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SICKNESS AMONG INDUSTRIAL EMPLOYEES

FREQUENCY OF DISABILITY LASTING LONGER THAN ONE WEEK FROM IMPORTANT CAUSES AMONG 163,000 PERSONS IN INDUSTRY IN 1928, AND A SUMMARY OF THE MORBIDITY EXPERIENCE FROM 1920 TO 1928 [1]

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The average frequency of cases of disability lasting more than one week among members of a group of about 35 industrial sick-benefit associations and company relief departments reporting periodically to the United States Public Health Service is presented for the year 1928 in comparison with each of the preceding seven years.[2]

As pointed out in previous reports, the rates presented are probably understatements of the frequency of cases of sickness and nonindustrial injuries which render employees unable to work for eight consecutive days or longer, because benefits are usually refused for disability on account of the venereal diseases, for illness resulting from the violation of any civil law, for the results of willful or gross negligence, and for certain other causes. Some of the associations do not pay benefits for chronic diseases contracted prior to the date of joining the organization nor for disabilities caused by or growing out of specific physical defects, and instances have been found of patient's failure to report his case on account of ignorance that cash benefits were due, as well as situations in which the employee was too sick to arrange for the reporting of his illness within the time limit set by the organization. On the other hand, a few cases of malingering may be included in the records. It appears, therefore, that the results probably do not seriously understate the real incidence of disability lasting eight days or longer.

With but few exceptions the reporting establishments are located east of the Mississippi and north of the Ohio and Potomac Rivers. None of the reports include industrial accidents. In calculating the sickness and nonindustrial accident frequency rates, the number of

[1] From the Office of Industrial Hygiene and Sanitation in cooperation with the Office of Statistical Investigations, U. S. Public Health Service.

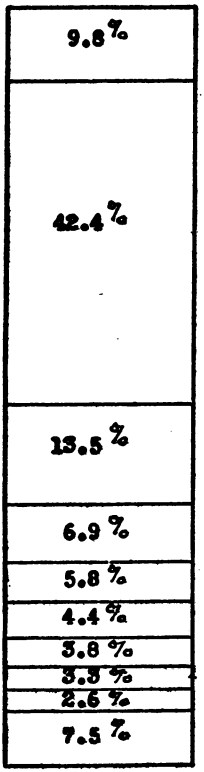
[2] Several articles on the frequency of disabling illness as shown by these data have been published in the Public Health Reports. The effect upon the sickness rate of certain factors such as age and sex which are not discussed in the present report may be found in Reprint No. 1266 from the Public Health Reports of Feb. 22, 1929.

persons used as the divisor is the average number of employees reported as holding membership in the association or company relief department.

RELATIVE IMPORTANCE OF DIFFERENT GROUPS OF DISEASES FROM THE STANDPOINT OF THE FREQUENCY OF THEIR OCCURRENCE

The relative importance of each of 10 groups of disabilities for which sick benefits were paid during the seven years ending December 31, 1927, was not changed by the addition of the data for the year

RELATIVE FREQUENCY OF CLAIMS FOR SICK-BENEFITS ON ACCOUNT OF SPECIFIED GROUPS OF DISEASES AMONG MALE INDUSTRIAL EMPLOYEES, 1921-1928.



* Numbers in parentheses are disease title numbers in the International List of Causes of Death, 3rd. revision, Paris, 1920.

FIGURE 1

1928. However, in several instances the percentages were different from those shown in last year's report, and it seemed worth while to present the 8-year record. During these years the claims for sickness

benefits on account of respiratory diseases constituted 42.4 per cent of total claims; for digestive diseases, 13.5 per cent; and for external causes (nonindustrial injuries), 9.8 per cent. These three groups added together, therefore, accounted for nearly two-thirds of the cases for which sick benefits were paid by associations reporting to the Public Health Service.

The sickness incidence or frequency rates from which were computed the percentages shown in Figure 1 appear in Tables 1 to 3. In the respiratory group of diseases the importance of influenza is indicated in Table 2 from the fact that one-half of the respiratory cases, 1921 to 1928, were reported as influenza or grippe. In 1928 this percentage was even larger, 57.5 per cent of the respiratory cases being diagnosed as influenza or grippe.

The digestive diseases were the second most important group from the standpoint of the frequency of their occurrence, followed by external causes (nonindustrial injuries).

The morbidity records are given in some detail in Tables 1 to 3, so that any sick-benefit organization with a waiting period of one week may compare its sickness frequency with the yearly rates presented, if it classifies in accordance with the International List of the Causes of Death (1920 revision) the disabilities among its male members which lasted eight consecutive days or longer, and then divides the number of cases of each specified disease group by the average male membership during the year.

TABLE 1.—*Frequency of specified disease groups which caused disability for eight consecutive calendar days or longer in a group of male industrial workers employed in different industries, by years, from 1921 to 1928*

Year	Average male membership of the reporting companies	Sickness and nonindustrial injuries [1]		Nonindustrial injuries [2]		Sickness		Respiratory diseases [3]		Nonrespiratory diseases	
		Number of cases per 1,000 men	Number of cases	Number of cases per 1,000 men	Number of cases	Number of cases per 1,000 men	Number of cases	Number of cases per 1,000 men	Number of cases	Number of cases per 1,000 men	Number of cases
1921–1928	[4] 899,064	103.5	93,064	10.2	9,202	93.3	83,862	43.9	39,484	49.4	44,378
1921	66,084	90.9	6,004	8.1	539	82.8	5,465	34.1	2,251	48.7	3,214
1922	66,466	96.4	6,407	7.8	518	88.6	5,889	44.0	2,918	44.6	2,971
1923	89,910	95.1	8,548	9.0	808	86.1	7,740	44.3	3,978	41.8	3,762
1924	114,065	96.0	10,948	9.6	1,093	86.4	9,855	38.2	4,349	48.2	5,506
1925	114,631	105.9	12,140	10.9	1,248	95.0	10,892	44.1	5,062	50.9	5,830
1926	118,886	111.9	13,307	11.2	1,325	100.7	11,982	50.4	5,991	50.3	5,991
1927	165,465	103.7	17,162	11.4	1,896	92.3	15,266	40.2	6,652	52.1	8,614
1928	163,557	113.4	18,548	10.9	1,775	102.5	16,773	50.6	8,283	51.9	8,490

[1] Industrial accidents and certain diseases are not reported as explained in the text.
[2] External causes—title numbers 165 to 203 in the International List of the Causes of Death, 3d revision, 1920.
[3] Title numbers 11, 31, 97 to 107, and 109 in the International List of the Causes of Death, 1920.
[4] Number of years of life under observation.

TABLE 2.—*Frequency of specified respiratory diseases which caused disability for eight consecutive calendar days or longer in a group of male industrial workers employed in different industries, by years, from 1921 to 1928*

Year	Number of cases per 1,000 men						
	Respiratory diseases	Influenza and grippe (11)	Tuberculosis of the respiratory system (31)	Bronchitis (99)	Pneumonia, all forms (100, 101)	Diseases of pharynx and tonsils (109)	Other diseases of respiratory system (97, 98, 102–107)
Average 1921-1928	43.9	21.8	1.4	5.7	3.3	6.3	5.4
1921	34.1	12.9	1.9	5.8	2.6	5.9	5.0
1922	44.0	20.9	1.9	5.4	3.8	5.3	6.7
1923	44.3	22.7	1.2	5.3	3.8	5.7	5.6
1924	38.2	16.9	1.3	5.0	3.1	6.4	5.5
1925	44.1	21.3	1.2	5.7	3.5	7.0	5.4
1926	50.4	27.1	1.6	6.6	3.1	7.1	4.9
1927	40.2	17.7	1.6	6.0	3.3	6.4	5.2
1928	50.6	29.1	1.1	5.7	3.4	5.9	5.4

TABLE 3.—*Frequency of specified nonrespiratory disease groups which caused disability for eight consecutive calendar days or longer in a group of male industrial workers employed in different industries, by years, from 1921 to 1928*

Year	Number of cases per 1,000 men								
	Digestive diseases						Nonrespiratory, non digestive		
	Digestive diseases, total	Diseases of the stomach [1] (111, 112)	Diarrhea and enteritis (114)	Appendicitis (117)	Hernia (118a)	Other digestive diseases (108, 110, 115, 116, 118–127)	Nonrespiratory, nondigestive, total	Circulatory and genitourinary, total	Diseases of the heart (87–90)
Average 1921-1928	14.0	4.7	1.6	3.7	1.6	2.4	35.4	7.1	1.8
1921	13.9	4.2	2.2	3.3	2.1	2.1	34.8	6.6	1.6
1922	12.2	4.1	1.8	2.9	1.5	1.9	32.4	6.4	1.3
1923	11.4	3.9	1.8	2.9	1.2	1.6	30.4	5.4	1.2
1924	13.3	4.6	1.9	3.3	1.3	2.2	34.9	6.3	1.5
1925	14.8	5.2	1.8	3.9	1.4	2.5	36.1	7.1	1.7
1926	14.5	5.2	1.5	3.6	1.6	2.6	35.8	7.2	1.9
1927	15.1	5.0	1.4	4.5	1.6	2.6	37.0	7.7	2.1
1928	14.6	4.7	1.3	4.2	1.8	2.6	37.3	8.1	2.1

Year	Nonrespiratory, nondigestive diseases								
	Diseases of the veins (93)	Other diseases of the circulatory system (91, 92, 94–96)	Nephritis, acute and chronic (128, 129)	Other diseases of genitourinary system (130–136)	Diseases of the nervous system, total (70–84)	Neuralgia, neuritis, sciatica (82)	Neurasthenia and the like (part of 84)	Other diseases of the nervous system (70–81, 83, part of 84)	Diseases of the eyes (85)
Average, 1921-1928	1.5	1.0	0.8	2.0	4.5	2.1	1.5	0.9	1.1
1921	1.7	.8	.7	1.8	4.1	1.3	2.5	.0	.8
1922	1.8	.7	.8	1.8	4.6	2.3	1.5	.8	.9
1923	1.3	.6	.8	1.5	3.5	1.6	1.2	.7	.9
1924	1.3	.8	.7	2.0	4.6	2.3	1.6	.7	1.2
1925	1.7	1.1	.7	1.9	4.6	2.0	1.8	.8	1.0
1926	1.5	.9	.8	2.1	4.5	2.1	1.6	.8	1.3
1927	1.5	1.1	.8	2.2	4.7	2.3	1.4	1.0	1.4
1928	1.7	1.3	.8	2.2	4.6	2.2	1.4	1.0	1.1

[1] Cancer excepted.

TABLE 3.—*Frequency of specified nonrespiratory disease groups which caused disability for eight consecutive calendar days or longer in a group of male industrial workers employed in different industries, by years, from 1921 to 1928*—Continued

Year	Nonrespiratory, nondigestive diseases								
	Diseases of the ear and mastoid process (86)	Rheumatism, acute and chronic (51, 52)	Lumbago and other diseases of organs of locomotion (158)	Diseases of the skin (151–154)	Epidemic and endemic diseases [1] (1–10, 12–25)	Cancer (all forms) (43–49)	General diseases not shown separately (26–30, 32–37, 41, 42, 50, 53–69)	Diseases of the bones and joints (155, 156)	Ill-defined and unknown causes of disability (205)
Average 1921–1928	0.6	6.0	3.4	3.9	2.7	0.6	2.5	1.0	2.0
1921	.6	5.6	3.0	3.6	2.6	.6	3.5	2.0	1.8
1922	.5	4.6	3.4	3.6	2.1	.6	2.2	1.5	2.0
1923	.4	4.7	2.7	3.3	2.4	.5	2.0	1.5	3.1
1924	.5	6.5	3.2	3.5	3.4	.6	2.3	.6	2.2
1925	.8	6.4	3.3	3.5	3.4	.6	2.5	.6	2.3
1926	.7	5.8	3.8	3.8	2.5	.8	2.5	.6	2.3
1927	.5	6.3	3.5	4.7	2.4	.7	2.6	1.0	1.5
1928	.7	6.4	4.0	4.4	2.7	.4	2.5	.7	1.7

[1] Except influenza and grippe.

