923, and 1926 each paired with 1924.

(3) years 1914 and 1924 paired.

In every case and for each disease group the differences are statistically significant; in some years the differences are very large but in others they are too small to have any practical significance. Thus the χ^2 test does not seem to be applicable where the numbers involved are extremely large.

TABLE 4.—*Influenza and pneumonia* [1] *mortality among persons of specific ages* [2] *in certain calendar years, and the excess over rates for corresponding ages during calendar years without excessive mortality from these diseases*

UNITED STATES

Age	All registration States						Registration States of 1920					Registration area				
	1937	1936	1934	1930	1929	1928	1926	1924	1923	1922	1920	1919	1918	1917	1916	1914
	Annual death rate per 100,000															
All ages	114.9	119.6	96.9	102.5	146.5	142.5	142.4	116.9	153.6	132.6	207.4	221.9	577.9	166.3	163.5	136.0
Under 5	290.2	304.8	290.7	309.2	391.2	390.9	409.4	356.3	429.0	408.4	528.5	547.5	1,083.5	480.0	466.0	474.8
5–9	21.5	25.3	21.6	22.4	31.3	31.7	26.7	23.6	29.7	27.9	51.5	69.0	189.1	29.9	28.1	27.8
10–14	14.6	18.7	14.2	15.1	20.1	23.0	18.4	15.6	21.7	19.2	38.2	56.7	160.0	18.3	17.0	14.8
15–19	26.0	32.6	21.3	24.8	36.0	39.2	33.6	30.3	42.7	35.4	84.6	118.8	391.9	33.8	31.9	25.8
20–24	33.0	38.8	28.1	30.9	46.4	46.7	37.5	36.9	48.1	39.2	118.8	163.2	770.4	46.8	43.6	33.4
25–29	40.7	46.5	32.0	35.7	52.9	51.1	42.8	36.5	49.5	43.7	168.5	229.3	1,022.3	52.6	47.9	36.0
30–34	51.3	53.9	41.0	42.4	64.1	62.5	57.3	47.1	65.1	59.3	197.3	240.0	949.4	70.5	60.0	48.8
35–39	64.0	70.5	50.7	54.1	84.4	84.4	74.3	61.0	81.4	71.7	177.1	197.5	649.5	89.9	79.4	63.2
40–44	80.9	85.7	65.0	69.2	102.0	99.8	99.4	77.9	98.1	83.8	151.7	163.2	445.1	113.6	102.5	81.7
45–49	105.3	107.2	82.8	86.2	120.4	116.7	111.5	89.1	110.0	94.8	150.4	158.3	365.4	133.9	124.0	96.8
50–54	130.1	132.2	103.1	106.8	146.0	142.2	141.6	118.0	145.4	119.6	178.8	171.7	330.7	174.2	162.7	134.9
55–59	164.5	170.5	133.3	139.0	187.1	177.6	193.1	148.1	188.0	157.8	226.0	208.0	360.4	246.6	241.1	176.8
60–64	221.1	223.3	186.5	196.2	255.5	236.0	257.8	206.3	289.8	239.4	292.4	259.6	406.2	318.9	308.4	242.7
65–69	302.5	315.9	241.0	274.9	402.7	385.3	431.3	338.6	456.4	375.3	445.4	389.7	558.9	497.7	524.2	373.9
70 and over	806.1	814.6	677.3	701.4	1,156.8	1,073.9	1,125.5	809.9	1,212.3	945.7	1,016.4	801.8	1,054.3	1,244.0	1,359.2	920.2

	Excess[3] death rate per 100,000															
All ages	+18.0	+22.7			+44.0	+40.0	+25.5		+36.7	+15.7	+90.5	+85.9	+441.9	+30.8	+27.5	
Under 5	−.5	+14.1			+82.0	+81.7	+53.1		+72.7	+52.1	+172.2	+72.7	+558.7	+5.2	−8.8	
5–9	−.1	+3.7			+8.9	+9.3	+3.1		+6.1	+4.3	+27.9	+41.2	+161.3	+2.1	+.3	
10–14	+.4	+4.5			+5.0	+7.9	+2.8		+6.1	+3.6	+22.6	+41.9	+145.2	+3.5	+2.2	
15–19	+4.7	+11.3			+11.2	+14.4	+3.3		+12.4	+5.1	+54.3	+93.0	+366.1	+8.0	+6.1	
20–24	+4.9	+10.7			+15.5	+15.8	+.6		+11.2	+2.3	+81.9	+129.8	+737.0	+13.4	+10.2	
25–29	+8.7	+14.5			+17.2	+15.4	+6.3		+13.0	+7.2	+132.0	+191.3	+984.3	+14.6	+9.9	
30–34	+10.3	+12.9			+21.7	+20.1	+10.2		+18.0	+12.2	+150.2	+191.2	+900.6	+21.7	+11.2	
35–39	+13.3	+19.8			+30.3	+30.3	+13.3		+20.4	+10.7	+116.1	+134.3	+586.3	+26.7	+16.2	
40–44	+15.9	+20.7			+32.8	+30.6	+21.5		+20.2	+5.9	+73.8	+81.5	+363.4	+31.9	+20.8	
45–49	+22.5	+24.4			+34.2	+30.5	+22.4		+20.9	+5.7	+61.3	+61.5	+268.6	+37.1	+27.2	
50–54	+27.0	+29.1			+39.2	+35.4	+23.6		+27.4	+1.6	+60.8	+36.8	+195.8	+39.3	+27.8	
55–59	+31.2	+37.2			+48.1	+38.6	+45.0		+39.9	+9.7	+77.9	+31.2	+183.6	+60.8	+64.3	
60–64	+34.6	+36.8			+59.3	+39.8	+51.5		+83.5	+33.1	+86.1	+16.9	+163.5	+76.2	+65.7	
65–69	+61.5	+74.9			+127.8	+110.4	+92.7		+117.8	+36.7	+106.8	+15.8	+185.0	+123.8	+150.3	
70 and over	+128.8	+137.3			+455.4	+372.5	+315.6		+402.4	+135.8	+206.5	−118.4	+134.1	+323.8	+439.0	

[1] In 1928 and later years the relatively few deaths from capillary bronchitis (less than 0.3 percent of all pneumonia) are included with pneumonia; prior to that time they are excluded. Pneumonia of all forms is included for all years.

[2] Populations for specific ages for 1928 and later years were taken from Vital Statistics Rates, 1900–40 (*12*); 10-year age groups in that volume were broken into 5-year groups in proportion to the 1930 census for 1928, 1929, and 1930, and in proportion to the 1940 census for 1934, 1936, and 1937.

Populations for 1920 through 1926 were taken from the annual mortality reports of the U. S. Census Bureau which included estimates by age for the registration States of 1920.

Populations for specific ages for 1919 and earlier years were estimated by distributing the total registration area populations according to the relative age distribution of the population of the registration States of 1920. For 1918 a correction was made in the 4 age groups from 15 to 35 years for men then in the Army, because the deaths as published by the Census Bureau excluded deaths of soldiers. Data published by Sydenstricker and King (*18*) were used in making this correction.

Computations for 1926 and earlier years were made prior to the publication of Vital Statistics Rates, 1900–40 (*12*), but a check of these rates in 5-year age groups with rates in 10-year groups shown in that volume indicates substantial agreement in every year.

[3] Excess rates for 1919 and earlier years are deviations from those for corresponding ages for the calendar year 1914; for 1920 through 1926 they are deviations from rates for 1924; for 1928 and 1929 they are deviations from rates for 1930; and for 1936 and 1937 they are deviations from rates for 1934.

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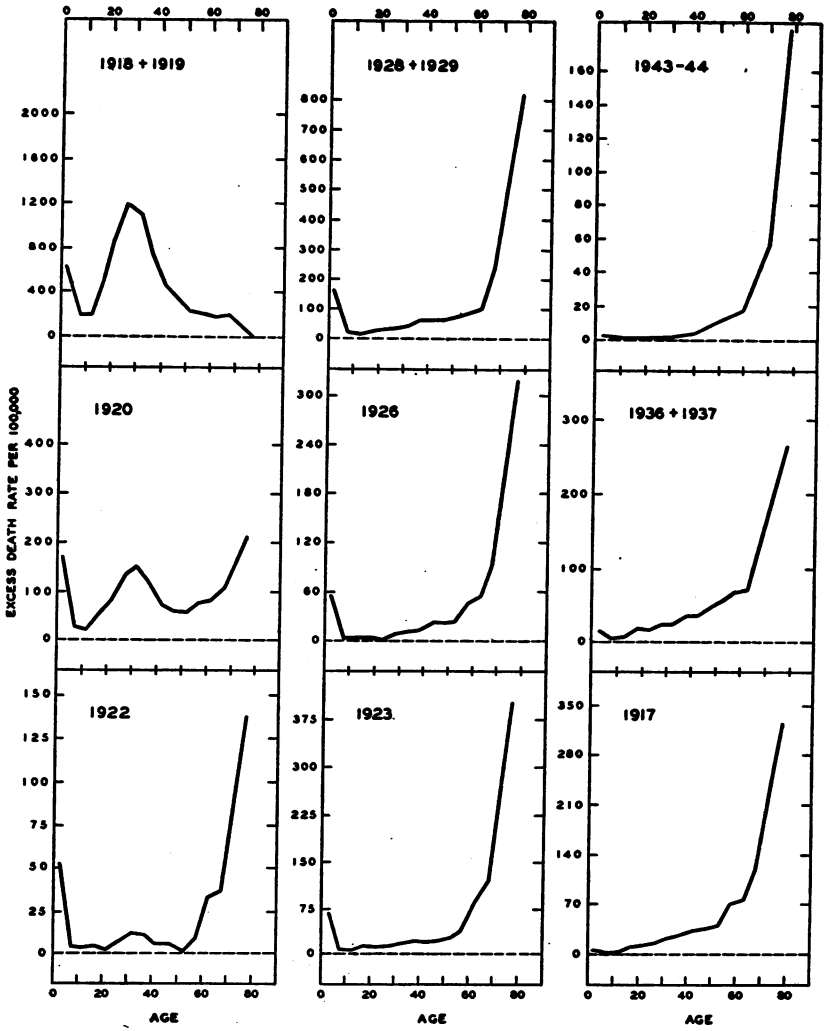

FIGURE 8.—Comparison on an arithmetic chart of the age curves of excess mortality from influenza and pneumonia in the United States during certain calendar years when influenza was epidemic, 1917–44. (Excess rates are deviations from rates for corresponding ages in a nearby "normal" year; see figure 7 for years used as "normal." In the 1943–44 epidemic, excess is over corresponding ages of same 2 months of 1942–43; age groups are as in table 2, except that the last point is an estimate for age 70+, to correspond to other curves in this chart. Scales are arranged so the average of the excess rates in the different age groups equals the same distance on the vertical scale as 20 years on the horizontal scale. In averaging, 10-year age groups are weighted by 2 and 5-year groups by 1.)