SICKNESS INCIDENCE BY YEARS

In 1928 the frequency of cases of sickness and nonindustrial injuries causing disability for 8 consecutive days or longer was 113 cases per 1,000 men. This is the highest rate during any of the last eight years. For this result influenza appears to have been chiefly responsible. As shown in Table 2 and Figure 2, the influenza rate was higher in 1928 than in any year since 1920. The pneumonia rate, however, did not rise to a new peak in 1928, but remained close to its average frequency over the 8-year period. A decrease is indicated for diseases of the pharynx and tonsils, and the incidence rate of tuberculosis of the respiratory system reached a new low level in 1928. Nonrespiratory diseases as a whole appear to have occurred in 1928 at much the same frequency as in the preceding three years, and were only slightly higher (by 5 per cent) than the 8-year average. For the first time since 1922 a decrease occurred in the frequency of nonindustrial accidents.

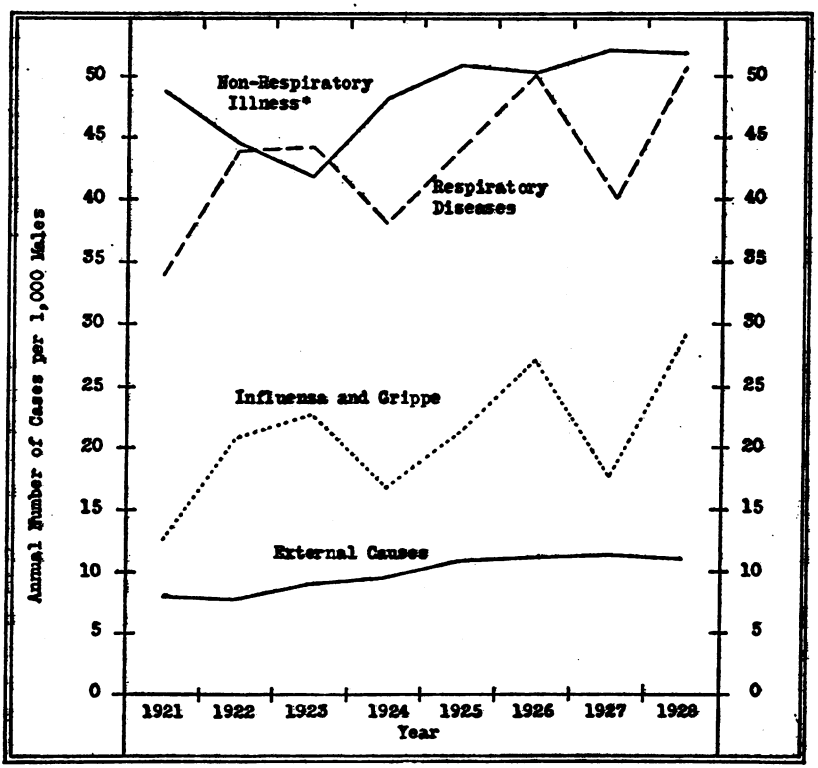
For digestive diseases as a whole, the incidence rate in 1928 was much the same as in the preceding three years. Similarly, little change is indicated in the rate of occurrence of the more important digestive diseases.

The nonrespiratory, nondigestive diseases as a group also have shown relatively little change from year to year, but within this broad group a gradual increase in the rate of circulatory-genito-urinary diseases appears to have taken place since 1922, principally on account of a larger number of cases of heart disease.

It is of interest to note that the reports show no tendency for diseases of the nervous system to increase in frequency over the last eight years. The cases of neurasthenia and the like even appear to show a slightly declining trend.

SICKNESS INCIDENCE BY MONTHS, 1920 TO 1928

The sickness rates by months are shown in Table 4 and Figure 3. It is apparent from the graph that influenza reached epidemic or near-epidemic proportions in 1920, 1922, 1923, 1926, and 1928. Even in the interepidemic years, which numbered only four in a 9-year period,



* Exclusive of accidents.

FIGURE 2.—Frequency of the principal causes of disability, 1921 to 1928

the winter incidence of this disease was of no inconsiderable magnitude. The seasonal waves of respiratory sickness exclusive of influenza were pronounced, but not nearly so much as the explosive-like curve for influenza.

NATURE OF ILLNESSES IN CERTAIN INDUSTRIES

In Table 4 the frequency of different diseases and groups of diseases is shown for men in iron and steel manufacturing, in public utilities, and in a group of miscellaneous industries, which include the manu-

facture of chemicals, abrasives, plumbing fixtures, electrical equipment, paper, paper novelties, timepieces, hats, underwear, flour, soap, and certain other products.

The sickness rates among the men in the iron and steel industry were generally lower than for the other two industrial groups. One

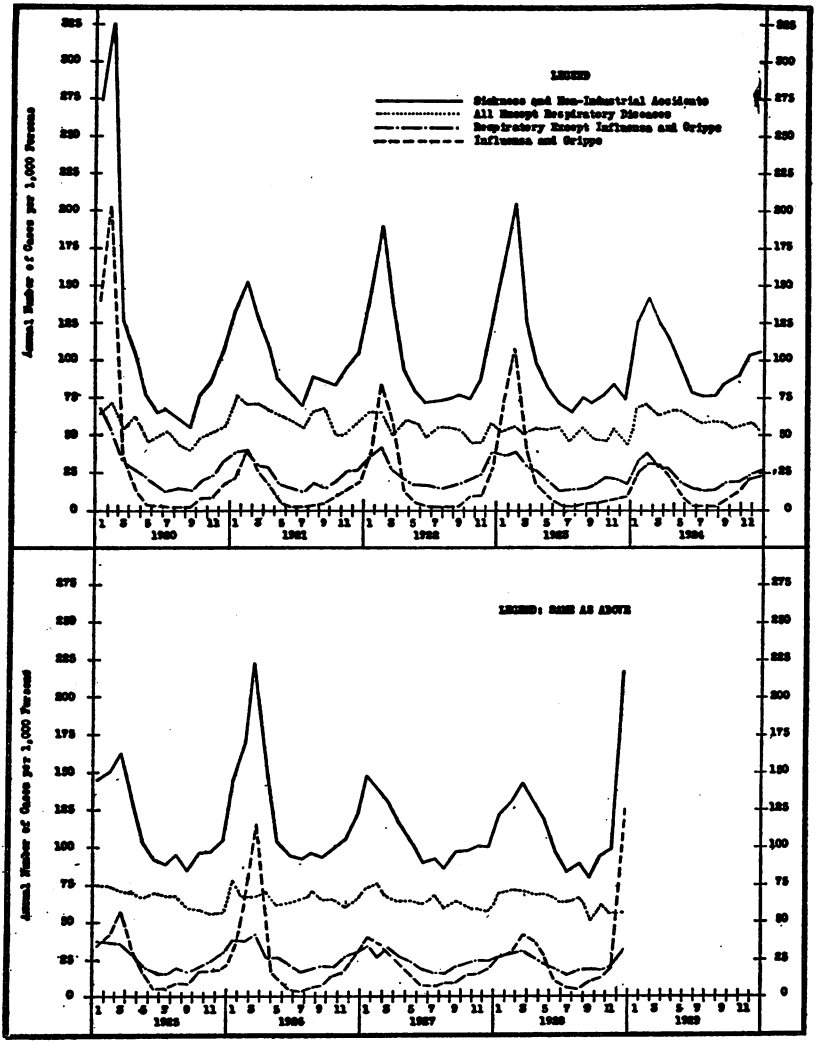


FIGURE 3.—Frequency of specified groups of diseases causing disability for 8 days or longer by month of onset from January, 1920, to December, 1928

disease which did not show a lower incidence, however, was pneumonia. Data have been collected in a large steel plant which will show the frequency of this disease in different occupations during the last five years, and a report is being prepared analyzing the occupational as well as certain other factors which may predispose workers to pneumonia.

TABLE 4.—*Frequency of specified disease groups by month of onset, 1920–1928, among a group of wage earners* [1]

Month of onset of disability	Number of cases per 1,000 persons per year			
	All diseases [1]	Influenza and grippe	Respiratory except influenza and grippe [2]	All except respiratory
1920				
January	275.0	142.9	67.4	64.7
February	326.7	201.4	54.4	70.9
March	126.0	37.1	34.1	54.8
April	103.9	13.2	27.4	63.3
May	76.7	4.6	23.2	48.9
June	67.3	2.3	15.6	49.4
July	67.1	.8	12.9	53.4
August	60.1	1.2	15.2	43.7
September	56.2	2.0	14.0	40.2
October	76.4	7.4	21.8	47.2
November	85.7	9.3	24.9	51.5
December	106.1	18.1	31.6	56.4
1921				
January	134.0	20.7	37.6	75.7
February	152.5	40.7	40.5	71.3
March	128.5	25.6	30.4	72.5
April	110.6	16.7	28.3	65.6
May	88.4	6.7	18.5	63.2
June	76.6	3.3	14.6	58.7
July	70.6	3.1	12.7	54.8
August	87.9	4.7	18.0	65.2
September	86.7	5.2	14.7	66.8
October	81.6	11.1	19.7	50.8
November	94.3	15.4	26.0	52.9
December	105.2	19.0	26.7	59.5
1922				
January	138.4	36.5	36.4	65.5
February	189.6	82.2	43.2	64.2
March	139.9	61.3	27.4	51.2
April	94.7	13.1	21.3	60.3
May	80.8	6.4	17.7	56.7
June	72.2	3.8	18.2	50.2
July	72.7	3.3	14.8	54.6
August	74.7	3.0	16.1	55.6
September	75.5	4.3	17.6	53.6
October	75.1	9.6	19.7	45.8
November	83.0	11.4	25.0	46.6
December	125.8	28.5	38.7	58.6
1923				
January	160.0	70.0	37.4	52.6
February	205.1	109.4	39.5	56.2
March	126.6	42.5	30.7	53.4
April	99.7	18.0	25.4	56.3
May	82.0	7.8	19.4	54.8
June	72.5	3.5	13.3	55.7
July	65.5	2.7	14.8	48.0
August	75.3	4.2	15.2	55.9
September	72.9	5.9	18.0	49.0
October	77.4	7.8	22.6	47.0
November	85.0	9.5	21.3	54.2
December	74.6	11.3	18.6	44.7
1924				
January	125.9	24.8	32.9	68.2
February	142.2	32.6	38.5	71.1
March	124.6	32.2	29.3	63.1
April	116.7	23.8	27.1	65.8
May	94.3	11.2	19.3	63.8
June	80.2	3.9	15.6	60.7
July	77.1	4.2	14.2	58.7
August	76.9	4.1	13.5	59.3
September	84.9	8.4	18.8	57.7
October	91.1	12.9	20.7	57.5
November	104.2	20.8	24.2	59.2
December	105.0	23.4	26.8	54.8
1925				
January	145.9	34.9	36.7	74.3
February	150.3	41.4	35.8	73.1
March	162.4	56.7	35.3	70.4
April	130.9	32.2	29.0	69.7
May	102.5	15.8	20.2	66.5
June	90.8	5.1	16.5	69.2
July	87.8	5.2	15.1	67.5
August	94.6	8.5	19.1	67.0
September	84.1	8.5	16.4	59.2
October	95.2	17.4	19.9	57.9
November	96.1	17.8	23.3	55.0
December	103.7	18.2	29.3	56.2
1926				
January	145.3	31.0	37.4	76.9
February	168.9	62.7	37.7	68.5
March	223.3	115.6	40.9	66.8
April	149.5	55.1	26.1	68.3
May	104.3	16.7	25.5	62.1
June	91.2	7.2	21.2	62.8
July	87.0	3.5	16.7	66.8
August	92.8	5.5	16.5	70.8
September	94.2	8.5	20.6	65.1
October	98.4	13.1	20.8	64.5
November	104.2	17.5	26.1	60.6
December	121.5	28.6	28.7	64.2
1927				
January	147.4	42.1	34.2	71.1
February	137.7	35.9	26.8	75.0
March	130.0	29.4	33.5	67.1
April	115.0	23.2	26.6	65.2
May	101.6	13.7	24.2	63.7
June	90.3	8.7	18.9	62.7
July	92.1	6.1	16.4	69.6
August	86.2	9.0	16.5	60.7
September	96.8	11.5	20.8	64.5
October	99.5	15.1	22.8	61.6
November	101.3	16.2	24.6	60.5
December	100.1	19.1	24.5	56.5
1928				
January	123.0	25.8	26.9	70.3
February	132.4	30.0	30.2	72.2
March	143.6	41.0	31.2	71.4
April	132.8	38.3	26.4	68.1
May	118.6	29.1	21.5	68.0
June	96.2	12.3	19.2	64.6
July	86.7	7.6	14.5	64.6
August	89.8	6.7	17.2	65.9
September	81.4	11.2	19.4	50.8
October	93.5	13.4	17.7	62.4
November	97.8	20.4	19.0	58.4
December	217.7	126.3	32.8	58.6

[1] Annual number of cases per 1,000 persons employed in establishments sending morbidity reports to the Public Health Service. Only those disabilities from sickness and nonindustrial accidents which lasted 8 days or longer are included, except in 1920, when a few 7-day cases were included. Certain diseases are not reported, as explained in the text.