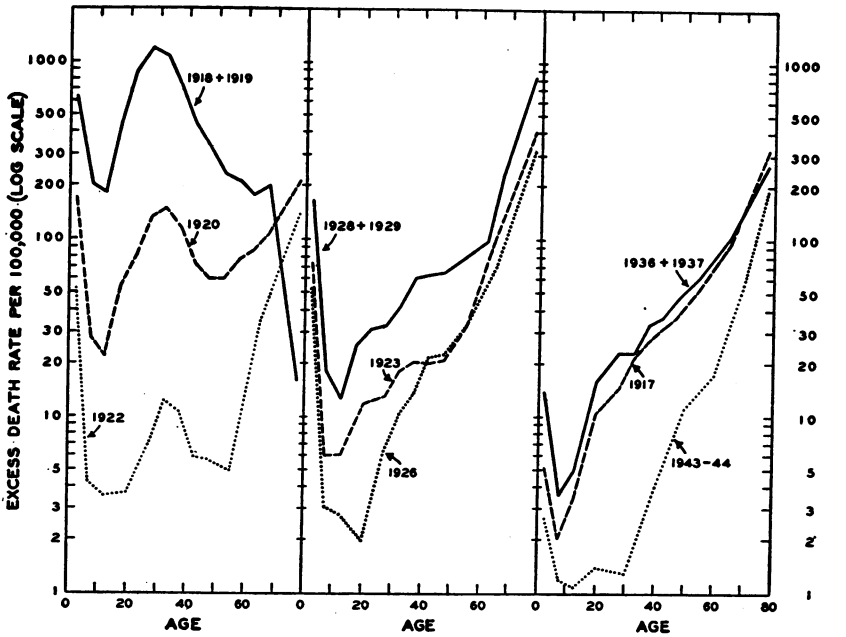

FIGURE 9.—Comparison on a semilogarithmic chart of the age curves of excess mortality from influenza and pneumonia in the United States during certain calendar years when influenza was epidemic, 1917–44. (See fig. 7 for years used as "normal" and fig. 8 for details about 1943–44 epidemic. Curves for 1917, 1922, 1923, 1926, and 1936–37 are plotted in age groups 15–24, 50–59, and 60–69 years.)

In terms of actual excess rates, the age curves of 1918–19 and 1920 are rather different but in terms of percentage excess the two epidemics have very similar curves, with one important peak at 25 to 29 years and with the smallest percentage excesses in the youngest and oldest ages. The curves for 1922, 1923, and 1928–29 each have peaks between 10 and 20 years and between 30 and 40 years, with some rise in the older ages. Aside from similarities between the 1917 and 1936–37 curves, there are few other common features in the relative age curves for the several epidemics.

The curves in figures 8, 9, and 10 represent all sizeable influenza epidemics since 1910 except the outbreaks of 1915–16, early 1931, and 1932–33. These latter epidemics show up in the data for the groups of cities (figs. 1 and 2) but do not appear to increase greatly the rates from influenza and pneumonia in the registration States for the calendar years involved. The other epidemics not represented in these charts of age curves were very small in terms of excess mortality and no attempt has been made to apply this rough calendar year method to them.

Massachusetts, 1887–1910.—Influenza occurred in pandemic form in 1889–92. About the only available influenza and pneumonia mortality records for any part of the United States for this period are those for Massachusetts which were shown as monthly excess rates in figure 3.

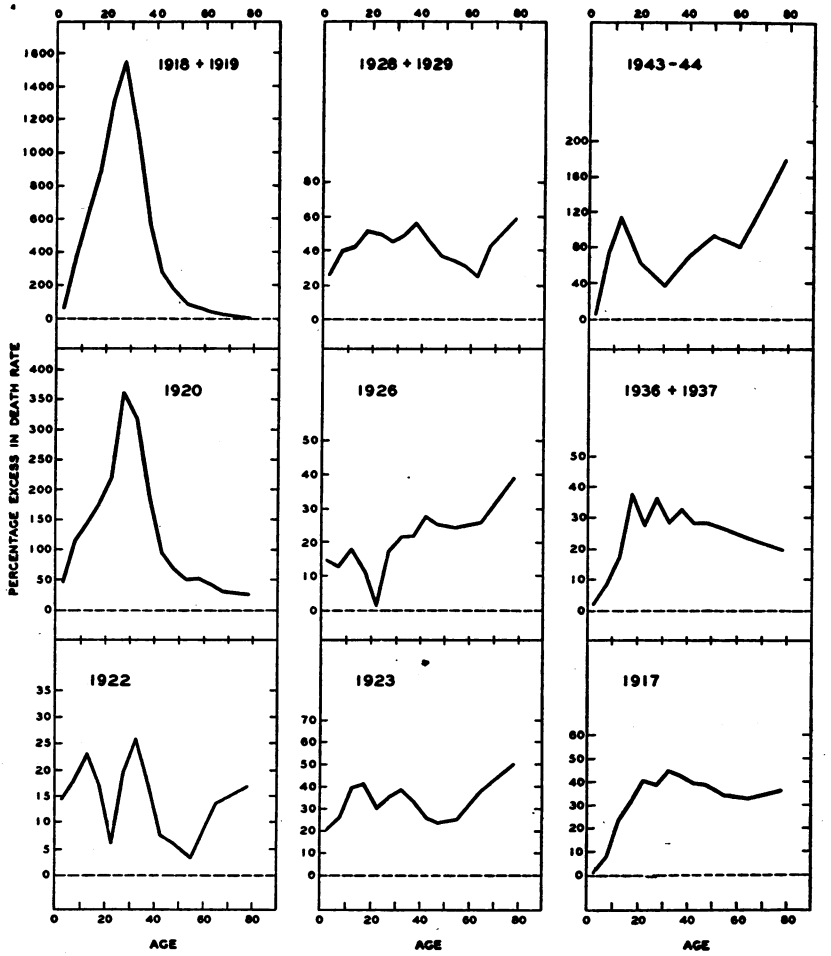

FIGURE 10.—Comparison on an arithmetic chart of the age curves of the percentage excess in mortality from influenza and pneumonia in the United States during certain calendar years when influenza was epidemic, 1917–44. (See figs. 7 and 8 for periods used as "normal." Scales are arranged so the average of the percentage excesses in the different age groups equals the same distance on the vertical scale as 30 years on the horizontal scale. Actual percentage excesses are not comparable from epidemic to epidemic because some represent percentages over a 2-year norm, others over a 1-year norm, and 1943–44 over a 2-month norm. Curves for 1917, 1922, 1923, 1926, and 1936–37 are plotted in age groups 50–59 and 60–69 years.)

Although the epidemic of early 1890 seemed to be less severe in Massachusetts than in other parts of the world, there was a series of outbreaks in the following decade. The age curves of excess mortality from influenza and pneumonia were computed for these outbreaks by the calendar year method described in a preceding section. The data are shown in table 5, and in figure 11 the actual rates are plotted on logarithmic vertical scales for calendar years which include epidemics and for nearby calendar years which were relatively free from outbreaks. The periods used as "normal" were the 3 years 1887–89 combined, and 1898, 1902, and 1904 combined. For the larger

epidemics of early 1890, winter of 1891–92, and spring of 1900, the excesses over rates for the same age groups in the "normal" periods are shown in figure 12.

Considering the excess death rates in figure 12 and also those for other years in table 5, there is no instance of any outstanding young adult peak such as occurred in the 1918–19 and 1920 epidemics in the registration area. The Massachusetts excess curves for 1891–92 and 1900 are generally similar to those previously presented for the United States for 1923, 1926, and 1928–29 (fig. 8), with excess rates for children under 5 years of age that are greater than those for young adults but far below those for older people. The curve for 1890 has few of the characteristics of those for the epidemics of 1918–19 and 1920; however the excesses in the age groups 20 to 40 years are relatively greater than those in the 1891–92 and 1900 outbreaks in the same State, and the excess among persons above 70 years of age is relatively less.

TABLE 5.—*Influenza and pneumonia mortality among persons of specific ages in certain calendar years, and the excess over rates for corresponding ages during calendar years without excessive mortality from these diseases.*

MASSACHUSETTS

Age	1898, 1902, 1904	1900	1899	1895	1893	1892	1891	1890	1887, 1888, 1889
	Annual death rate per 100,000								
All ages	169.4	214.3	203.0	203.2	240.9	255.0	213.0	198.8	165.9
Under 5	551.8	629.2	618.3	639.3	657.4	616.2	526.1	563.9	521.9
5–9	34.8	44.1	46.2	44.5	64.6	52.1	47.4	43.0	52.1
10–14	17.3	18.7	20.5	16.6	26.1	18.3	28.4	20.8	23.7
15–19	30.8	33.2	35.6	35.2	60.2	41.2	45.4	61.5	48.2
20–29	42.4	54.4	53.2	59.0	78.9	76.7	61.4	81.2	56.7
30–39	77.8	93.5	91.4	113.0	141.8	124.6	119.1	111.5	90.6
40–49	114.8	137.2	139.7	170.4	225.8	202.7	166.4	180.9	131.5
50–59	211.1	280.8	248.2	238.8	332.4	372.5	283.1	285.7	209.9
60–69	409.9	622.7	500.0	476.0	620.4	717.1	585.2	466.8	391.7
70 and over	1,068.9	1,553.9	1,496.8	1,326.4	1,367.2	1,943.3	1,560.2	1,050.5	896.0
	Excess [1] death rate per 100,000								
All ages		+44.9	+33.6	+37.3	+75.0	+89.1	+47.1	+32.9	
Under 5		+77.4	+66.5	+117.4	+135.5	+94.3	+4.2	+42.0	
5–9		+9.3	+11.4	−7.6	+12.5	0	−4.7	−9.1	
10–14		+1.4	+3.2	−7.1	+2.4	−5.4	+4.7	−2.9	
15–19		+2.4	+4.8	−13.0	+12.0	−7.0	−2.8	+13.3	
20–29		+12.0	+10.8	+2.3	+22.2	+20.0	+4.7	+24.5	
30–39		+15.7	+13.6	+22.4	+51.2	+34.0	+28.5	+20.9	
40–49		+22.4	+24.9	+38.9	+94.3	+71.2	+34.9	+49.4	
50–59		+69.7	+37.1	+28.9	+122.5	+162.6	+73.2	+75.8	
60–69		+212.8	+90.1	+84.3	+228.7	+325.4	+193.5	+75.1	
70 and over		+485.0	+427.9	+430.4	+471.2	+1,047.3	+664.2	+154.5	

[1] For 1895 and earlier years, excess rates are deviations from average annual rates for corresponding age groups for the 3 calendar years 1887–89; for 1899 and later years excess rates are deviations from average annual rates for corresponding age groups for the 3 calendar years 1898, 1902, and 1904, except for the age group under 5 years which is for the 2 years 1898 and 1904, because the rate for that age group appeared to be excessively high in 1902 although taken as a whole the year was without high rates.