[2] Tuberculosis of the lungs and diseases of the pharynx and tonsils are included in the respiratory group.

TABLE 5.—*Frequency of specified disabilities lasting eight calendar days or longer among male wage earners, 1922 to 1928, classified according to industry*

Diseases and conditions causing disability (with corresponding title numbers in parentheses from the International List of the Causes of Death, 1920 revision)	Annual number of cases per 1,000 men			Number of cases		
	Iron and steel	Public utilities	Other industries [1]	Iron and steel	Public utilities	Other industries [1]
Sickness and nonindustrial injuries [2]	91.0	114.4	113.2	30,745	23,210	33,105
Sickness (1–164, 205)	81.4	105.5	100.8	27,498	21,410	29,489
External causes (nonindustrial injuries) (165–203)	9.6	8.9	12.4	3,247	1,800	3,616
Respiratory diseases	37.1	52.7	47.9	12,515	10,698	14,020
Influenza and grippe (11)	19.0	25.9	24.0	6,421	5,258	7,021
Tuberculosis of respiratory system (31)	1.4	1.8	1.1	468	359	335
Bronchitis (99)	4.0	7.4	6.6	1,350	1,494	1,940
Pneumonia—all forms (100, 101)	4.3	2.6	2.9	1,438	521	854
Diseases of pharynx and tonsils (109)	4.2	8.4	7.3	1,416	1,715	2,131
Other diseases of respiratory system (97, 98, 102–107)	4.2	6.6	6.0	1,422	1,351	1,739
Digestive diseases	12.0	16.6	14.5	4,068	3,363	4,239
Diseases of the stomach (111, 112)	4.4	5.4	4.8	1,475	1,088	1,390
Diarrhea and enteritis (114)	1.1	2.1	1.8	378	417	537
Appendicitis (117)	3.3	4.7	3.6	1,135	961	1,035
Hernia (118a)	1.2	1.9	1.6	401	387	479
Other digestive diseases (108, 110, 115, 116, 118b–127)	2.0	2.5	2.7	679	510	798
Nonrespiratory, nondigestive diseases	32.3	36.2	38.4	10,915	7,349	11,230
Circulatory and genito-urinary diseases	6.6	7.6	7.3	2,232	1,549	2,130
Diseases of the heart (87–90)	1.9	1.7	1.8	626	338	517
Diseases of the veins (93)	1.2	2.0	1.6	412	413	456
Other diseases of circulatory system (91, 92, 94–96)	.9	.9	1.1	308	191	325
Nephritis—acute and chronic (128, 129)	.7	.8	.7	252	163	222
Other diseases of genito-urinary system (130–136)	1.9	2.2	2.1	634	444	610
Diseases of the nervous system	3.8	4.5	5.3	1,278	917	1,563
Neuralgia, neuritis, sciatica (82)	1.8	2.2	2.4	624	444	708
Neurasthenia and the like (part of 84)	.9	1.6	2.2	287	326	640
Other diseases of nervous system (70–81, 83, part of 84)	1.1	.7	.7	367	147	215
Diseases of the eyes (85)	1.0	1.0	1.4	344	203	401
Diseases of the ear and mastoid process (86)	.4	.8	.7	146	154	192
Rheumatism—acute and chronic (51, 52)	6.0	5.7	6.2	2,031	1,147	1,809
Lumbago and other diseases of the organs of locomotion (158)	3.4	3.3	3.5	1,168	677	1,027
Diseases of the skin (151–154)	3.8	3.8	4.2	1,282	777	1,229
Epidemic and endemic diseases (1–10, 12–25)	2.9	2.4	2.8	976	478	809
Cancer—all forms (43–49)	.6	.8	.5	184	160	143
General diseases not shown above (26–30, 32–37, 41, 42, 50, 53–69)	2.0	2.9	2.5	690	591	733
Diseases of the bones and joints (155, 156)	.8	1.0	.9	258	206	277
Ill-defined and unknown causes (205)	1.0	2.4	3.1	326	490	917
Number of years of life under observation				337,681	202,822	292,477

[1] Including employees of industries producing chemicals, abrasives, plumbing fixtures, electrical equipment, paper, paper novelties, timepieces, hats, underwear, flour, soap, and certain other products.
[2] Industrial accidents and certain diseases are not reported as explained in text.

SUMMARY

1. Reports from a group of about 35 industrial sick-benefit associations and company relief departments showed that cases of sickness and nonindustrial injuries causing disability for 8 consecutive calendar days or longer occurred at the rate of 103.5 cases annually per 1,000 men during the period 1921 to 1928, inclusive. This figure may understate to some extent the real incidence of disability lasting longer than one week, because sick benefits are usually denied for certain diseases and for illness of any kind under certain circumstances as explained above.

2. Respiratory diseases were reported as the cause of 42.4 per cent of the cases; digestive diseases, 13.5 per cent; and external causes (nonindustrial accidents), 9.8 per cent. These three groups, accordingly, accounted for nearly 66 per cent of the cases for which sick benefits were paid by associations reporting to the United States Public Health Service.

3. In the respiratory group influenza or grippe continues to be of outstanding importance, accounting for 57.5 per cent of the respiratory cases in 1928, compared with 50 per cent during the period 1921 to 1928.

4. The frequency of disability on account of respiratory tuberculosis was lower in 1928 than in any of the preceding years of record.

5. Five of the nine years covered by the record were marked by influenza epidemics. In the other four years the winter incidence of influenza or grippe was of no inconsiderable magnitude.

6. Relatively low sickness rates were found among men employed in the iron and steel industry. An exception was the rate for pneumonia, which appears to be about 50 per cent higher than among other industrial employees as a whole. Data for a study of the incidence of pneumonia by occupation in the steel industry have been collected and are being analyzed.

A NEW METHOD OF EVALUATING THE POTENCY OF ANTINEURITIC CONCENTRATES

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INTRODUCTION

The chemical isolation of the antineuritic vitamin first recognized by Eijkman in 1897 has engaged the attention of investigators for many years with but little success and not infrequently with much disappointment. The difficulties involved are no doubt manifold, some of a chemical nature and others of a biological character. To the latter belongs the problem of ascertaining the antineuritic potency of the concentrated or purified fractions which the chemist may have obtained in the course of his investigations. It must be evident that so long as the chemical nature of the antineuritic vitamin is unknown the chemist must rely upon a biological test to guide him, and unless the test object measures specifically and with reasonable accuracy the substance in question, the test is not only of uncertain value but it may actually be misleading.

Of the various tests employed by those interested in the biochemistry of the antineuritic vitamin, such as the chemical color reactions, the influence of concentrates upon the growth of yeast, and the

action of such concentrates in certain animals, only the last need be considered here, for the first two types of reactions were abandoned early as either lacking in specificity or in accuracy or in both.

Critical examination of such methods as involve the use of certain laboratory animals as the test object reveals some fundamental defects of either a theoretical or practical nature. The discovery by Eijkman in 1897 of polyneuritis in pigeons when kept upon a diet of polished rice, and his recognition of the similarity of this condition with that of human beriberi has been the chief reason for the use of polyneuritis gallinarum as a test object in ascertaining the activity of antineuritic concentrates. It was soon recognized, however, that this test lacked in certain fundamental essentials, which many workers have attempted to correct but not altogether successfully. Thus it was early recognized that the pigeon-cure test, which consisted in ascertaining the amount of vitamin fraction required to cure polyneuritis in pigeons subsisting on rice, was inadequate for several reasons. First, spontaneous cures had been observed not infrequently. Second, cures effected in polyneuritic pigeons by the administration of the antineuritic substance have often been noted to be little or not at all sustained, and instances have been known in which birds were totally refractory to treatment during subsequent attacks. Furthermore, temporary cures in polyneuritic pigeons are reported to have been effected by a variety of chemical agents, such as histamine, pilocarpine, nitrites, thyroxine, choline, etc., substances bearing no relationship whatever to the antineuritic vitamin (1, 2, 3).

To circumvent some of the fundamental difficulties inherent in this method of testing for antineuritic potency, modifications have been suggested, which, however, are not entirely free from objections. Thus Williams (4) in 1916, though still making use of the pigeon as a test object, proposed to substitute the preventive for the curative test. The serious difficulty involved in this test, apart from the fact that it is necessarily of very long duration, is the great individual variation in the time of onset of the polyneuritic symptoms in different birds. Recognizing these difficulties, Seidell in 1922 (5) developed a technique of assaying his antineuritic concentrates, which consists essentially in determining the minimal amount of the vitamin supplement required to maintain body weight in pigeons subsisting on polished rice. This, it will be noted, must either assume the identity of the antineuritic and growth factors, which is contrary to all the available recent evidence, or else it must assume that maintenance of body weight in the pigeon is a function of the antineuritic vitamin; admittedly a possibility, but clearly an assumption which requires proof. Furthermore, this technique fails to take into account the fact that a diet of polished rice is not only deficient in the antineuritic vitamin but that it also lacks in other dietary essentials, such as

minerals, certain amino acids, and vitamins other than the antineuritic, and, though the dietary requirements of the pigeon appear to be very simple, it is nevertheless possible that a supplement preventing loss of weight in the pigeon on polished rice may do so by supplying certain other deficiencies as well as that of the vitamin under consideration. That such might indeed be the case appears from the experiments of Di Mattei (6), who was able to produce paralysis in pigeons without loss of weight when fed a diet of polished rice supplemented with sunflower seeds.

Fully cognizant of the fundamental defects inherent in the pigeon test, McCollum and Simmonds (7) adopted in 1918 the white rat as a test object, making use of the growth curve as an index of the potency of the vitamin B supplement when added to a basal ration adequate in all other respects. This method, which has since been refined in certain details, has been very generally used in testing foodstuffs for their vitamin B content, and, except for the length of time the method requires, it has served the purpose admirably.

The rat method of McCollum and Simmonds, however, was based on the belief current at that time that the antineuritic and growth-promoting functions of vitamin B were physiologic manifestations of one and the same substance, so that the antineuritic potency of a vitamin concentrate was in effect measured by this method in terms of its growth-promoting power. The recent progress made in the physiology and biochemistry of vitamin B seems to indicate quite definitely that it consists of at least two factors with different chemical as well as physiologic properties, namely, the thermolabile antineuritic, and the heat stable growth factors (8, 9, 10, 11), the latter of which is according to Goldberger and associates (12) probably identical with their pellagra-preventive factor. It is clear that in the light of our present knowledge of the multiple nature of vitamin B a test which takes into account the growth curve alone, while it may be useful in evaluating the growth factor of the B complex, is no criterion of its antineuritic component.

In this paper a method is described for the evaluation of the antineuritic or thermolabile component of the vitamin B complex.[1] This is believed to be free from the objections and criticisms raised against the other methods in vogue, besides having the further advantage of being specific, rapid, and reasonably accurate.