Populations for specific age groups were estimated by distributing the total estimated State population according to the relative age distribution of the population of the State according to the 1890 census for 1895 and earlier years and according to the 1900 census for 1898 and later years. Data from annual reports (*15*).

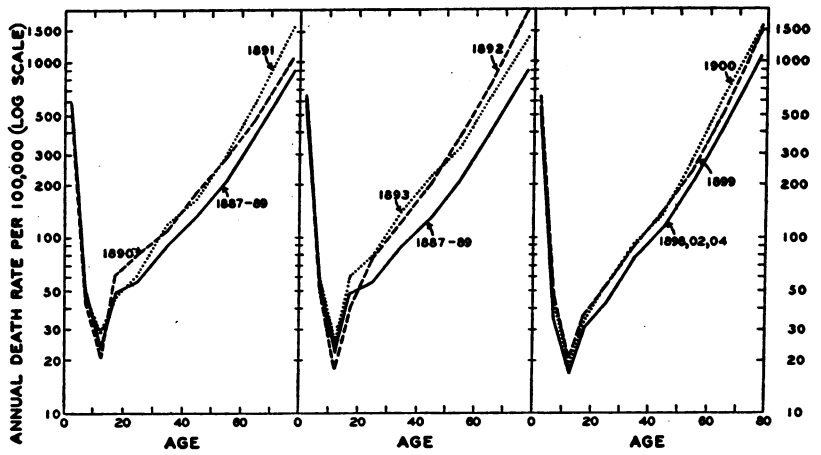

FIGURE 11.—Age-specific mortality from influenza and pneumonia in Massachusetts during certain epidemic and nonepidemic calendar years, 1887–1910. (Years 1887–89 and 1898, 1902, 1904 are used as "normal.")

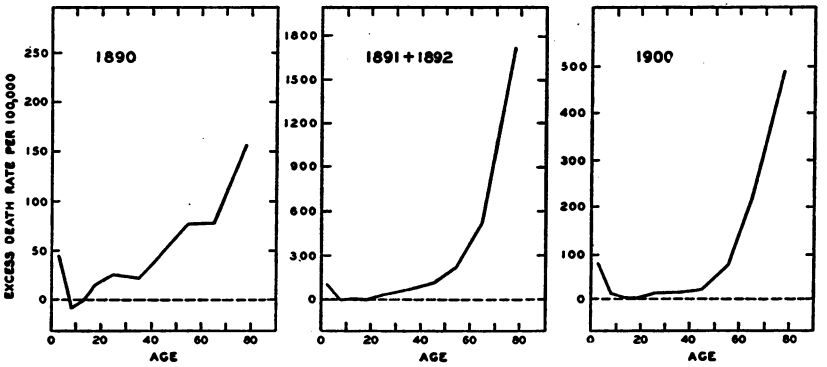

FIGURE 12.—Comparison on an arithmetic chart of the age curves of excess mortality from influenza and pneumonia in Massachusetts during certain calendar years when influenza was epidemic, 1887–1910. (Excess rates for 1890–92 are deviations from mean annual rates for corresponding age groups for 1887–89; for 1900 they are deviations from mean annual rates for corresponding age groups for the years 1898, 1902, and 1904 combined. Scales are arranged as in fig. 8 to put curves on a relative basis.)

SUMMARY

The recent 1943–44 epidemic of influenza was small as judged by excess deaths credited by attending physicians to influenza and pneumonia, but was considerably larger when measured by total excess mortality from all causes. In terms of age-specific rates there appears to be no indication of any young adult peak; in fact, the mortality in this outbreak seems to be more concentrated in the older ages than was true in recent preceding epidemics (figs. 5, 8, and 9).

An examination of the age curves of excess mortality from influenza and pneumonia in the more extensive epidemics since the pandemic of 1918–19 discloses young adult peaks in 1920 and 1922 which are similar but relatively smaller than that of 1918–19. On the other hand, the young adult peaks of 1920 and particularly of 1922 are

accompanied by rates at the youngest and oldest ages that are definitely above those for young adults, in contrast to the pandemic of 1918–19 when the young adult peak was the highest. Viewing the whole set of age curves of excess mortality from influenza and pneumonia (fig. 8), there is considerable variation from epidemic to epidemic, but in all except those of 1918–22 the tendency is for the highest excess rates to occur in the oldest ages, with relative age curves of excess mortality that are not exceedingly different from the curves of the total mortality from influenza and pneumonia in the same or a nearby year (figs. 9 and 7).

Except for the epidemics of 1943–44 and 1928–29, all excess mortality data for specific ages included in this paper represent an approximation derived by subtracting rates for a nearby "normal" year from those for the calendar year which included the epidemic. For the 1928–29 epidemic the excess rates were computed by this calendar year method and also by a similar procedure based on only the 3 months of the epidemic. Comparisons indicate that the results of the two methods are reasonably similar (fig. 6).

A similar calendar year method was applied to Massachusetts mortality from influenza and pneumonia for selected years in the period 1887–1910 which included a succession of epidemics, the largest of which was comparable in size to that of 1920. None of these outbreaks showed young adult peaks like those of the years 1918–22 (figs. 11 and 12).

THE RELATIVE VALUE OF LIQUID MEDIA, GLUCOSE CYSTINE BLOOD AGAR, AND MOUSE INOCULATION IN THE TITRATION OF *PASTEURELLA TULARENSIS*[1]

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Francis (*1*) found no liquid medium suitable to the growth of *Pasteurella tularensis* (*B. tularense*). Tamura and Gibby (*2*) and Steinhaus, Parker, and McKee (*3*) subsequently reported upon the growth of *P. tularensis* in liquid media. The media devised by Tamura and Gibby consisted of either gelatin or casein hydrolysates or mixtures of amino acids to which certain accessory factors such as blood-cell or liver-cell extract or biotin concentrate were added. They found cystine or cysteine hydrochloride to be necessary to maintain the organism. Steinhaus media consisted of those materials ordinarily used in glucose cystine blood agar with the exception that agar was deleted and commercial hemoglobin substituted for whole blood. These liquid media leave much to be desired from the standpoint of ease in handling.

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

It is the purpose of this paper to report our experience with liquid media and to report the relative merit of modified Steinhaus media, glucose cystine blood agar, and mouse inoculation in the enumeration of *P. tularensis*.

MATERIALS AND METHODS

The strains of *P. tularensis* used had been isolated recently from patients suffering from tularemia. Strains F. G., H. S., and G. S. were isolated in this laboratory from material taken from the local lesions of cases of oculoglandular or ulceroglandular types of tularemia and strain T. was obtained from pleural fluid of a patient with pneumonic involvement and was isolated at the laboratories of the Virginia State Department of Health. All produced typical lesions of tularemia in mice and guinea pigs, grew in a characteristic manner on glucose cystine blood agar, and gave specific serological reactions.

Glucose cystine blood agar was made according to the directions of Francis (*4*) and contained 2 percent agar, 1 percent dextrose, 0.1 percent cystine, and 10 percent rabbit blood in a base of horse infusion broth. The media was used either slanted in tubes or distributed in petri plates. The samples of Tamura and Gibby media were made with a base of hydrolyzed casein and cystine to which a red blood cell extract was added. Steinhaus media was modified simply by using his basic medium A consisting of beef heart infusion, dextrose, and cystine and adding to this 10 percent red blood cell extract instead of bacto-hemoglobin. The result was a clear fluid media which supported the growth of *P. tularensis*. All cultures were incubated at 37° C. and observed daily for 10 to 12 days before they were discarded.

Titrations for the enumeration of organisms were made in liquid media, glucose cystine blood agar, and by mouse inoculations employing 0.1 cc. or 0.3 cc. of serial tenfold dilutions of various test materials. Animal tissues or suspensions of organisms were diluted in 0.85-percent salt solution and serial tenfold dilutions were made to an end point of 10^{-10} or 10^{-12}.

Swiss mice bred at the National Institute of Health were employed. Mice of varying ages and weights were used and appeared to be uniformly susceptible to tularemia. Mice were observed for 2 weeks after injections.

EXPERIMENTAL

Growth of P. tularensis *on liquid media.*—The relative merit of the two types of liquid media for the detection of *P. tularensis* was determined. Sufficient growth from a 24-hour-old culture of *P. tularensis* (strain G. S.) was taken from the surface of a glucose cystine blood agar slant to produce a density corresponding to T-500 (Fuller's earth scale) when suspended in 10 cc. of salt solution. This was considered

to be 10^{-9} and serial tenfold dilutions in 0.85-percent salt solution were made from this suspension. Duplicate tubes of both types of liquid media were then inoculated with 0.1-cc. quantities of the various dilutions of organisms from 10^{-2} to 10^{-10}. The tubes were shaken to insure good mixture of the inoculum in the media, and incubated at 37° C. They were observed daily for 10 days. Growth was detected by the degree of turbidity which developed and by the relative number of organisms noted in smears stained by Gram's method. Organisms survived and developed in tubes of Tamura and Gibby media inoculated with a 10^{-3} dilution of culture and in tubes of modified Steinhaus media inoculated with a 10^{-6} dilution of culture. The results are shown in table 1.

TABLE 1.—*Growth of* P. tularensis *in 2 types of liquid media when 0.1 cc. of serial tenfold dilutions of a glucose cystine blood agar culture is used as an inoculum for duplicate tubes of media*

Type of medium	Dilution of inoculum	Degree of turbidity at end of—													
		First day		Second day		Third day		Fourth day		Fifth day		Seventh day		Tenth day	
Tamura and Gibby [1]	10^{-3}	3+	3+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+
Do	10^{-5}	1+	1+	1+	1+	1+	1+	1+	1+	2+	2+	2+	2+	2+	2+
Do	10^{-7}	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Modified Steinhaus [2]	10^{-6}	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+
Do	10^{-8}	2+	2+	3+	3+	3+	4+	4+	4+	4+	4+	4+	4+	4+	4+
Do	10^{-9}	1+	1+	2+	3+	3+	3+	3+	4+	3+	4+	3+	4+	3+	4+
Do	10^{-10}	0	0	0	1+	0	2+	2+	3+	3+	3+	3+	3+	3+	3+
Do	10^{-11}	0	0	0	0	0	1+	0	2+	0	3+	0	3+	0	3+
Do	10^{-12}	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[1] Tamura and Gibby negative from 10^{-4} to 10^{-10}.
[2] Modified Steinhaus negative from 10^{-7} to 10^{-10}.

The ability of *P. tularensis* to survive and proliferate in modified Steinhaus medium through 22 consecutive passages over a course of 60 days was demonstrated. The basic media was adjusted to pH 7.8, 7.6, 7.4, 7.2, and 7.0 before autoclaving and before addition of red blood cell extract. After addition of the supplementary factor 4.5 cc. of completed media was placed in each tube. The initial inoculum consisted of 0.5 cc. of 10^{-3} dilution of a T-500 suspension of organisms (strain F. G.) grown on glucose cystine blood agar. With the exception of the first passage, transplants to new tubes containing 4.5 cc. of media were made every 2 to 3 days using 0.5 cc. inocula. In the first passage 6 days elapsed before transplants were made.

In order to determine the virulence of the organisms and their relative concentration after growth in liquid media titrations were made, using mice as the test animal. After incubation at 37° C. for 6 days 0.5 cc. of culture was withdrawn and diluted in 4.5 cc. of salt solution to make a 10^{-1} dilution and serial tenfold dilutions were made to a titer of 10^{-10}. Groups of mice were inoculated with 0.3-cc. quantities of the various dilutions intraperitoneally and deaths recorded.

At no time were we able to obtain growth of *P. tularensis* in media having an initial pH of 7.0 or 7.2 and thus these were not tested in mice. As shown in table 2 this strain was capable of growing at pH 7.8, 7.6, and 7.4 for periods of 56 days after having been transferred 22 times from the original culture on glucose cystine blood agar.

TABLE 2.—*Survival of* P. tularensis *after serial passage in modified Steinhaus media with pH 7.4, 7.6, and 7.8 as shown by infectivity for mice*

Passage No.	Number of days of growth in liquid media	Infective titre for mice of organisms grown in media having—		
		pH 7.8	pH 7.6	pH 7.4
1	6	10^{-7}	10^{-6}	10^{-7}
2	12	10^{-9}	10^{-7}	10^{-9}
12	33	—	10^{-6}	10^{-7}
20	55	10^{-7}	—	—
21	58	10^{-6}	—	—
22	60	10^{-7}	10^{-6}	10^{-6}

—=no titration made.

Using a similar technique, four other strains of *P. tularensis* were tested for survival after five passages in this media and were found to possess titers which indicated that proliferation had occurred.

Titration of P. tularensis *in various materials.*—Three mice which had died following injection with *P. tularensis* (strain T) were autopsied and blood, liver, and spleen obtained aseptically. The tissues from each animal and each tissue were handled separately and were made into 10-percent suspensions in salt solution. Inocula of 0.1 cc. of 10-percent blood or tissue suspensions were transferred to tubes of modified Steinhaus media containing either red blood cell or liver extract instead of bacto-hemoglobin or rubbed on the slanted surface of glucose cystine blood agar in test tubes. The tubes were then incubated at 37° C. and observed for growth. The tubes of glucose cystine blood agar were placed so the slanted surface was in a horizontal plane and was moist from the inoculum. If growth occurred in any tube the organism was isolated and studied to determine whether or not it was *P. tularensis*. No contaminating organisms were obtained. *P. tularensis* was isolated from all tissues except the spleen of mouse 3 on modified Steinhaus media but from only the spleen of mouse 1 and the blood and spleen of mouse 2 on slanted glucose cystine blood agar.

The heart blood of a mouse found moribund following intraperitoneal injection of *P. tularensis* was withdrawn aseptically and diluted in nine parts of saline. This was considered to be a 10^{-1} dilution of blood and further serial tenfold dilutions were made to an end point of 10^{-10}. Inocula of 0.1 cc. were given to lots of six mice each intraperitoneally and cultured on modified Steinhaus media

(pH 7.6) and on petri plates containing glucose cystine blood agar. The organisms were detected to a titre of 10^{-7} in mice, 10^{-6} on glucose cystine blood agar plates, and 10^{-4} in modified Steinhaus media.

The liver and spleen were removed from two mice previously infected with *P. tularensis*. One of those (No. 1) was moribund, while the other was fairly active although obviously ill. Ten-percent suspensions of each organ were made in 0.85 percent saline and serial tenfold dilutions of each sample of tissue were injected intraperitoneally into groups of six mice each, into tubes of modified Steinhaus media, and petri plates of glucose cystine blood agar. The media were incubated at 37° C. The results are shown in table 3.

TABLE 3.—*The relative sensitivity of mice, glucose cystine blood agar plates (Gcba), and modified Steinhaus media (Stein.) in the enumeration of* P. tularensis *in tissues of infected mice*

Mouse No.	Tissue	End point in—		
		Mice	Stein.	Gcba
1 (moribund)	Spleen	10^{-8}	(1)	10^{-8}
	Liver	10^{-8}	(1)	10^{-7}
2 (ill)	Spleen	10^{-6}	10^{-6}	10^{-7}
	Liver	10^{-6}	10^{-2}	10^{-6}

[1] Contaminated.

The technique adopted in the above experiment was used to study the comparative value of mouse inoculation, modified Steinhaus media, and petri plates containing glucose cystine blood agar in detecting the presence of organisms in varying dilutions of cultures of *P. tularensis* (strains H. S. and G. S.). The T-500 suspensions of each of these organisms in salt solution were considered to be a 10^{-0} suspension. Serial tenfold dilutions to a titre of 10^{-12} were made and 0.3 cc. of each dilution of each strain given to mice or cultured on liquid or solid media. Strain H. S. titred to 10^{-9} in mice and on solid media, and to 10^{-3} on liquid media and strain G. S. had end points of 10^{-10} in mice, 10^{-9} on solid media, and 10^{-2} on liquid media.

TABLE 4.—*The relative sensitivity of mice, glucose cystine blood agar plates (Gcba), and modified Steinhaus media (Stein.) in the enumeration of* P. tularensis *grown on the former media.*

Source of culture	End point in—		
	Mice	Stein.	Gcba
H. S.	10^{-9}	10^{-3}	10^{-9}
G. S.	10^{-10}	10^{-2}	10^{-9}

The spleens of two mice dead of tularemia were removed, ground in a mortar, and each suspended in 5.0 cc. of salt solution. Tenfold dilutions were made from each suspension to an end point of 10^{-12}. Duplicate tubes of slanted glucose cystine blood agar and plates of

the same media were inoculated with 0.3 cc. of material from the various dilutions of tissue suspension. Groups of six mice each were inoculated intraperitoneally with similar amounts of the same material. The tubes were incubated in an upright position. The water of condensation and the fluid added with the inoculum drained to the angle between the butt and the slant and as it evaporated colonies of organisms grew on the slant at the junction of the air and fluid. Spleen suspension from one mouse had an end point of 10^{-10} when inoculated into mice or cultured on glucose cystine agar plates and 10^{-8} when cultured on the slanted surface of the same media. The spleen emulsion of the other mouse had end points of 10^{-10}, 10^{-9}, and 10^{-9}, respectively, by the three methods.

DISCUSSION

The results obtained from this study substantiate the claims that glucose cystine blood agar is still the medium of choice for the cultivation of *P. tularensis*. The results which have been obtained indicate that liquid media are not as efficient as solid media for growing or detecting this organism.

Francis' medium is capable of supporting proliferation of small numbers of organisms and in our experience has been almost as sensitive as mouse inoculation when used as a method of enumerating the number of virulent recently isolated organisms in a given sample of material.

CONCLUSIONS

P. tularensis grows for at least 22 passages during a period of 60 days in liquid medium without loss of virulence for white Swiss mice.

Glucose cystine blood agar is still the artificial medium of choice for routine cultivation of *P. tularensis*.

REFERENCES

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USE OF LAWSON'S BEAN MEDIUM FOR LABORATORY DETECTION OF *MYCOBACTERIUM TUBERCULOSIS* IN SPUTUM

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A comparatively simple medium for the cultivation of *Mycobacterium tuberculosis* has been described by Lawson (*1*). Essentially, it consists of the pulp of cooked mashed beans mixed with water, the juice in

which the beans had been cooked, agar, glycerine, and any suitable dye. The medium must be poured aseptically and solidified immediately by chilling in chipped ice or ice water.[1]

The author is not aware of any report on the use of this medium in routine work. For this reason, a series of cultures was made using the bean medium, prepared from dried lima beans, parallel with Petragnanni's medium and stained smears. The Petragnanni medium was modified by doubling the number of egg yolks, as suggested by Perry and Petran (*2*).

The specimens used consisted of 1,009 consecutive samples of sputum received at the Division of Laboratories of the State Board of Health at Jefferson City, Mo., and examined by the author. The regular concentration procedure, which consisted of sodium hydroxide digestion, centrifuging, neutralization with hydrochloric acid, and again centrifuging, was followed. Three portions of the sediment obtained from each specimen were used: (1) for the preparation of smears, (2) for the inoculation of a slant of Lawson's bean agar, and (3) the inoculation of a slant of modified Petragnanni's medium. The smears were stained with Ziehl-Neelsen's stain for microscopic examination. Screw-cap culture tubes were used and the two cultures were incubated side by side at 37° C. They were examined at the end of 4 to 6 weeks, and again at the end of 3 months. The dye used in the bean agar was Malachite green and the concentration was one-tenth that used in Petragnanni's medium. The same dye was used in both media in order to make the comparison as close as possible. The concentration of Malachite green used in Petragnanni's medium was much too inhibitory in the bean medium. Less than one-tenth this amount was found insufficient to prevent the growth of nonacid-fast organisms.