The present method of testing for the antineuritic vitamin.—The method proposed herein for the evaluation of vitamin concentrates for antineuritic potency is the direct outcome of and the logical

[1] There has been considerable discussion in the literature as to the nomenclature of the two vitamins which until recently were known as vitamin B. Owing to lack of agreement on this subject and to avoid confusion, these factors will be referred to in this paper as the antineuritic or thermolabile and the growth or thermostable components of the B complex. (For the discussion as to nomenclature see Dutcher: Science, 1928, Vol. 68, 206.)

sequence to the recognition of the dual nature of vitimin B and the appreciation of the fact that the dietary of the rat in order to be complete must contain besides the thermolabile antineuritic vitamin the more heat stable growth-promoting constituent (8). In other words, withholding both factors from the dietary of the rat results in rapid loss of weight, inanition, and death with no evidence of paralysis, while a diet so constituted as to include the thermostable factor but lacking in the antineuritic vitamin almost invariably results in specific polyneuritis after a period usually of from 6 to 10 weeks on the deficient diet. (See Chart 1, curves A and B.[2]) Furthermore, the administration of a yeast concentrate containing the antineuritic vitamin brings about *prompt* and *complete* recovery from the paralytic symptoms, the duration of the remission being from 3 to 15 or more days, depending upon the size of the dose administered. After a variable period of recovery, which is roughly pro-

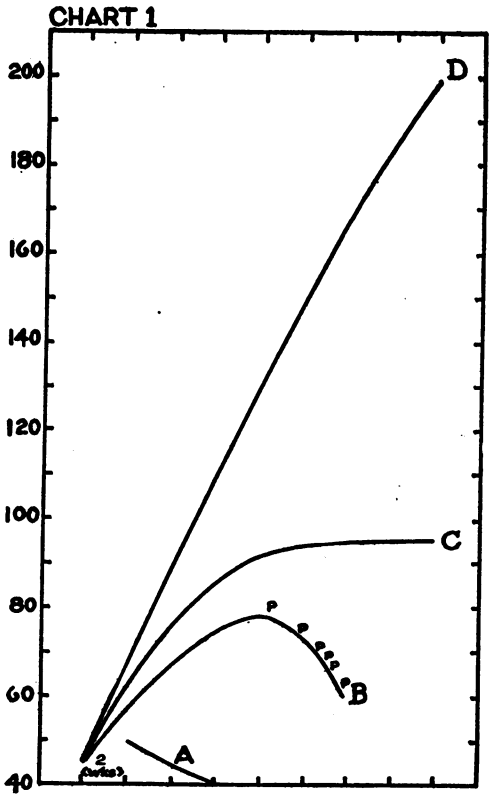

CHART 1.—The relation of the thermolabile and thermostable components of the B complex to growth and beriberi paralysis in rats. Each curve represents the average of four to six animals. (A) Weight curve of six rats on basal diet deficient in the B complex. No paralysis. Death in about four weeks. (B) Weight curve of six rats on the same basal diet plus 10 per cent autoclaved yeast. All the rats developed polyneuritis (at P) and died in from three to five days. (C) Weight curve of four rats on same basal ration plus 2 per cent brewer's yeast. No evidence of polyneuritis and inadequate growth, indicating that the requirements for the thermolabile factor were met but that the needs for the thermostable factor are far greater than that furnished by 2 per cent yeast. This is confirmed by the next curve. (D) Weight curve of four rats on the same diet as that of (C) with the addition of 10 per cent autoclaved yeast

[2] It would thus appear that the requirements of the rat for the thermostable factor are greater than for the thermolabile factor; hence on diets so constituted as to be deficient in both, the former is the limiting factor, and unless this is adequately supplied the antineuritic deficiency does not manifest itself. Such an explanation would account for the general failure of earlier workers to produce regularly experimental beriberi in rats. Funk (13), for instance, erroneously assumed that polyneuritis due to deficiency of the antineuritic vitamin can only be produced in animals in which uric acid is the end product of purine metabolism and not allantoin as is the case in the rat. On the other hand, McCollum and Simmonds (7), making use of the growth curve as a criterion of vitamin B potency, state that typical polyneuritis results in many of the experimental rats when the diet is lacking in vitamin B but properly constituted otherwise. In the light of our experience with the purified synthetic ration, which if lacking in both factors of the vitamin B complex has never given rise to polyneuritis in rats, it is probable that in their ration McCollum and Simmonds may have had some of the heat stable factor.

portional to the amount of antineuritic substance given, the paralysis recurs but may be again alleviated by a suitable dose of the vitamin. The same animal may thus be used many times over with

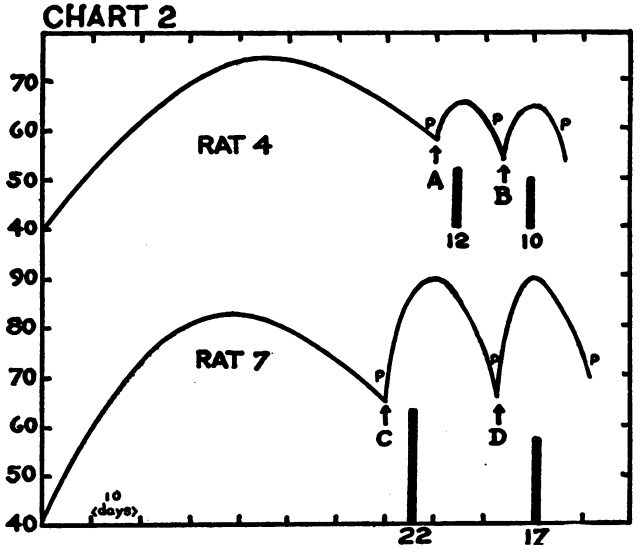

CHART 2.—Growth curve and period of onset of polyneuritis in rats on a beriberi-producing diet. Effect of intravenous injections of antineuritic vitamin on the paralytic symptoms and body weight. At A and B injected 2 milligrams antineuritic concentrate 26.112; at C and D, 10 milligrams of same concentrate. In this, as in all subsequent charts, ordinates represent weight in grams and abscissae time in 10-day intervals. The solid blocks with corresponding numerals indicate the duration of the recovery period following the injection of the antineuritic vitamin. Occurrence of paralysis is indicated by the letter P

apparently very little change in its response to the effects of the antineuritic vitamin, as illustrated in Charts 2 to 9. The potency of the

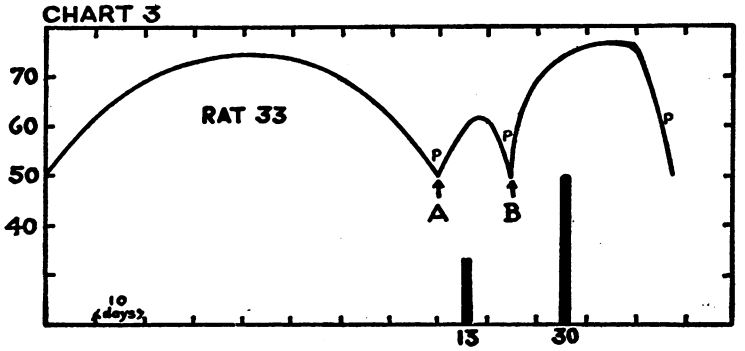

CHART 3.—Effect of graded doses of antineuritic concentrate 26.112 on weight and paralysis. At A, 2 milligrams and at B, 10 milligrams of the concentrate were injected intravenously

concentrate can thus be ascertained by determining the minimum amount thereof required to bring about complete recovery from the specific paralysis, the amount being administered in a single dose.

THE DETAILS OF THE METHOD

The rats used in this work were from a stock colony maintained upon a diet of bread and milk, whole yellow corn, rolled oats, with lettuce given two or three times a week to supply the antisterility factor. The young, weighing 50 to 70 grams, usually about 60 grams, were taken at the age of 30 to 40 days and placed upon the following polyneuritis-producing diet:

	Per cent
Casein	18
Salt mixture 185 (14)	4
Autoclaved brewer's yeast	10
Cod-liver oil	1
Olive oil	9
Corn starch [3]	58

The casein, finely ground, was leached with 0.2 per cent acetic acid for 10 to 12 days, washed with distilled water and dried in a current of air. The autoclaved yeast supplying the thermostable growth factor was prepared by heating in the autoclave under 15 pounds pressure for from 4 to 6 hours, dried and finely ground brewer's yeast in layers of about ¼ inch thick. The cod-liver oil in the ration amply meets the vitamin A and D requirements. On such a diet good growth takes place usually for about 20 to 40 days, following which growth ceases despite the almost normal food intake to within a few days of the onset of paralysis. The animals then decline considerably in weight and finally in from 50 to 80 days from the beginning of the dietary period develop typical paralytic symptoms characterized by lameness of the hind and fore limbs, incoordination, spastic gait, cart-wheel and rolling movements. If untreated, the paralytic condition progresses for two to five days, when the animal dies. If, however, an adequate dose of the antineuritic vitamin is given, prompt recovery ensues, which may be noticeable in 3 to 5 hours and unmistakable in 18 to 24 hours. The cure thus effected may last, as stated previously, from three days upwards, depending upon the size of the dose. Three days is about the shortest remission period that a minimal effective dose of an antineuritic concentrate will bring about.

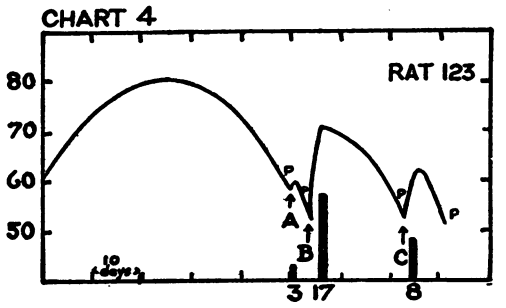

CHART 4.—Effect of three different antineuritic concentrates on weight and paralysis. At A, 10 milligrams 27.152; at B, 6.5 milligrams P_7; and at C, 6.5 milligrams 26.164 were injected, showing that 10 milligrams 27.152 is just about the minimum curative dose and that concentrate P_7 is more active than 26.164

[3] Argo corn starch was used without special treatment. It is evidently nearly if not completely devoid of either of the vitamin B complex.

With the recovery from the paralytic symptoms there is noticeable an improvement of the appetite, an increase in the food consumption, and a gain in weight, the latter being somewhat proportional to the dose given. These points are illustrated in Charts 2 to 9.

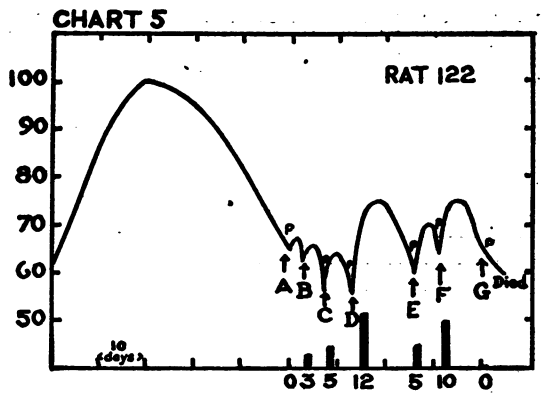

CHART 5.—Effect of repeated injections of three different antineuritic concentrates in graded doses on weight and paralysis. At A and B, 10 and 20 milligrams of concentrate 26.152 were injected, respectively. At C, 5 milligrams 26.164, and at D, 5 milligrams P_7 were injected, showing that the latter is the more active. At E, 5 milligrams 26.164 were repeated, and the reaction is nearly the same as at C. At F, 10 milligrams 26.164 were given. At G, 5 milligrams $CaCl_2$ were injected, one of the many nonspecific substances having no effect whatever upon the paralytic symptoms. Although reactions D and F are nearly the same, it is not to be inferred that 5 milligrams P_7 is equivalent in potency to 10 milligrams 26.164

The administration of the antineuritic concentrate to polyneuritic rats in order to ascertain the minimum effective dose thereof is best carried out by injecting the calculated dose intravenously. From a few experiments the indications are that oral administration will accomplish the same result. (See Chart 9.) Oral administration, however, is difficult and quantitatively less certain than the intravenous route, because the animals often refuse, or on account of the spastic incoordination are unable to consume, the vitamin offered to them. In the present experiments, in which the vitamin was administered orally, the stomach tube was resorted to. The intravenous route is, however, much to be preferred because of its greater accuracy, freedom from uncertainties of delayed or incomplete absorption and because it eliminates the possibility of local effects upon the

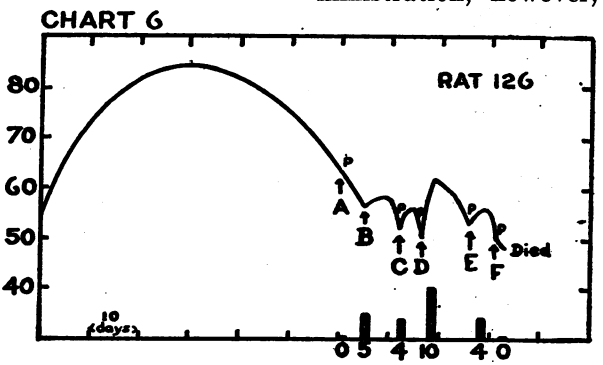

CHART 6.—Effect of repeated injections of three different antineuritic concentrates and a comparison of their activity. At A and B, 3 and 6 milligrams, respectively, were injected of concentrate No. 171. At C, 3 milligrams 26.164; at D, 3 milligrams P_7; at E, 1 milligram P_7; and finally at F, 0.5 milligram P_7. It may be inferred from this that the minimum curative dose of 171 is about 6 milligrams, that of P_7 about 1 milligram, half a milligram being insufficient, and since the minimum effective dose of 26.164 is 3 milligrams (see Table 1), it follows that P_7 is about three times as active as 26.164, weight for weight

gastro-intestinal tract. In this work, in which some 200 rats have been used, about 600 to 800 intravenous injections were made of various fractions, both active and inactive, in many cases the animals receiving from five to ten or more injections.

We prefer making the injections into one of the tail veins, thus avoiding all operative procedures. After warming the tail for a few moments in warm water the veins, more especially the lateral ones, become sufficiently prominent so that with a little experience the operator can easily introduce a 26-gage needle while an assistant holds the animal, and the required amount is then injected from a tuberculin syringe, the volume injected being from 0.5 to 1 cubic centimeter. The only points to be observed are that the solution injected should be nearly neutral and it must, of course, be free from extraneous toxic substances. After the injection, the animal is returned to its cage and the following morning its condition and weight are noted. With an adequate dose, there will be some gain in weight, and complete recovery or pronounced improvement. If the material is inert or the dose insufficient, the paralytic condition will be more severe and the weight of the animal may remain unchanged or may show a further decline. With an amount of the antineuritic concentrate bordering on the minimal effective dose, it may be necessary to observe the animal for another 24 hours before a decision can be reached. As soon as the paralytic symptoms reappear the animal may be used again.

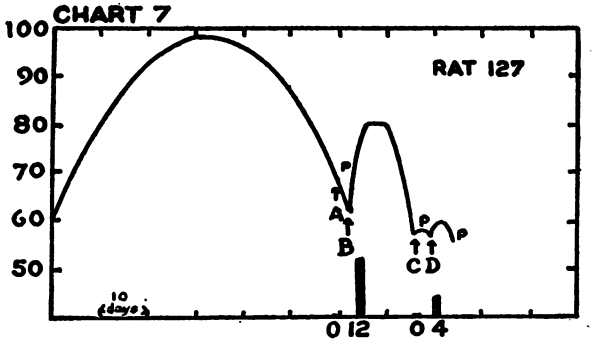

CHART 7.—Effect of repeated injection of concentrate 171 in varying doses. At A, 3.5 milligrams; at B, 31 milligrams; at C, 5.7 milligrams; and at D, 11.5 milligrams were injected. Note proportionality of response to dose injected

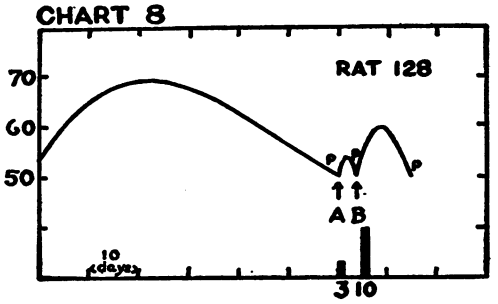

CHART 8.—Effect of 9 and 19.5 milligrams of concentrate 171 injected at A and B, respectively. Taken together with Charts 6 and 7, it may be inferred that the minimum curative dose of this concentrate is somewhere between 6 and 9 milligrams

THE RESULTS OBTAINED WITH THE PRESENT METHOD

In the following section a somewhat detailed account will be given of the actual results obtained in attempting to evaluate the antineuritic potency of several concentrates by the use of this method. This will serve to indicate the degree of accuracy that may be expected of it and, what appears to be even more important, its specificity. Many substances were tested in the course of this work, but in general they may be divided into three groups: (A) Antineuritic concentrates derived from brewer's yeast, (B) inert fractions obtained in the course of concentration, (C) nonspecific substances and certain pharmacologic agents.

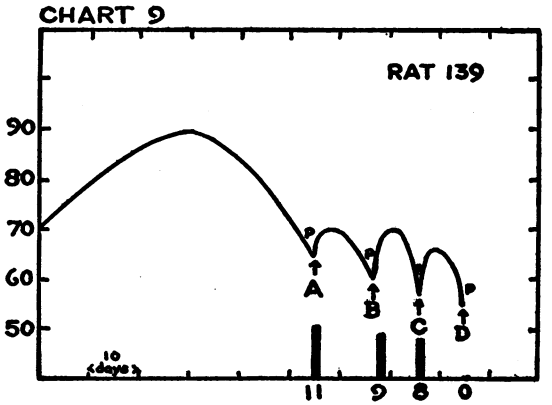

CHART 9.—Comparison of oral and intravenous administration of antineuritic concentrate and comparative effects of active and inert fractions. At A, 3 milligrams P_7 given by stomach tube; at B, same dose given intravenously; at C, same dose of Q_5 given intravenously; and lastly at D, 30 milligrams R_6, a concentrate similar to P_7 and Q_5, but made from autoclaved yeast, was given intravenously

(A) In this group are included five concentrates. Three of these were kindly furnished by Dr. Atherton Seidell, which he obtained in the course of his work and designated 26.112, 26.164, and 27.152. The first two concentrates were made by Seidell in 1927 and 1928, respectively, according to the method described by him in 1926 (15). The third fraction, representing further progress in the isolation of the antineuritic vitamin, was made by Seidell in 1929 (16). Two of the five concentrates in this group P_7 and Q_5 were made by the author from brewer's yeast. On account of the simplicity of the method, the ease of preparation of the concentrate, and its relatively high potency it seems to merit description.

Dried brewer's yeast is thoroughly triturated in a mortar with 5 volumes of N/25 acetic acid and placed in the cold room overnight. The next morning the extract is centrifuged, the supernatant solution decanted and poured with stirring into 2 volumes of 95 per cent alcohol. After standing several hours in the cold room, the supernatant fluid is decanted, filtered, and concentrated under reduced pressure to about one-twentieth of the original volume. This is now poured slowly with stirring into 9 volumes of acetone and is left in the cold room overnight. The acetone solution is decanted, filtered if necessary, and concentrated under reduced pressure to one-twentieth its volume. This is diluted 10 times with distilled water. This

aqueous solution having a pH of about 4, is stirred thoroughly with one-fiftieth to one-one hundredth its weight of purified norite [4] three times, the norite being filtered off in each case on a Buchner funnel under suction and washed with a little distilled water. The combined norites are treated on the water bath with about 5 volumes of N/20 HCl in 50 per cent alcohol and filtered under suction, the operation being repeated three times. The increased acidity, heat, and alcohol all aid in the elution of the active principle adsorbed on the norite. The eluent is concentrated under reduced pressure to about one-twentieth its volume. This solution having a pH of about 2 has kept well in the cold room for several months.[5] Just before injection it is diluted as required and made neutral to litmus by the addition of $NaHCO_3$. Two different lots made by the same method at different times are referred to in this paper as P_7 and Q_6, respectively.

TABLE 1.—*The standardization of five concentrates for antineuritic potency*

Rat No.	Weight	Dose	Result: Recovery	Result: Weight change
	Gms.	*Mgm.*	*Days*	*Gms.*
Concentrate 26.112				
9	57	0.5	0	−3
10	55	.5	0	−9
12	58	1.0	0	−3
2	53	2.0	11	+11
4	58	2.0	11	+9
5	65	2.0	9	+9
33	50	2.0	13	+12
12	58	5.0	15	+14
23	60	5.0	6	+8
24	82	5.0	7	+8
26	68	5.0	7	+12
28	56	5.0	8+	+24
6	45	10.0	20	+22
7	65	10.0	19	+20
8	60	10.0	25	+28
1	55	15.0	25	+18
Concentrate 26.164				
89	76	1.0	0	−10
78	64	2.0	0	+4
87	54	2.0	0	0
133	50	2.0	0	+5
88	70	3.0	4	+8
89	73	3.0	6	+13
126	52	3.0	3	+4
85	68	4.0	17	+16
116	54	5.0	5	+7
122	60	5.0	5	+7
125	63	5.0	8	+10
123	52	6.5	8	+10
122	64	10.0	11	+11

Rat No.	Weight	Dose	Result: Recovery	Result: Weight change
	Gms.	*Mgm.*	*Days*	*Gms.*
Concentrate 27.152				
121	62	5.0	0	0
246-7	90	10.0	0	0
244-5	97	10.0	5	−8
244-6	61	10.0	0	+4
122	65	10.0	0	+3
123	58	10.0	3	+2
246-5	92	20.0	10	+12
115	64	20.0	5	+10
122	63	20.0	5	+3
124	70	20.0	2	+3
114	55	25.0	10	+9
113	64	50.0	10	+10
244-1	66	100.0	15	+35
Concentrate P_7				
135	40	0.5	0	0
134	42	.5	2	+3
131	65	.5	0	0
126	48	.5	0	0
101	56	.7	0	+4
134	47	1.0	7	+2
135	40	1.0	7	+5
131	75	1.0	7	+2
136	47	1.0	0	0
126	53	1.0	5	+3
133	50	2.0	12	+8
132	70	2.0	10	+5
101	60	2.0	4	+4
102	60	3.0	6	+14
126	50	3.0	10	+12
122	55	5.0	14	+20
123	52	6.5	18	+19
106	67	7.0	12	+22

Rat No.	Weight	Dose	Result: Recovery	Result: Weight change
	Gms.	*Mgm.*	*Days*	*Gms.*
Concentrate Q_6				
184	49	0.5	0	+1
188	55	.5	0	−1
187	65	.5	5	+3
147	57	1.0	0	−2
148	52	1.0	4	+3
149	82	1.0	14	+3
151	85	1.0	7	−8
146	85	2.0	14	+3
147	55	2.0	10	+5
144	57	2.0	7	+7
167	75	2.0	10	+5
184	56	2.0	10	+3
185	61	2.0	10	+6
186	48	2.0	8	+6
139	57	3.0	8	+9
145	90	10.0	18	+22

[4] The norite is boiled with 10 per cent HCl, washed till free from chloride, and air-dried.

[5] The yield of active material by this method is roughly in the proportion of 1 gram to 200 grams dried yeast. The solids of this solution were determined by evaporating a definite volume thereof on the water bath and drying to constant weight at 105° C.

In the accompanying table are given the results of assay for antineuritic potency of the five foregoing concentrates by the method described herein. Besides giving the relative antineuritic potency of the five preparations, this table indicates the degree of accuracy that may be expected from this method. It is furthermore apparent that though the period of recovery from the paralytic symptoms is generally proportional to the dose of the antineuritic concentrate administered, the relationship is not a quantitative one, and for an accurate evaluation it is necessary to ascertain the minimal dose that is just effective. It will be seen that the dosages given are expressed in milligrams with no reference to the weight of the animal. An analysis of the results indicates that no greater accuracy can be expected from this method by adjusting dosage on the basis of body weight.

The relative potency of the five preparations given in Table 1 may be summarized in terms of the minimum effective dose as follows:

Concentrate	Minimum effective dose
	Milligrams
23.112	2
26.164	3
27.152	20
P_7	1
Q_6	1

It may be of interest to state that concentrates 26.112 and 26.164, both prepared by Doctor Seidell, were made in the same manner, with the exception, however, that the latter contained considerably more inorganic material, the difference being almost sufficient to approximately account for the difference in potency. A consideration of the potency of three of the above concentrates in terms of their nitrogen content reveals the following relationship:

Concentrate	Minimum effective dose	
	Milligrams concentrate	Milligrams N.
26.164	3	0.195 (Seidell (16))
27.152	20	.06 (Seidell (16))
Q_6	1	[1].188

[1] I am indebted to Mr. C. G. Remsburg for the nitrogen determination.