There were 186 specimens, or 18.4 percent out of the 1,009 in which *Mycobacteria* were demonstrated by one or more of the methods. The correlation is shown in table 1.

It can be seen that the most efficient method was the modified Petragnanni's culture, which picked up a total of 165, or 88.7 percent, and missed 21, or 11.3 percent, of those found positive. It is also to be noted that 27, or 14.5 percent, of the specimens were found positive only by this method. Next in efficiency was the stained-smear method which detected 136, or 73.1 percent, of the total and missed 50, or 26.9 percent. Fifteen, or 8.1 percent, were found only

[1] 1. 200 gm. dried legumes; soak in 700 cc. of water for 24 hours.
2. Change water and autoclave at 15 pounds for 25 minutes.
3. Drain beans and mash through a fine sieve.
4. 105 gm. of pureed beans are weighed and mixed with 30 cc. of juice which was drained from beans, and 180 cc. of distilled water in a 500-cc. flask.
5. Add 3 gm. granulated agar.
6. Autoclave at 15 pounds for 20 minutes.
7. Add immediately 7 cc. of glycerine and appropriate dye.
8. Cool to 50° to 60° and pour aseptically into chilled tubes. Solidify at once in ice bath.

TABLE 1

Method	*Mycobacterium* found								*Mycobacterium* missed					
	Total		On Petragnanni's medium		On smear		On bean		On bean		On smear		On Petragnanni's medium	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Smear+, Bean+, Petragnanni's+	98	52.7	98		98		98							
Smear−, Bean+, Petragnanni's+	19	10.2	19				19				19			
Smear+, Bean−, Petragnanni's+	21	11.3	21		21				21					
Smear+, Bean+, Petragnanni's−	2	1.1			2		2						2	
Smear−, Bean−, Petragnanni's+	27	14.5	27						27		27			
Smear−, Bean+, Petragnanni's−	4	2.1					4				4		4	
Smear+, Bean−, Petragnanni's−	15	8.1			15				15				15	
Total	186	100.0	165	88.7	136	73.1	123	66.2	63	33.8	50	26.9	21	11.3

on smears. The Lawson's bean medium cultures were the least efficient. A total of 123, or 66.2 percent, were positive by this method and 63, or 33.8 percent were missed. Only 4, or 2.1 percent, were positive by this method alone.

Lawson's bean agar has several advantages which might make it useful under certain circumstances, although it appears to be less efficient than either modified Petragnanni's medium or stained smears. Most important is the cheapness and availability of the ingredients, second is the comparative ease with which it can be prepared. While it is not the best medium, it is, nevertheless, a good medium for the cultivation of the tubercle bacillus. If the bean medium and stained smears are compared without the modified Petragnanni's, it is seen that 23 specimens were positive on bean medium and not on smear, and 36 were positive on smear and not on bean culture. These findings suggest that the positive specimens found in addition to those discovered by stained smears may be enough to warrant use of the bean medium, if Petragnanni's medium is not available.

REFERENCES

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DEATHS DURING WEEK ENDED JUNE 30, 1945

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

	Week ended June 30, 1945	Corresponding week, 1944
Data for 93 large cities of the United States:		
Total deaths	8,747	8,476
Average for 3 prior years	8,558	
Total deaths, first 26 weeks of year	243,311	247,446
Deaths under 1 year of age	562	599
Average for 3 prior years	608	
Deaths under 1 year of age, first 26 weeks of year	15,909	16,251
Data from industrial insurance companies:		
Policies in force	67,377,490	66,644,754
Number of death claims	14,291	11,456
Death claims per 1,000 policies in force, annual rate	11.1	9.0
Death claims per 1,000 policies, first 26 weeks of year, annual rate	10.9	10.5

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

REPORTS FROM STATES FOR WEEK ENDED JULY 7, 1945

Summary

For the current week, the incidence of poliomyelitis for the country as a whole remained practically unchanged. A total of 154 cases was reported, as compared with 155 last week, 288 for the corresponding week last year, and a 5-year (1940–44) median of 86. Of the current total, 95 cases occurred in the 6 States which reported 7 or more cases each, only one of which (Texas), showed a decline. These States are as follows (last week's figures in parentheses): Connecticut 7 (1), New York 21 (16), New Jersey 10 (5), Tennessee 18 (6), Texas 21 (54), California 18 (12).

The total reported cases to date is 1,424, as compared with 1,290 and 1,329 for the corresponding periods of 1944 and 1943. For the 11-week period ended March 17, the date of lowest weekly incidence this year, 397 cases were reported, as compared with 263 and 302, respectively, for the corresponding periods of 1944 and 1943. Since that date, 1,027 cases have been reported, the same number as for the corresponding 16-week period of each of the two preceding years.

The downward trend in the incidence of meningococcus meningitis, interrupted last week, was resumed. A total of 109 cases was reported, as compared with 143 last week, 122 for the next earlier week, and a 5-year median of 61. The total for the year to date is 5,527, as compared with 12,027 for the corresponding period last year and a 5-year median of 2,082.

The current incidence of diphtheria, influenza, measles, scarlet fever, typhoid fever, and whooping cough declined during the week. Total numbers of cases reported to date for certain other diseases are as follows (last year's corresponding figures in parentheses): Anthrax 19 (23), dysentery, all forms, 16,639 (13,703), infectious encephalitis 184 (297), leprosy 25 (15), Rocky Mountain spotted fever 169 (205), tularemia 423 (315), endemic typhus fever 1,698 (1,502).

A total of 8,536 deaths was recorded in 90 large cities of the United States, as compared with 8,669 last week, a 3-year (1942–44) average of 7,761, and 7,777 for the corresponding week of last year. The total to date is 249,558, as compared with 253,098 for the corresponding period of last year.

Telegraphic morbidity reports from State health officers for the week ended July 7, 1945, and comparison with corresponding week of 1944 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44
	July 7, 1945	July 8, 1944		July 7, 1945	July 8, 1944		July 7, 1945	July 8, 1944		July 7, 1945	July 8, 1944	
NEW ENGLAND												
Maine	0	0	0				3	32	38	0	1	1
New Hampshire	0	0	0				0	31	11	0	0	0
Vermont	0	0	0				23	10	61	0	0	0
Massachusetts	5	2	0				250	347	480	4	5	5
Rhode Island	2	1	0	22	6		0	13	50	0	0	0
Connecticut	1	0	1				34	66	124	2	1	1
MIDDLE ATLANTIC												
New York	9	2	8	[1] 4	[1] 1	[1] 1	72	328	605	10	18	10
New Jersey	1	1	1			1	61	262	285	2	11	3
Pennsylvania	2	5	6	1			261	133	226	7	21	4
EAST NORTH CENTRAL												
Ohio	4	6	3	6	3	4	24	68	68	7	0	1
Indiana	4	4	2	6	1	2	14	14	22	6	2	0
Illinois	2	4	8	3	13	5	246	72	150	11	8	1
Michigan [2]	7	3	2		1	1	50	296	296	4	8	2
Wisconsin	1	2	0	9	2	7	69	461	643	1	5	1
WEST NORTH CENTRAL												
Minnesota	6	3	3			1	7	72	72	1	1	0
Iowa	1	3	1			1	34	16	68	0	1	0
Missouri	0	4	1	4			15	19	38	3	8	2
North Dakota	0	0	0		1	1	2	7	7	0	1	1
South Dakota	2	2	2				15	3	5	1	0	0
Nebraska	1	2	1	3			4	23	23	0	1	1
Kansas	2	3	3			2	11	51	60	1	2	1
SOUTH ATLANTIC												
Delaware	1	0	0				1	3	3	0	1	1
Maryland [2]	4	4	3	2	3	2	8	59	59	1	12	6
District of Columbia	0	0	1		1		1	28	28	3	2	1
Virginia	0	0	3	89	37	32	11	82	82	7	6	1
West Virginia	1	3	3		1	1	2	53	9	1	1	1
North Carolina	5	4	3				5	99	43	6	1	1
South Carolina	6	2	2	52	100	100	11	31	38	1	4	1
Georgia	5	2	2	2	5	5	5	35	35	0	1	1
Florida	2	3	1		5	5	8	34	13	0	1	1
EAST SOUTH CENTRAL												
Kentucky	3	1	1		4	1	18	28	28	1	3	2
Tennessee	4	7	3	15	16	12	19	25	25	3	5	2
Alabama	0	4	2		15	8	0	9	27	0	5	1
Mississippi [2]	3	7	7							3	2	1
WEST SOUTH CENTRAL												
Arkansas	5	1	2	3	11	6	11	24	21	1	0	0
Louisiana	4	0	1			1	14	19	15	1	2	1
Oklahoma	1	0	3	6	1	5	14	31	27	1	4	3
Texas	26	23	16	298	236	236	146	277	145	4	7	4
MOUNTAIN												
Montana	0	1	1	5			3	8	31	0	1	1
Idaho	2	0	0		4	1	12	17	7	0	0	0
Wyoming	0	0	0				1	9	12	0	0	0
Colorado	4	5	5	10		11	9	20	32	0	1	0
New Mexico	0	2	2				3	4	4	0	0	0
Arizona	7	3	1	19	22	22	8	19	20	0	1	0
Utah [2]	1	0	0				78	30	70	0	0	0
Nevada	0	0	0		1		1	42	3	0	0	0
PACIFIC												
Washington	8	1	3				134	121	93	1	1	0
Oregon	3	3	2	1	1	1	54	27	46	2	1	0
California	13	15	15	21	12	17	477	841	366	13	32	2
Total	158	138	138	581	503	503	2,249	4,299	4,763	109	188	61
27 weeks	6,896	5,716	6,487	67,055	336,026	166,984	93,473	580,848	517,785	5,527	12,027	2,082

[1] New York City only.

[2] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended July 7, 1945, and comparison with corresponding week of 1944 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [1]		
	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44
	July 7, 1945	July 8, 1944		July 7, 1945	July 8, 1944		July 7, 1945	July 8, 1944		July 7, 1945	July 8, 1944	
NEW ENGLAND												
Maine	1	0	0	23	14	3	0	0	0	0	1	1
New Hampshire	2	0	0	1	6	2	0	0	0	0	0	0
Vermont	0	1	0	3	11	0	0	0	0	1	1	0
Massachusetts	1	0	0	93	74	69	0	0	0	3	3	3
Rhode Island	0	1	0	4	4	4	0	0	0	0	0	0
Connecticut	7	2	0	8	19	19	0	0	0	0	0	0
MIDDLE ATLANTIC												
New York	21	34	3	135	111	111	0	0	0	3	6	6
New Jersey	10	2	1	25	33	33	0	0	0	0	1	2
Pennsylvania	0	26	2	87	88	76	0	0	0	4	0	6
EAST NORTH CENTRAL												
Ohio	5	7	3	96	258	105	0	2	0	4	7	7
Indiana	0	6	2	22	20	12	0	0	0	0	2	2
Illinois	2	6	5	74	44	57	0	0	3	1	2	4
Michigan [2]	3	1	0	76	80	67	0	2	0	4	1	3
Wisconsin	0	1	0	52	46	47	0	0	0	0	0	1
WEST NORTH CENTRAL												
Minnesota	0	2	2	16	44	21	0	0	0	1	0	0
Iowa	2	2	1	8	9	10	1	0	0	0	1	1
Missouri	1	1	0	11	12	12	0	0	0	0	1	5
North Dakota	1	1	0	7	5	4	0	0	0	0	1	0
South Dakota	0	0	0	5	14	4	0	0	0	1	0	0
Nebraska	0	1	0	29	5	7	0	0	0	0	0	0
Kansas	1	2	2	18	15	15	0	0	0	2	2	2
SOUTH ATLANTIC												
Delaware	1	0	0	1	2	2	0	0	0	0	0	0
Maryland [2]	3	0	0	25	37	18	0	0	0	0	4	2
District of Columbia	0	0	0	10	2	9	0	0	0	0	0	0
Virginia	5	14	1	17	18	10	0	0	0	4	1	4
West Virginia	2	0	0	9	19	12	0	1	0	3	4	5
North Carolina	1	92	1	12	11	11	0	0	0	6	3	4
South Carolina	6	4	0	5	2	2	0	0	0	11	9	6
Georgia	5	4	4	5	6	8	0	0	0	5	11	17
Florida	0	7	2	1	2	2	0	0	0	4	5	5
EAST SOUTH CENTRAL												
Kentucky	1	28	2	7	6	8	0	0	0	6	7	9
Tennessee	18	2	2	15	12	12	0	0	0	3	7	8
Alabama	5	5	4	5	5	5	1	0	0	5	4	5
Mississippi [3]	1	2	2	4	2	2	0	0	0	3	6	7
WEST SOUTH CENTRAL												
Arkansas	0	1	1	3	2	2	0	0	0	3	3	8
Louisiana	3	9	0	7	5	4	0	0	0	8	8	9
Oklahoma	6	2	2	0	1	7	0	0	0	6	4	4
Texas	21	5	5	22	40	20	0	0	0	26	24	30
MOUNTAIN												
Montana	1	0	0	1	8	8	0	1	0	0	1	0
Idaho	0	2	1	2	7	4	0	0	0	0	0	0
Wyoming	0	0	0	3	3	3	0	0	0	3	0	0
Colorado	0	3	0	15	10	8	0	0	0	0	2	0
New Mexico	0	0	0	2	0	1	0	0	0	6	0	1
Arizona	0	1	0	2	14	3	0	0	0	0	0	1
Utah [1]	0	0	0	7	15	6	0	0	0	0	0	0
Nevada	0	0	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	0	1	0	21	65	10	1	0	0	1	0	0
Oregon	0	2	0	2	22	9	0	0	0	0	1	1
California	18	8	8	144	161	57	0	0	0	2	5	5
Total	154	288	86	1,140	1,389	964	3	6	9	129	138	215
27 weeks	1,424	1,290	847	129,055	142,782	93,132	248	273	563	1,872	2,253	2,593

[1] Period ended earlier than Saturday.
[2] Including paratyphoid fever reported separately as follows: Massachusetts 3; South Carolina 2; Arkansas 2; Louisiana 1; Wyoming 2; California 1.

Telegraphic morbidity reports from State health officers for the week ended July 7, 1945, and comparison with corresponding week of 1944 and 5-year median—Con.

Division and State	Whooping cough			Week ended July 7, 1945								
	Week ended—		Median 1940–44	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	July 7, 1945	July 8, 1944		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	31	11	22	0	0	0	0	0	0	0	1
New Hampshire	0	0	0	0	0	0	0	0	0	0	1
Vermont	28	30	14	0	0	0	0	0	0	0	3
Massachusetts	100	48	84	0	0	0	0	0	0	0	2
Rhode Island	7	2	18	0	0	0	0	0	0	0	0
Connecticut	30	24	26	0	1	0	0	0	0	0	2
MIDDLE ATLANTIC											
New York	284	83	245	2	12	0	0	0	0	0	3
New Jersey	165	47	53	0	0	0	0	2	0	0	3
Pennsylvania	196	76	216	0	0	0	1	0	0	1	2
EAST NORTH CENTRAL											
Ohio	155	196	211	0	0	1	0	1	0	0	1
Indiana	27	20	20	0	0	0	0	0	0	0	2
Illinois	57	78	88	1	12	0	1	0	0	0	4
Michigan [2]	35	43	167	1	1	0	0	0	0	6	9
Wisconsin	75	67	103	0	0	0	0	0	0	0	4
WEST NORTH CENTRAL											
Minnesota	1	14	41	3	0	0	0	0	0	0	5
Iowa	8	10	47	0	0	0	0	0	0	0	0
Missouri	24	31	31	0	0	2	0	0	0	0	0
North Dakota	1	14	14	0	0	0	0	0	0	0	0
South Dakota	0	55	4	0	0	0	0	0	0	0	1
Nebraska	0	17	14	0	0	0	0	0	0	0	0
Kansas	36	70	70	1	0	0	0	1	0	0	1
SOUTH ATLANTIC											
Delaware	5	4	4	0	0	0	0	0	0	0	0
Maryland [2]	60	91	86	1	0	1	0	2	0	0	1
District of Columbia	12	1	9	0	0	0	0	0	0	0	0
Virginia	84	55	69	0	0	131	0	4	3	0	1
West Virginia	27	33	36	0	0	0	0	0	0	0	0
North Carolina	105	144	144	0	0	0	0	1	0	1	2
South Carolina	94	124	91	14	65	0	0	0	0	1	0
Georgia	9	22	22	1	5	5	0	1	0	31	6
Florida	4	21	10	4	0	0	1	0	0	11	0
EAST SOUTH CENTRAL											
Kentucky	48	156	61	0	1	0	0	0	2	0	2
Tennessee	23	69	54	1	0	10	1	0	4	1	1
Alabama	22	47	39	8	0	0	0	1	0	12	0
Mississippi [2]				0	0	0	0	0	1	0	0
WEST SOUTH CENTRAL											
Arkansas	8	11	22	0	2	0	0	0	7	1	0
Louisiana	0	1	9	0	0	0	0	0	1	7	1
Oklahoma	28	15	17	1	3	0	0	0	0	0	4
Texas	173	267	250	12	452	27	0	0	0	34	12
MOUNTAIN											
Montana	4	4	14	0	0	0	0	0	0	0	0
Idaho	5	3	5	0	0	0	0	0	0	0	0
Wyoming	0	8	8	0	0	4	0	1	0	0	0
Colorado	37	15	33	0	0	0	0	0	0	0	0
New Mexico	6	0	22	0	0	0	0	0	0	0	0
Arizona	29	17	17	0	0	27	1	0	0	0	2
Utah [2]	23	62	62	0	0	0	0	0	0	0	3
Nevada	0	0	0	0	0	0	0	0	0	0	0
PACIFIC											
Washington	21	13	29	0	0	0	0	0	0	0	0
Oregon	0	5	26	0	0	0	0	2	0	0	3
California	249	47	222	0	10	0	0	0	0	0	3
Total	2,336	2,172	3,431	50	564	208	5	16	18	100	85
Same week, 1944	2,172	------	------	71	776	345	13	33	15	92	71
Average, 1942–44	3,123	------	------	42	608	396	13	[4] 18	20	[4] 65	------
27 weeks: 1945	67,428	------	------	883	12,241	3,515	184	169	423	1,698	2,510
1944	49,676	------	------	826	9,632	3,245	297	205	315	1,502	1,863
Average, 1942–44	87,134	------	[4] 102036	785	6,742	2,559	279	[4] 205	447	[4] 1,072	------

[2] Period ended earlier than Saturday.
[4] 5-year median, 1940–44.

Anthrax: New York 1 case. *Leprosy:* California 1 case. *Psittacosis:* California 1 case. *Rabies:* Missouri 1 case.