It appears therefrom that on the nitrogen basis concentrates 26.164 and Q_6 are of approximately the same potency, while at least two-thirds of the solids of 26.164 must be inert. Quite in harmony with this and in agreement with Seidell's supposition that the active sub-

stance is a nitrogenous body (16), it appears that in his concentrate 27.152 he has effected on the nitrogen basis a threefold purification, from which it follows that at least two-thirds of the N in 26.164 or in Q_6 must be inert and no more than one-sixtieth of the solids of 27.152 can be active.

A comparison of the results obtained herein with preparations 26.164 and 27.152 with those reported by Seidell (16), in which weight maintenance of the pigeon was used as a criterion, shows decided lack of agreement. According to Seidell's figures, preparation 27.152 represents a concentration of about ten times as compared with 26.164, while on the basis of the present work the extent of purification is only threefold. The disparity in results is clearly due to the disproportionate requirements of 27.152 and 26.164 for the maintenance of the pigeon on the one hand and the cure of polyneuritis in the rat on the other. Thus the pigeon maintenance dose of 26.164 is about seven and one-half times the beriberi curative dose for the rat, while the pigeon maintenance dose of 27.152 is only three times the dose required to cure polyneuritis in the rat. This is shown in the following table:

Preparation	Pigeon maintenance dose (Seidell) (16)	Polyneuritis curative dose—rat	Ratio
26.164	23	3	7.7 : 1
27.152	60	20	3.0 : 1

Apart from the question as to which of the two methods represents a more accurate index of the antineuritic potency of the above or any other concentrate, these results at least emphasize one point clearly, and that is the impossibility of comparing the merits of the various chemical procedures used by different men in the concentration and purification of the antineuritic vitamin unless one biologic method is adopted in common for testing of the potency of such concentrates. For reasons set forth in the earlier part of this paper, it is felt that the present method offers a more reliable means of estimating antineuritic potency than has heretofore been suggested. The above disparity might of course be supposed to be due to the known greater nutritional requirements of the rat as compared with the pigeon. In view of the specificity of the rat test, however, such an explanation appears extremely improbable. A more probable explanation for the relatively high potency of 27.152 as measured by the maintenance dose in the pigeon would seem to be the high mineral content of this preparation (possibly in excess of 99 per cent) which may contribute considerably by supplying the mineral deficiency of the polished rice diet.

(B) Many fractions of slight or no activity were tested by the present method in the course of this work, with results thoroughly reliable, indicating its wide applicability and general usefulness in guiding one through a series of chemical manipulations for the purpose of effecting purification. Among these are also included several concentrates made from the autoclaved yeast used in the present beriberi-producing diet. These concentrates were made by the method described for P_7 and Q_6, and when given intravenously in 10 to 30 milligram doses or by stomach tube up to 100 milligrams had no effect whatever upon the paralytic symptoms.

(C) As a further check upon the specificity of this method a number of nonspecific substances and pharmacologic agents were injected from time to time into paralytic rats with no effects whatever upon the paralytic symptoms. This is especially important in view of the fact that similar paralysis in pigeons has been reported by various observers to respond to a variety of nonspecific substances. There is, of course, no limit to the number of pharmacologic and other chemical agents that one might test. In these experiments special attention was directed to such substances as have been reported to effect temporary cures in paralytic pigeons. The following is a list of the substances used and the dosages given, which usually represent the maximum amount tolerated, all the injections having been made intravenously:

Substance injected	Dose in milligrams	Substance injected	Dose in milligrams
Choline hydrochloride 0.25 per cent solution	2.5.	Glucose 20 per cent solution	200.
Pilocarpine nitrate	0.5 to 2.0.	Sodium nitrite	0.5.
Histamine phosphate	1.0 to 4.0.	Sodium nitrate	50.
Hemin in alkaline solution	4.0.	Calcium chloride	5.
Glutathione (reduced)	10 to 20.[1]	Sodium sulfate	100.
		Di sodium phosphate	40 to 80.

[1] I am indebted to Dr. J. M. Johnson for a supply of glutathione.

None of the above substances had any effect whatever upon the paralytic symptoms of the rat, thus excluding in large measure the possibility of nonspecific reactions.

SUMMARY

A method is described for the estimation of the antineuritic potency in water-soluble concentrates. The method is based upon the uniform production of polyneuritis in rats on a diet in which the antineuritic thermolabile component of the vitamin B complex is the sole limiting factor and the determination of the minimum curative dose of a given concentrate, the dose being injected intravenously.

The method claims specificity, rapidity, and a sufficient degree of accuracy to be a useful and reliable guide in the chemical puri-

fication of antineuritic concentrates with a view toward isolating the active principle.

It is believed that much of the present-day confusion concerning the relative merits of the various chemical procedures employed by biochemists in the purification and isolation of the antineuritic vitamin would be clarified if a uniform reliable method were adopted for the standardization of their potent fractions.

A method is described for the preparation of an antineuritic concentrate of considerable potency from dried brewer's yeast. The method simply involves fractional precipitation of inert material with organic solvents, adsorption and elution of the active substance with different solvents under different pH values. On account of the ease and certainty with which active material can be prepared by this method, it is believed that it might well serve as a starting point for further purification.

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AMERICAN PUBLIC HEALTH ASSOCIATION TO MEET IN FORT WORTH, TEX.

The Fifty-ninth Annual Meeting of the American Public Health Association will be held in Fort Worth, Tex., during the week of October 27, 1930, with the Hotel Texas as headquarters.

The annual meetings of this oldest and strongest of public health organizations bring together for a week of scientific discussion all of the public health leaders of the continent. It is always the most important health convention of the year. Health officers, nurses, dieticians, sanitary engineers, child and industrial hygienists—all of

the specialists that make up the public health profession—meet to consider their common problems. Each of the 10 sections of the association—health officers; laboratory; vital statistics; public health engineering; public health nursing; public health education; food, drugs, and nutrition; industrial hygiene; child hygiene; and epidemiology—arrange an individual program, and there will be a number of general sessions to which the public is invited.

Detailed programs of the Fort Worth meeting will be announced later in the year in the official publication of the association, The American Journal of Public Health and the Nation's Health. Further information may be obtained from the executive secretary, Mr. Homer N. Calver, 370 Seventh Avenue, New York, N. Y.

MORTALITY SUMMARY FOR 77 CITIES, 1929

Number of deaths, death rates, and infant mortality in 77 large cities in 1929 and comparison with 1928

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

City [1]	Total deaths [a]	Death rate [b]	Deaths under 1 year [c]	Provisional infant mortality rate, 1929 [b c]	Infant mortality rate, 1929	Mortality data for calendar year, 1928 [d]		
						Total deaths	Death rate	Deaths under 1 year
Total (64 cities)	382,649	13.0	36,919	*63	*68	386,922	13.1	40,750
Akron [f]	2,347	-------	333	59	69	2,378	-------	349
Albany	2,062	17.2	179	75	69	1,994	16.6	183
Atlanta	4,194	16.5	472	96	100	4,280	16.8	525
White	2,127	(h)	246	150	71	2,243	(h)	246
Colored	2,067	(h)	226	69	156	2,037	(h)	279
Baltimore	11,654	14.1	1,087	71	82	11,929	14.4	1,295
White	8,778	(h)	729	60	70	8,970	(h)	881
Colored	2,876	(h)	358	111	124	2,959	(h)	414
Birmingham	3,967	17.9	485	87	95	3,882	17.5	554
White	1,903	(h)	212	63	74	1,829	(h)	259
Colored	2,064	(h)	273	124	127	2,053	(h)	295
Boston	11,580	14.5	1,216	66	77	11,568	14.5	1,445
Bridgeport [f]	1,737	-------	209	69	60	1,731	-------	183
Buffalo	7,942	14.3	762	65	74	7,673	13.8	896
Cambridge	1,405	11.2	143	51	54	1,478	11.7	147
Camden	1,688	12.5	212	74	77	1,700	12.6	233
Canton	1,159	10.0	129	62	84	1,184	10.1	181
Chicago	37,498	11.9	3,572	61	64	39,563	12.5	3,778
Cincinnati [f]	7,541	-------	658	75	85	7,579	-------	774
Cleveland	10,976	10.9	1,055	61	60	10,426	10.3	1,076
Columbus	4,224	14.2	354	67	73	4,198	14.0	396
Dallas [g]	2,958	13.6	358	-------	-------	2,658	12.2	351
White	2,316	(h)	290	-------	-------	2,015	(h)	270
Colored	642	(h)	68	-------	-------	643	(h)	81
Dayton	2,250	12.2	222	63	67	2,175	11.8	227
Denver	4,221	14.4	400	80	91	4,684	15.9	483

[1] For the cities for which deaths are shown by color, the colored population in 1920, constituted the following percentages of the total population: Atlanta 31, Baltimore 15, Birmingham 39, Dallas 15, Fort Worth 14, Houston 25, Indianapolis 11, Kansas City, Kans., 14, Knoxville 15, Louisville 17, Memphis 38, Nashville 30, New Orleans 26, Richmond 32, and Washington, D. C., 25.

[a] Based upon telegraphic reports received each week from city health officers.

[b] Allowance has been made for the extra day, which must be added to the 52 weeks to give a period of 365 days.

[c] Infant mortality rate is based upon deaths under 1 year as returned each week and estimated births 1929.

[d] Based upon deaths which occurred within the calendar year.

[e] Infant mortality rate for the cities in the birth registration area appearing in the summary.

[f] Mortality rates are omitted, pending the establishment of more satisfactory estimates of population.

[g] Cities with no infant mortality rate are not in the registration area for births.

[h] Not available.

Number of deaths, death rates, and infant mortality in 77 large cities in 1929 and comparison with 1928—Continued

City	Total deaths	Death rate	Deaths under 1 year	Provisional infant mortality rate, 1929	Infant mortality rate, 1928	Mortality data for calendar year, 1928		
						Total deaths	Death rate	Deaths under 1 year
Des Moines	1,617	10.7	174	45	52	1,725	11.4	144
Detroit	16,667	12.1	2,319	69	77	16,061	11.6	2,519
Duluth	1,161	10.0	62	32	64	1,197	10.2	132
El Paso *	1,934	16.5	383	------	------	2,044	17.4	401
Erie /	1,372	------	130	53	60	1,337	------	148
Fall River	1,540	11.5	153	67	68	1,417	10.6	185
Flint	1,590	10.7	296	66	86	1,523	10.2	381
Fort Worth *	1,943	11.4	221	------	------	1,865	10.9	196
White	1,595	(A)	176	------	------	1,489	(A)	152
Colored	348	(A)	45	------	------	376	(A)	44
Grand Rapids	1,688	10.3	186	54	54	1,787	10.9	188
Houston / *	3,567	------	346	------	------	3,409	------	407
White	2,454	(A)	250	------	------	2,373	(A)	311
Colored	1,113	(A)	96	------	------	1,036	(A)	96
Indianapolis	5,372	14.1	431	62	66	5,338	14.0	438
White	4,454	(A)	350	58	62	4,481	(A)	358
Colored	918	(A)	81	84	94	857	(A)	80
Jersey City	3,896	12.0	402	67	85	3,969	12.2	529
Kansas City, Kans	1,558	13.2	140	64	74	1,712	14.5	175
White	1,143	(A)	101	51	71	1,325	(A)	147
Colored	415	(A)	39	163	89	387	(A)	28
Kansas City, Mo	5,426	13.9	467	70	76	5,593	14.3	478
Knoxville	1,426	13.6	169	76	92	1,495	14.2	212
White	1,110	(A)	143	71	85	1,167	(A)	178
Colored	316	(A)	26	124	153	328	(A)	34
Los Angeles /	13,482	------	1,073	63	66	13,658	------	1,158
Louisville	4,654	14.2	353	59	81	4,637	14.1	499
White	3,592	(A)	275	52	75	3,529	(A)	402
Colored	1,062	(A)	78	109	129	1,108	(A)	97
Lowell /	1,424	------	137	62	77	1,402	------	168
Lynn	1,154	11.0	99	48	68	1,177	11.2	130
Memphis	3,838	20.2	419	96	90	3,747	19.7	386
White	2,008	(A)	214	76	67	1,931	(A)	186
Colored	1,830	(A)	205	133	130	1,816	(A)	200
Milwaukee	6,116	11.3	888	86	71	6,132	11.3	843
Minneapolis	4,944	10.9	366	46	51	4,946	10.8	426
Nashville	2,711	19.5	317	94	100	2,622	18.8	322
White	1,708	(A)	222	88	88	1,585	(A)	216
Colored	1,003	(A)	95	116	138	1,037	(A)	106
New Bedford /	1,348	------	132	65	79	1,343	------	188
New Haven	2,174	11.6	130	49	57	2,204	11.7	204
New Orleans	8,043	18.8	748	83	78	8,242	19.2	792
White	4,630	(A)	353	60	62	4,923	(A)	416
Colored	3,413	(A)	395	128	111	3,319	(A)	376
New York	77,244	12.9	7,266	59	65	78,149	13.0	8,258
Bronx Borough	10,114	10.7	851	38	61	10,768	11.3	1,064
Brooklyn Borough	25,957	11.3	2,721	56	62	27,034	11.7	3,145
Manhattan Borough	30,796	17.6	2,880	91	69	28,955	16.5	2,910
Queens Borough	7,935	9.3	647	36	76	9,322	10.9	970
Richmond Borough	2,442	16.2	167	60	59	2,070	13.7	169
Newark, N. J	5,597	11.9	569	57	61	5,495	11.6	600
Oakland	3,150	11.5	188	44	47	3,174	11.6	214
Oklahoma City /	1,927	------	206	78	68	1,721	------	175
Omaha	2,853	12.8	250	55	57	2,884	12.9	252
Paterson	1,842	12.7	167	56	57	1,836	12.7	169
Philadelphia	25,517	12.4	2,185	62	71	26,883	13.0	2,610
Pittsburgh	9,799	14.6	1,097	77	75	10,189	15.1	1,141
Portland, Oreg. /	3,755	------	167	39	43	3,659	------	190
Providence	3,621	12.7	356	63	63	3,517	12.3	376
Richmond	2,951	15.2	292	83	85	2,812	14.5	313
White	1,707	(A)	127	55	59	1,601	(A)	142
Colored	1,244	(A)	165	138	133	1,211	(A)	171
Rochester	3,950	12.1	360	61	61	3,989	12.2	372
St. Louis	11,891	14.1	828	52	63	12,126	14.3	939
St. Paul /	2,850	------	179	35	54	3,044	------	275
Salt Lake City	1,787	13.0	185	56	58	1,753	12.7	192
San Antonio *	3,649	16.8	609	------	------	3,591	16.5	669
San Diego /	2,156	------	128	52	47	2,241	------	125
San Francisco	8,020	13.7	379	50	45	8,268	14.1	372
Schenectady	1,155	12.4	122	73	74	1,068	11.4	121
Seattle	4,029	10.5	219	42	43	3,979	10.4	212
Somerville	949	9.3	92	58	75	1,050	10.2	138