WEEKLY REPORTS FROM CITIES

City reports for week ended June 30, 1945

This table lists the reports from 88 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	0	------	0	0	0	2	0	4	0	0	1
New Hampshire:												
Concord	0	0	------	0	0	0	0	0	2	0	0	0
Massachusetts:												
Boston	3	0	------	0	84	4	6	0	22	0	0	32
Fall River	0	0	------	0	0	1	0	0	0	0	0	0
Springfield	0	0	------	0	2	0	0	0	4	0	0	5
Worcester	0	0	------	0	53	0	3	0	2	0	0	3
Rhode Island:												
Providence	0	0	------	0	5	1	1	0	2	0	0	24
Connecticut:												
Bridgeport	0	0	------	0	0	0	0	0	2	0	0	0
Hartford	1	0	------	0	18	0	1	0	7	0	0	0
New Haven	0	0	------	0	2	0	4	0	0	0	0	12
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	------	1	1	1	7	5	6	0	0	3
New York	11	0	1	0	73	9	0	4	112	0	0	110
Rochester	0	0	2	0	50	1	3	0	3	0	0	13
Syracuse	0	0	------	0	0	0	2	0	1	0	0	61
New Jersey:												
Camden	0	0	------	0	3	0	0	0	1	0	0	0
Newark	0	0	------	0	5	1	0	0	6	0	0	11
Trenton	0	0	------	0	1	0	3	0	0	0	0	6
Pennsylvania:												
Philadelphia	0	0	------	0	301	2	16	0	28	0	2	93
Pittsburgh	0	0	------	0	3	5	8	0	13	0	0	17
Reading	1	0	------	0	0	0	0	0	1	0	0	1
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	1	0	------	0	3	3	5	0	7	0	0	6
Cleveland	0	0	1	0	2	4	4	2	11	0	1	37
Indiana:												
Fort Wayne	0	0	------	0	0	0	4	0	0	0	0	0
Indianapolis	0	0	------	1	3	0	2	0	8	0	0	4
South Bend	0	0	------	0	0	0	0	0	1	0	0	0
Terre Haute	0	0	------	0	0	0	0	0	1	0	0	0
Illinois:												
Chicago	0	0	1	1	256	8	17	2	45	0	0	48
Springfield	0	0	------	0	0	0	2	0	0	0	0	0
Michigan:												
Detroit	6	1	1	1	122	3	12	2	28	0	2	27
Flint	0	0	------	0	1	0	4	0	3	0	0	0
Grand Rapids	0	0	------	0	2	0	0	0	3	0	0	1
Wisconsin:												
Kenosha	0	0	------	0	8	0	0	0	0	0	0	3
Milwaukee	0	0	------	0	16	2	1	1	24	0	0	9
Racine	0	0	------	0	0	0	0	0	1	0	0	8
Superior	0	0	------	0	1	0	0	0	1	0	0	3
WEST NORTH CENTRAL												
Minnesota:												
Duluth	1	0	------	0	0	1	2	0	8	0	0	1
Minneapolis	0	0	------	1	0	0	2	0	16	0	0	3
St. Paul	0	0	------	0	5	0	4	0	2	0	0	1
Missouri:												
Kansas City	0	0	------	0	8	0	1	0	5	0	0	0
St. Joseph	0	0	------	0	1	0	0	0	0	0	0	0
St. Louis	0	0	1	1	17	1	8	2	5	0	0	18
North Dakota:												
Fargo	0	0	------	0	0	0	4	0	0	0	0	0
Nebraska:												
Omaha	1	0	------	0	1	0	2	0	3	0	0	0
Kansas:												
Topeka	0	0	------	0	2	0	0	0	5	0	0	1
Wichita	0	0	------	0	2	0	5	0	3	0	0	2

City reports for week ended June 30, 1945—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	1	0	1	1	0	0	0	0
Maryland:												
Baltimore	1	0	------	0	3	3	3	0	14	0	0	60
Cumberland	0	1	------	0	0	0	0	0	0	0	0	0
Frederick	0	0	------	0	0	0	0	0	0	0	0	0
District of Columbia:												
Washington	0	0	------	1	1	0	7	3	13	0	2	22
Virginia:												
Lynchburg	0	0	------	0	2	0	1	0	2	0	0	0
Richmond	0	0	------	0	3	1	0	1	3	0	0	4
Roanoke	0	0	------	0	0	1	0	0	2	0	1	0
West Virginia:												
Charleston	0	0	------	0	0	0	0	0	1	0	0	0
Wheeling	0	0	------	0	0	0	1	0	1	0	0	1
North Carolina:												
Raleigh	0	0	------	0	0	0	0	0	0	0	0	4
Wilmington	0	0	------	0	1	0	1	0	1	0	0	6
Winston-Salem	0	0	------	0	0	0	2	0	1	0	0	9
South Carolina:												
Charleston	0	0	------	0	1	1	0	2	0	0	0	2
Georgia:												
Atlanta	1	0	------	0	0	0	2	0	0	0	1	3
Brunswick	1	0	------	0	0	0	0	0	1	0	0	0
Savannah	0	0	1	1	0	0	2	0	0	0	0	0
Florida:												
Tampa	0	0	------	0	0	0	3	0	0	0	0	0
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	------	0	5	1	9	0	2	0	2	5
Nashville	0	0	------	0	1	0	1	0	0	0	0	0
Alabama:												
Birmingham	0	0	------	0	0	0	3	5	0	0	1	0
Mobile	0	0	------	0	0	3	2	0	0	0	1	0
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	------	0	2	0	0	0	0	0	0	0
Louisiana:												
New Orleans	1	0	2	1	3	0	4	0	1	0	0	1
Shreveport	0	0	------	0	0	0	3	2	0		1	0
Texas:												
Dallas	2	0	------	0	5	0	4	0	2	0	1	1
Galveston	0	0	------	0	0	0	1	3	2		0	0
Houston	1	0	------	1	1	0	4	9	6	0	0	0
San Antonio	0	0	------	0	2	1	1	0	0	0	0	8
MOUNTAIN												
Montana:												
Billings	0	0	------	0	0	0	0	0	0	0	0	0
Great Falls	0	0	------	0	1	0	0	0	0	0	0	0
Helena	0	0	------	0	0	0	0	0	0	0	0	1
Missoula	0	0	------	0	0	0	0	0	0	0	0	0
Idaho:												
Boise	0	0	------	0	0	0	0	0	0	0	0	0
Colorado:												
Denver	1	0	2	1	3	0	14	0	2	0	0	11
Pueblo	0	0	------	0	0	0	1	0	0	0	0	4
Utah:												
Salt Lake City	0	0	------	0	36	0	0	0	2	0	0	4

City reports for week ended June 30, 1945—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle	0	0	------	0	60	0	3	0	8	0	0	3
Spokane	1	0	------	0	7	0	0	0	2	0	0	1
Tacoma	0	0	------	0	29	0	1	0	0	0	0	2
California:												
Los Angeles	1	0	5	0	70	1	2	0	31	0	0	34
Sacramento	1	0	------	0	6	0	1	0	3	0	0	9
San Francisco	0	0	------	0	97	1	3	2	18	0	0	4
Total	36	2	17	11	1,391	60	215	46	514	0	15	763
Corresponding week, 1944	51	------	12	6	1,289	------	248	------	509	0	13	475
Average, 1940–44	59	------	28	[1] 9	[2] 2,628	------	[1] 248	------	527	0	23	1,019

[1] 3-year average, 1942–44.
[2] 5-year median, 1940–44.

Dysentery, amebic.—Cases: New York, 2; Richmond, 1.
Dysentery, bacillary.—Cases: New York, 3; Detroit, 1; Charleston, S. C., 24; Nashville, 2; Los Angeles, 2.
Dysentery, unspecified.—Cases: San Antonio, 8.
Rocky Mountain spotted fever.—Cases: Washington, 1.
Typhus fever, endemic.—Cases: Atlanta, 2; New Orleans, 2; Shreveport, 1; Dallas, 1; San Antonio, 4.

Rates (annual basis) per 100,000 population, by geographic groups, for the 88 cities in the preceding table (estimated population, 1943, 34,058,900)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England	10.5	0.0	0.0	0.0	431	15.8	44.6	0.0	118	0.0	0.0	202
Middle Atlantic	5.6	0.0	1.4	0.5	202	8.8	18.1	4.2	79	0.0	0.9	146
East North Central	4.4	0.6	1.9	1.9	262	12.6	32.2	4.4	84	0.0	1.9	92
West North Central	4.0	0.0	2.0	4.0	72	4.0	55.7	4.0	94	0.0	0.0	52
South Atlantic	4.9	1.6	1.6	3.3	20	9.8	37.6	11.4	64	0.0	6.5	181
East South Central	0.0	0.0	0.0	0.0	35	23.6	88.5	29.5	12	0.0	23.6	30
West South Central	11.5	0.0	5.7	5.7	37	2.9	48.8	40.2	32	0.0	5.7	29
Mountain	7.9	0.0	15.9	7.9	318	0.0	119.1	0.0	32	0.0	0.0	159
Pacific	4.7	0.0	7.9	0.0	425	3.2	15.8	3.2	98	0.0	0.0	84
Total	5.5	0.3	2.6	1.7	214	9.2	33.0	7.1	79	0.0	2.3	117

PLAGUE INFECTION IN SAN BERNARDINO AND SAN BENITO COUNTIES, CALIF.

Plague infection has been reported proved on June 27 in San Bernardino and San Benito counties, Calif., as follows.—*San Bernardino County:* In a pool of 11 fleas from mice, *Peromyscus*, sp., trapped 1 mile north of Fawnskin; in a pool of 52 fleas from 3 ground squirrels, *C. fisheri*, trapped 1 mile west and 1 mile north of Big Bear Lake. *San Benito County:* In a pool of 203 fleas from 17 ground squirrels, *C. beecheyi*, shot 7 miles east of Tres Pinos; in tissue from 5

ground squirrels, same species, shot 8 miles east and 5 miles south of Tres Pinos; in 3 pools of fleas additional to those previously reported proved on June 22, from ground squirrels, *C. beecheyi*, shot distant from Tres Pinos as follows: A pool of 400 fleas, 7 miles east and 3 miles south; 379 fleas, 7 miles east and 5 miles south; 185 fleas, 8 miles east and 5 miles south.

TERRITORIES AND POSSESSIONS

Panama Canal Zone

Notifiable diseases—May 1945.—During the month of May 1945, certain notifiable diseases were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Panama		Colon		Canal Zone		Outside the Zone and terminal cities		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chickenpox	4		3		6		2		15	
Diphtheria	5		1				3		9	
Dysentery:										
Amebic	1				3		12		16	
Bacillary			1		4				5	
Leprosy				1			2		2	1
Malaria [1]	7	1	4		62		79	1	152	2
Measles					5				5	
Mumps					5		2		7	
Paratyphoid fever							1		1	
Pneumonia		10		6	29			5	[2] 29	21
Relapsing fever							2		2	
Trachoma	1								1	
Tuberculosis		12		2	12			7	[2] 12	21
Whooping cough					5				[2] 5	

[1] 17 recurrent cases.
[2] In the Canal Zone only.

FOREIGN REPORTS

BRITISH EAST AFRICA

Kenya—Notifiable diseases—Year 1944.—During the year 1944, certain notifiable diseases were reported in Kenya, British East Africa, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	738	27	Relapsing fever	336	19
Diphtheria	33	4	Scarlet fever	2	
Dysentery:			Schistosomiasis	736	2
Amebic	5,067	71	Smallpox (alastrim)	3,046	16
Bacillary	2,256	68	Syphilis	13,907	73
Encephalitis, infectious	22	11	Trachoma	1,446	
Gastroenteritis	17,712	234	Trypanosomiasis	236	13
Hookworm disease	1,814	1	Tuberculosis	3,200	504
Leprosy	180	2	Typhoid and paratyphoid fever	897	186
Malaria	77,840	397	Typhus fever	57	3
Measles	2,576	19	Undulant fever	19	1
Meningitis, meningococcus	1,075	303	Yaws	8,897	5
Plague, human	9	4			
Poliomyelitis	31	5			

NOTE.—Present estimated population is 3,725,000.

CANADA

Provinces—Communicable diseases—Week ended June 16, 1945.—During the week ended June 16, 1945, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox	1	16		100	339	46	27	79	123	731
Diphtheria		3	3	25	2	5		1	2	41
Dysentery, bacillary				1						1
German measles		14		12	39		8	35	28	136
Influenza	7	7			34				7	55
Measles		3		75	185	31	36	51	443	824
Meningitis, meningococcus				1	5		1			7
Mumps		1		85	110	37	23	70	24	350
Poliomyelitis				1	1					2
Scarlet fever		1	14	72	90	15		22	7	221
Tuberculosis (all forms)		5	1	129	28	14	20	12	76	285
Typhoid and paratyphoid fever				4	2	1	1	2		10
Undulant fever				3						3
Venereal diseases:										
Gonorrhea		13	22	114	150	47	24	40	59	469
Syphilis	1	1	4	126	86	17	5	12	23	275
Whooping cough				72	19		4	8	5	108

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

From 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 tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases; P, present]

NOTE.—Since many of the figures in the following tables are from weekly reports, the accumulated totals are for approximate dates.

Place		January–April 1945	May 1945	June 1945—week ended—				
				2	9	16	23	30
ASIA								
China: Szechwan Province—								
Chungking	C						[1] 2,000	
Hsiao Lung Ken	C						1	
Hsin Kai Shik	C						1	
Kiang Pei	C						1	
India	C	39,466	17,107					
Bombay	C	14	23			1		
Calcutta	C	2,533	1,007	122	82	96		
Cawnpore	C	6	44	20	14	20		
Chittagong	C	13	2	1	1			
Delhi	C	[2] 1	10	2	4	4		
Madras	C	47	2					
Vizagapatam	C		13					
Indochina: Cochinchina	C		P					

[1] From the beginning of the outbreak.
[2] Imported.

PLAGUE

[C indicates cases; P, present]

Place		January–April 1945	May 1945	June 1945—week ended—				
				2	9	16	23	30
AFRICA								
Algeria	C	[1] 12						
Basutoland	C	4						
Bechuanaland	C	7						
Belgian Congo	C	4	2	1	1			
British East Africa:								
Kenya	C	3	1			1		[2] 5
Uganda	C	4		2				
Egypt	C	67	46					
Ismailiya	C	45	22					
Port Said	C	6	14	2	7	5	7	
Suez	C	5	5		5			
French West Africa	C	5						
Dakar	C	1						
Madagascar	C	102	8					
Morocco (French)	C	121	110				[2] 193	
Senegal	C	54						
Tunisia	C	3						
Union of South Africa	C	6	1					
ASIA								
China: Foochow	C					P		
India	C	17,469						
Iraq	C	34						
Palestine	C	12						
Plague-infected rats		16						
EUROPE								
France: Corsica—Ajaccio	C		2		2		1	
Great Britain: Malta	C							4
Portugal: Azores	C	3		1				
Spain: Canary Islands	C	1						

See footnotes at end of table.

PLAGUE—Continued

[C indicates cases, P, present]

Place		January–April 1945	May 1945	June 1945—week ended— 2	9	16	23	30
NORTH AMERICA								
Canada: Alberta Province.[4]								
Plague-infected squirrel							1	
SOUTH AMERICA								
Bolivia: Santa Cruz Department	C	[5] 14	61					
Ecuador:								
Chimboraza Province	C	6						
Loja Province	C	2						
Peru:								
Ancash Department	C	1						
Ica Department	C	[6] 2						
Lambayeque Department	C	12						
Libertad Department	C	10						
Lima Department	C	10						
Piura Department	C	4						
OCEANIA								
Hawaii Territory	C	1						
Plague-infected rats [7]		9						

[1] Includes 1 case of pneumonic plague.
[2] Suspected cases.
[3] For the period June 1–20, 1945.
[4] Plague infection in fleas was also reported for the weeks ended June 9 and June 23, 1945.
[5] Includes 4 confirmed cases.
[6] Includes 1 suspected case.
[7] Plague infection was also proved positive in a pool of 5 mice on Jan. 4, in a pool of fleas on Feb. 14, and in a pool of 40 fleas on Mar. 14, 1945.

SMALLPOX

[C indicates cases; P, present]

AFRICA								
Algeria	C	109	26					
Angola	C	54						
Basutoland	C	306						
Belgian Congo	C	2,865	1,040					
British East Africa:								
Kenya	C	116	18		3			
Nyasaland	C	9						
Tanganyika	C	2,371	353		80			
Uganda	C	466	72	3	8			
Cameroon (French)	C	291	27		[1] 5			
Dahomey	C	92	8		[1] 2			
Egypt	C	782	147					
French Equatorial Africa	C	1,472	28					
French Guinea	C	1,002	337		[1] 5			
French West Africa: Dakar District	C	319	46		[1] 6			
Gambia	C	56	13		2	8		
Gold Coast	C	26					3	
Ivory Coast	C	240	105		[1] 6			
Mauritania	C	41	33					
Morocco (French)	C	179	72		[1] 25			
Nigeria	C	2,551	96					
Niger Territory	C	310	91		[1] 33			
Rhodesia, Northern	C	584	25		12			
Senegal	C	311	47		[1] 24			
Sierra Leone	C	2	10					
Sudan (Anglo-Egyptian)	C	[2] 3						
Sudan (French)	C	1,039	332		[1] 78			
Togo (British)	C	25						
Togo (French)	C	354	64		[1] 20			
Tunisia	C				[1] 2			
Union of South Africa [3]	C	395	P		P			P

See footnotes at end of table.

SMALLPOX—Continued

[C indicates cases; P, present]

Place		January–April 1945	May 1945	June 1945—week ended— 2	9	16	23	30
ASIA								
Arabia	C	16	3	1		1		
Ceylon	C	[4] 341	7					
China: Kunming (Yunnan Fu)	C	6	1					
India	C	143,546						
Iran	C	344						
Iraq	C	13	8	8		1	1	
Syria and Lebanon	C	6						
Turkey (see Turkey in Europe.)								
EUROPE								
Belgium	C	1						
France	C	2						
Great Britian: Scotland	C	[2] 2						
Italy	C	1,029	58	4	4	6		
Sicily	C	4						
Portugal	C	10	6			1		
Spain	C	23	3					
Canary Islands	C	1						
Turkey	C	274	8	2		5	1	
NORTH AMERICA								
Canada	C	6						
Guatemala	C	3	1					
Honduras	C	8						
Mexico	C	710						
Nicaragua	C	123						
SOUTH AMERICA								
Bolivia	C	150						
Brazil	C	[5] 56	1					
Columbia	C	113	48	12				
Ecuador	C	13	8					
Paraguay	C	1						
Peru	C	23						
Venezuela	C	[5] 436	[5] 28					

[1] For the period June 1–10, 1945.
[2] Imported.
[3] For the week ended June 30, 1945, cases of virulent smallpox were reported in the Union of South Africa.
[4] Includes some cases of chickenpox.
[5] Includes cases of alastrim.

TYPHUS FEVER *

[C indicates cases; P, present]

AFRICA								
Algeria	C	735	106					
Basutoland	C	50						
Belgian Congo [1]	C	58	48					
British East Africa: Kenya	C	16	8					
Egypt	C	10,516	2,488					
French West Africa: Dakar [1]	C	4	2		[2] 5			
Libya: Tripolitania	C	17						
Morocco (French)	C	3,303	849				[3] 520	
Nigeria	C						P	
Rhodesia, Northern	C	11						
Sierra Leone	C	1						
Tunisia	C	360	5		[2] 4			
Union of South Africa	C	158	P		P			
ASIA								
China: Kunming (Yunnan Fu)	C	32						
India	C	21						
Iran	C	467						
Iraq	C	83	73	16	13	10	11	
Palestine [1]	C	23	1					
Syria and Lebanon	C	8	4					
Trans-Jordan	C	42						
Turkey (see Turkey in Europe.)								

See footnotes at end of table.

TYPHUS FEVER—Continued

[C indicates cases; P, present]

Place		January–April 1945	May 1945	June 1945—week ended— 2	9	16	23	30
EUROPE								
Albania	C	100						
Belgium	C	1						
Bulgaria	C	770						
France	C	5	10					[4] 15
Gibraltar	C	4						
Great Britain	C	1	2	3	1			
Greece	C	26	8					
Italy	C	13	35					
Malta and Gozo [1]	C	6						
Netherlands	C	6						
Portugal	C	39	2					
Rumania	C	[3] 7,831						
Slovakia	C	230						
Spain	C	8	5					
Sweden	C		[4] 3					
Turkey	C	1,483	300	35	66	45	42	37
Yugoslavia	C	137						
NORTH AMERICA								
Canada [1]	C	1						
Costa Rica	C	2	1		2			
Cuba [1]	C	1	1					
Guatemala	C	659	143					
Jamaica	C	12	4	1				
Mexico	C	703						
Panama (Republic)	C	1						
Puerto Rico [1]	C	28	21	4	2	4		
Virgin Islands [1]	C	4						
SOUTH AMERICA								
Bolivia	C	88						
Brazil	C	1						
Chile [1]	C	198						
Colombia	C	18	2					
Curaçao	C	1						
Ecuador	C	160	35					
Peru	C	232						
Venezuela [1]	C	50	8					
OCEANIA								
Australia	C	79						
Hawaii Territory	C	33	6	4	2	5		

* Reports from some areas are probably murine type, while others probably include both murine and louse-borne types.

[1] Reports cases as murine type.
[2] For the period June 1–10, 1945.
[3] For the period June 1–20, 1945.
[4] Repatriated refugees.
[5] For the period Jan. 1–20, 1945.

YELLOW FEVER

[C indicates cases; D, deaths]

AFRICA								
Gold Coast:								
Nsawam	C					1		
Takoradi	C				1			
Winneba	C						1	
Ivory coast:								
Gaoua	C			1				
Guiglo	C	1						
Sierra Leone: Moyamba	C					[1] 1		
SOUTH AMERICA								
Brazil:								
Goiaz State	D	75						
Minas Geraes State	D	17						
Colombia: Santander del Norte Department	D	[2] 5						
Peru: Cuzco Department	C	2						
Venezuela:								
Bolivar State	C	1						
Tachira State	D	2						1

[1] Suspected.
[2] For the period Jan. 1 to Mar. 11, 1945.