/ Mortality rates are omitted, pending the establishment of more satisfactory estimates of population.
* Cities with no infant mortality rate are not in the registration area of births.
(A) Not available.

Number of deaths, death rates, and infant mortality in 77 large cities in 1929 and comparison with 1928—Continued

City	Total deaths	Death rate	Deaths under 1 year	Provisional infant mortality rate, 1929	Infant mortality rate, 1928	Mortality data for calendar year, 1928		
						Total deaths	Death rate	Deaths under 1 year
Spokane	1,486	13.7	99	50	48	1,607	14.7	100
Springfield, Mass	1,876	12.6	174	53	59	1,716	11.5	176
Syracuse	2,636	13.3	232	55	59	2,702	13.6	254
Tacoma	1,239	11.2	56	28	37	1,293	11.7	77
Toledo	3,947	12.6	395	69	65	3,931	12.6	366
Trenton	2,091	15.1	200	72	83	1,839	13.2	232
Utica	1,578	15.2	125	68	68	1,626	15.6	137
Washington, D. C	7,412	13.5	634	71	65	7,239	13.1	582
White	4,576	(1)	290	48	46	4,472	(1)	280
Colored	2,836	(1)	344	117	107	2,767	(1)	302
Waterbury [2]	924		123	61	72	1,099		148
Wilmington, Del	1,441	11.2	156	68	71	1,518	11.8	152
Worcester	2,448	12.4	212	53	62	2,665	13.5	246
Yonkers	1,261	10.4	143	66	57	1,198	9.9	130

[2] Mortality rates are omitted, pending the establishment of more satisfactory estimates of population.
[1] Not available.

DEATHS DURING WEEK ENDED JANUARY 4, 1930

Summary of information received by telegraph from industrial insurance companies for the week ended January 4, 1930, and corresponding week of 1929. (From the Weekly Health Index, January 10, 1930, issued by the Bureau of the Census, Department of Commerce)

	Week ended Jan. 4, 1930	Corresponding week, 1929
Policies in force	75, 180, 975	72, 479, 946
Number of death claims	13, 985	15, 548
Death claims per 1,000 policies in force, annual rate	9. 7	11. 2

Deaths from all causes in certain large cities of the United States during the week ended January 4, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929. (From the Weekly Health Index, January 10, 1930, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Jan. 4, 1930		Annual death rate per 1,000, corresponding week, 1929	Deaths under 1 year		Infant mortality rate, week ended Jan. 4, 1930 [2]
	Total deaths	Death rate [1]		Week ended Jan. 4, 1930	Corresponding week, 1929	
Total (64 cities)	7,888	13.9	19.5	726	968	[3] 64
Akron	47			5	8	46
Albany [4]	28	12.1	20.4	1	4	22
Atlanta	89	18.2	26.2	13	8	137
White	39			4	4	127
Colored	50	(5)	(5)	9	4	143
Baltimore [4]	242	15.2	20.5	21	27	71
White	176			13	18	56
Colored	66	(5)	(5)	8	9	126
Birmingham	87	20.4	47.3	10	32	93
White	47			2	13	31
Colored	40	(5)	(5)	8	19	189
Boston	252	16.4	16.0	34	22	96

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended January 4, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929. (From the Weekly Health Index, January 10, 1930, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Jan. 4, 1930		Annual death rate per 1,000, corresponding week, 1929	Deaths under 1 year		Infant mortality rate, week ended Jan. 4, 1930 [2]
	Total deaths	Death rate [1]		Week ended Jan. 4, 1930	Corresponding week, 1929	
Bridgeport	42			6	6	103
Buffalo	183	17.2	20.2	28	19	125
Cambridge	36	14.9	13.3	4	4	74
Camden	31	11.9	25.1	5	10	91
Canton	33	14.7	32.2	4	8	99
Chicago [4]	710	11.7	17.4	46	98	41
Cincinnati	166			14	23	83
Cleveland	224	11.6	21.8	23	30	69
Columbus	89	15.5	29.4	9	11	88
Dallas	73	17.5	25.4	6	16	
White	57			6	13	
Colored	16	(5)	(5)	0	3	
Dayton	37	10.5	14.5	6	7	89
Denver	70	12.4	20.4	6	10	63
Des Moines	27	9.3	12.7	0	2	0
Detroit	288	10.9	21.8	38	70	59
Duluth	25	11.2	11.6	3	0	81
El Paso	43	19.0	29.7	8	10	
Erie	17			1	4	21
Fall River [4]	28	10.9	20.2	3	4	69
Flint	24	8.4	17.2	4	13	47
Fort Worth	38	11.6	25.1	5	7	
White	31			4	7	
Colored	7	(5)	(5)	1	0	
Grand Rapids	41	13.0	15.3	3	6	46
Houston	96			10	10	
White	72			10	8	
Colored	24	(5)	(5)	0	2	
Indianapolis	110	15.0	19.0	4	9	30
White	79			2	6	17
Colored	31	(5)	(5)	2	3	108
Jersey City	83	13.3	15.5	11	13	96
Kansas City, Kans	23	10.1	19.4	2	2	47
White	18			2	0	53
Colored	5	(5)	(5)	0	2	0
Kansas City, Mo	94	12.5	18.2	9	14	70
Knoxville	17	8.4	17.4	1	2	23
White	12			0	1	0
Colored	5	(5)	(5)	1	1	247
Los Angeles	311			21	21	64
Louisville	101	16.0	20.2	11	3	96
White	78			7	3	69
Colored	23	(5)	(5)	4	0	290
Lowell	22			1	2	24
Lynn	16	7.9	11.4	1	1	25
Memphis	79	21.7	40.4	6	16	71
White	46			3	10	55
Colored	33	(5)	(5)	3	6	101
Milwaukee	134	12.8	19.0	22	23	111
Minneapolis	122	14.0	19.7	10	8	65
Nashville	63	23.5	25.5	6	5	93
White	37			4	3	82
Colored	26	(5)	(5)	2	2	127
New Bedford	29			1	0	26
New Haven	45	12.5	10.6	2	4	39
New Orleans	191	23.2	40.1	14	23	81
White	117			8	12	71
Colored	74	(5)	(5)	6	11	101
New York	1,640	14.2	14.8	157	147	66
Bronx Borough	190	10.4	12.1	16	17	38
Brooklyn Borough	557	12.6	13.4	65	59	69
Manhattan Borough	669	19.9	20.1	60	60	98
Queens Borough	191	11.7	11.0	16	10	46
Richmond Borough	33	11.4	14.9	0	1	0
Newark, N. J.	137	15.1	16.4	14	9	73
Oakland	79	15.0	15.8	6	3	72
Oklahoma City	24			3	3	59
Omaha	64	15.0	16.4	1	5	11
Paterson	39	14.0	15.9	3	3	52
Philadelphia	537	13.6	21.3	42	77	62

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended January 4, 1930, infant mortality, annual death rate, and comparison with corresponding week of 1929. (From the Weekly Health Index, January 10, 1930, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Jan. 4, 1930		Annual death rate per 1,000, corresponding week, 1929	Deaths under 1 year		Infant mortality rate, week ended Jan. 4, 1930 [2]
	Total deaths	Death rate [1]		Week ended Jan. 4, 1930	Corresponding week, 1929	
Pittsburgh	166	12.8	45.4	23	36	84
Portland, Oreg	88			2	6	25
Providence	83	15.1	17.2	9	6	83
Richmond	55	14.8	26.4	6	10	89
White	34			3	3	67
Colored	21	(3)	(3)	3	7	131
Rochester	87	13.8	13.2	9	6	80
St. Louis	264	16.2	19.4	5	19	16
St. Paul	68			0	2	0
Salt Lake City [4]	31	11.7	12.1	1	3	16
San Antonio	97	23.2	19.7	12	11	
San Diego	63			3	8	63
San Francisco	142	12.7	17.0	7	8	48
Schenectady	22	12.3	21.9	2	5	62
Seattle	82	11.2	17.7	5	5	50
Somerville	23	11.7	12.2	1	7	33
Spokane	31	14.8	14.4	3	0	78
Springfield, Mass	41	14.3	16.4	2	3	32
Syracuse	51	13.3	23.3	7	7	87
Toledo	71	11.8	18.7	3	9	27
Trenton	32	12.0	21.1	0	4	0
Utica	38	19.0	20.6	5	1	142
Washington, D. C	162	15.3	18.1	13	21	75
White	109			7	12	60
Colored	53	(5)	(5)	6	9	106
Waterbury	18			3	1	77
Wilmington, Del	22	8.9	20.3	2	9	45
Worcester	65	17.2	15.3	7	4	91
Yonkers	21	9.0	19.8	2	4	48
Youngstown	30	9.0	18.6	0	5	0

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 72 cities.
[4] Deaths for week ended Friday.
[5] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Reports for Weeks Ended January 4, 1930, and January 5, 1929

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 4, 1930, and January 5, 1929

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan. 4, 1930	Week ended Jan. 5, 1929	Week ended Jan. 4, 1930	Week ended Jan. 5, 1929	Week ended Jan. 4, 1930	Week ended Jan. 5, 1929	Week ended Jan. 4, 1930	Week ended Jan. 5, 1929
New England States:								
Maine	1	6	8	493	13	615	0	0
New Hampshire	3	3	----	17	5	55	0	0
Vermont	----	----	----	289	13	4	0	0
Massachusetts	108	117	11	838	288	585	6	1
Rhode Island	16	15	10	179	1	48	2	1
Connecticut	12	28	6	790	64	420	2	0
Middle Atlantic States:								
New York	129	314	[1] 20	[1] 956	314	947	18	14
New Jersey	133	137	32	1,923	105	146	2	8
Pennsylvania [2]	353	367	----	----	800	1,300	23	7
East North Central States:								
Ohio	98	92	24	5,010	538	358	7	6
Indiana	34	54	----	1,129	110	117	29	0
Illinois	234	150	31	2,194	299	330	10	21
Michigan	79	105	----	8,948	210	43	14	7
Wisconsin	20	20	35	7,787	493	139	1	6
West North Central States:								
Minnesota	18	24	2	1,336	151	56	1	2
Iowa	17	8	----	1,447	152	----	1	0
Missouri	43	66	19	21,978	60	74	9	21
North Dakota	7	9	----	2,528	47	16	4	11
South Dakota	5	4	----	36	3	41	1	0
Nebraska	13	20	----	1,022	211	10	2	2
Kansas	24	19	5	4,915	137	11	2	1
South Atlantic States:								
Delaware	----	1	----	233	----	8	0	0
Maryland [3]	36	26	42	3,610	6	59	0	3
District of Columbia	12	19	2	658	3	1	0	1
Virginia	----	----	----	----	----	----	----	----
West Virginia	7	31	30	8,559	17	60	0	0
North Carolina	71	49	24	----	10	13	2	0
South Carolina	31	26	1,234	9,428	----	2	17	0
Georgia	30	17	156	11,711	39	23	4	0
Florida	9	16	2	953	13	10	0	0
East South Central States:								
Kentucky	12	9	----	9,231	92	----	0	0
Tennessee	13	21	205	19,413	41	1	3	1
Alabama	32	36	173	18,673	7	32	0	0
Mississippi	29	16	----	18,884	----	----	4	----
West South Central States:								
Arkansas	15	16	108	4,327	196	22	3	0
Louisiana	22	14	34	3,152	30	114	5	2
Oklahoma [4]	51	33	150	9,852	32	----	1	5
Texas	48	79	45	6,019	8	43	0	0
Mountain States:								
Montana	2	3	----	1,012	10	75	3	8
Idaho	----	1	----	25	43	----	2	2
Wyoming	3	1	----	9	5	4	2	0

[1] New York City only.
[2] Figures for 1929 are for 2 weeks.
[3] Week ended Friday.
[4] Figures for 1929 are exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 4, 1930, and January 5, 1929—Continued

Division and Stato	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan. 4, 1930	Week ended Jan. 5, 1929	Week ended Jan. 4, 1930	Week ended Jan. 5, 1929	Week ended Jan. 4, 1930	Week ended Jan. 5, 1929	Week ended Jan. 4, 1930	Week ended Jan. 5, 1929
Mountain States—Continued.								
Colorado	9	15	1	552	18	9	1	7
New Mexico	17	12	------	2,249	5	2	1	0
Arizona	13	8	10	408	4	1	6	1
Utah [3]	3	1	4	5	60	1	4	2
Pacific States:								
Washington	8	13	12	1,127	77	28	7	7
Oregon	13	21	59	1,374	22	53	1	0
California	80	49	53	1,254	178	22	12	11

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan. 4, 1930	Week ended Jan. 5, 1929	Week ended Jan. 4, 1930	Week ended Jan. 5, 1929	Week ended Jan. 4, 1930	Week ended Jan. 5, 1929	Week ended Jan. 4, 1930	Week ended Jan. 5, 1929
New England States:								
Maine	0	0	41	41	0	1	3	3
New Hampshire	0	0	14	18	0	0	0	0
Vermont	0	0	14	9	6	5	0	0
Massachusetts	1	2	298	297	0	0	4	2
Rhode Island	0	0	28	20	0	0	0	0
Connecticut	0	0	84	46	0	0	0	0
Middle Atlantic States:								
New York	2	5	385	410	9	0	4	14
New Jersey	1	1	203	119	0	0	5	1
Pennsylvania [2]	3	1	773	628	3	0	29	14
East North Central States:								
Ohio	2	2	312	250	215	30	9	11
Indiana	0	0	154	81	204	56	2	1
Illinois	2	0	515	342	135	57	0	10
Michigan	0	0	280	211	64	16	0	7
Wisconsin	0	1	72	143	6	9	6	5
West North Central States:								
Minnesota	0	0	100	121	4	0	0	0
Iowa	0	0	98	112	90	18	0	0
Missouri	0	0	111	75	21	35	6	3
North Dakota	1	0	37	48	15	2	0	0
South Dakota	0	0	23	45	18	33	3	3
Nebraska	0	0	58	73	35	35	1	3
Kansas	0	0	132	94	29	25	3	2
South Atlantic States:								
Delaware	0	0	8	3	0	0	2	0
Maryland [3]	0	0	64	81	0	0	2	2
District of Columbia	0	0	16	19	0	0	0	1
Virginia	------	------	------	------	1	------	------	------
West Virginia	0	0	31	51	7	13	8	0
North Carolina	0	0	65	64	11	15	10	0
South Carolina	2	0	21	14	3	1	8	8
Georgia	1	0	40	29	0	0	5	1
Florida	0	0	28	14	0	0	3	2
East South Central States:								
Kentucky	0	2	34	79	40	11	2	2
Tennessee	1	0	34	37	8	3	5	2
Alabama	0	0	42	37	2	4	2	2
Mississippi	0	0	8	12	3	0	5	1
West South Central States:								
Arkansas	0	0	15	19	14	0	1	0
Louisiana	0	0	14	20	0	4	7	3
Oklahoma [4]	0	0	39	26	88	12	10	5
Texas	0	0	32	88	31	47	4	5
Mountain States:								
Montana	0	0	40	55	11	15	1	0
Idaho	0	0	14	0	8	22	1	1
Wyoming	0	0	5	3	12	4	0	0
Colorado	0	0	35	33	15	22	1	1
New Mexico	1	0	5	9	2	4	2	4
Arizona	0	0	14	7	10	5	1	0
Utah [3]	0	0	10	9	2	6	1	2
Pacific States:								
Washington	1	0	60	18	69	67	1	2
Oregon	0	0	20	13	24	34	1	0
California	2	1	258	190	53	12	4	5

[2] Figures for 1929 are for 2 weeks.
[3] Week ended Friday.
[4] Figures for 1929 are exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
November, 1929										
Colorado	8	34	2		24		1	96	113	33
Michigan	57	492	13	1	658		10	987	282	32
Mississippi	1	324	3,276	4,013	159	386	1	137	1	44
Montana	12	8	6		279		1	165	73	24
North Carolina	7	757	31		15	98	11	508	15	38
Oklahoma [1]	9	397	378	168	72	18	3	295	92	119
Pennsylvania	29	869		1	1,526	1	19	1,411	10	106
South Dakota		19			21		0	79	234	2
Virginia	5	435	957	43	127	9	18	408	113	42
Wisconsin	10	123	66		1,696		3	399	119	81

[1] Exclusive of Oklahoma City and Tulsa.

November, 1929

	Cases
Actinomycosis:	
Pennsylvania	1
Anthrax:	
Pennsylvania	1
Chicken pox:	
Colorado	539
Michigan	1,854
Mississippi	584
Montana	108
North Carolina	478
Oklahoma [1]	130
Pennsylvania	3,531
South Dakota	117
Virginia	468
Wisconsin	1,701
Dengue:	
Mississippi	35
Dysentery:	
Colorado	6
Mississippi (amebic)	25
Mississippi (bacillary)	295
Oklahoma [1]	9
Pennsylvania	2
Dysentery and diarrhea:	
Virginia	92
German measles:	
Colorado	2
North Carolina	7
Pennsylvania	38
Hookworm disease:	
Mississippi	214
Oklahoma [1]	1
Lethargic encephalitis:	
Michigan	5
Pennsylvania	4
Wisconsin	1
Mumps:	
Colorado	53
Michigan	358
Mississippi	90
Montana	225

[1] Exclusive of Oklahoma City and Tulsa.

Mumps—Continued.	Cases
Oklahoma [1]	2
Pennsylvania	758
South Dakota	9
Wisconsin	238
Ophthalmia neonatorum:	
Colorado	1
Mississippi	24
North Carolina	1
Pennsylvania	10
Paratyphoid fever:	
North Carolina	1
Puerperal fever:	
Mississippi	43
Pennsylvania	10
Rabies in man:	
Michigan	1
Pennsylvania	3
Septic sore throat:	
Michigan	17
Montana	6
North Carolina	22
Oklahoma [1]	37
Tetanus:	
Pennsylvania	8
Trachoma:	
Mississippi	3
Montana	143
Oklahoma [1]	4
Pennsylvania	2
South Dakota	6
Trichinosis:	
Pennsylvania	2
Tularaemia:	
Colorado	1
Virginia	6
Undulant fever:	
Colorado	1
Oklahoma [1]	1
Pennsylvania	2
Wisconsin	1

[1] Exclusive of Oklahoma City and Tulsa.

Vincent's angina:	Cases
Colorado	5
Oklahoma [1]	3
Whooping cough:	
Colorado	54
Michigan	458
Mississippi	682
Montana	12

[1] Exclusive of Oklahoma City and Tulsa.

Whooping cough—Continued.	Cases
North Carolina	771
Oklahoma [1]	55
Pennsylvania	1,324
South Dakota	18
Virginia	791
Wisconsin	666

[1] Exclusive of Oklahoma City and Tulsa.

RECIPROCAL NOTIFICATIONS

Notifications regarding communicable diseases sent during the month of November, 1929, by departments of health of certain States to other State health departments

Disease	Connecticut	Illinois	Minnesota	New York	Washington
Diphtheria				1	
Gonorrhea			3		
Scarlet fever				1	
Smallpox		1			
Syphilis			2		
Tuberculosis	1	14	66		
Typhoid fever		3	3		1
Whooping cough				1	

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 97 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 31,390,000. The estimated population of the 90 cities reporting deaths is more than 29,815,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended December 28, 1929, and December 29, 1928

	1929	1928	Estimated expectancy
Cases reported			
Diphtheria:			
45 States	1,588	1,760	
97 cities	722	786	1,059
Measles:			
42 States	2,962	4,028	
97 cities	556	953	
Meningococcus meningitis:			
45 States	199	162	
97 cities	91	87	
Poliomyelitis: 45 States	23	14	
Scarlet fever:			
45 States	3,518	3,034	
97 cities	1,309	1,078	1,271
Smallpox:			
45 States	1,216	537	
97 cities	107	25	45
Typhoid fever:			
45 States	132	143	
97 cities	24	29	41
Deaths reported			
Influenza and pneumonia: 90 cities	931	2,783	
Smallpox:			
90 cities	1	0	
Barre, Vt	1	0	

City reports for week ended December 28, 1929

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1920 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	78,600	14	2	0	1	0	1	1	3
New Hampshire:									
Concord	(1)	0	0	1		0	3	0	2
Vermont:									
Barre	(1)	0	0	0		0	0	0	0
Burlington	(1)	0	0	0		0	0	0	0
Massachusetts:									
Boston	799,200	51	48	24	1	1	19	36	16
Fall River	134,300	4	5	1		0	0	0	1
Springfield	149,800	14	4	15		0	4	0	2
Worcester	197,600	24	6	2	1	1	12	1	0
Rhode Island:									
Pawtucket	73,100	0	2	0		0	0	0	1
Providence	286,300	2	11	5		1	1	0	6
Connecticut:									
Bridgeport	(1)	5	8	3		1	0	0	4
Hartford	172,300		8						
New Haven	187,900	22	2	0		0	0	0	4
MIDDLE ATLANTIC									
New York:									
Buffalo	555,800	23	19	7		0	3	4	22
New York	6,017,500	184	191	121	28	14	30	56	195
Rochester	328,200	10	10	3	1	0	1	1	7
Syracuse	199,300	11	4	1		0	0	9	1
New Jersey:									
Camden	135,400	1	6	4		0	0	0	6
Newark	473,600	72	19	39	6	0	25	10	4
Trenton	139,000	2	4	6		1	6	0	4
Pennsylvania:									
Philadelphia	2,064,200	136	84	23	10	8	21	16	56
Pittsburgh	673,800	35	25	30		4	19	1	24
Reading	115,400	18	4	0		0	0	1	2
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	413,700	24	15	3	2	2	1	0	16
Cleveland	1,010,300	118	43	13	5	1	8	4	15
Columbus	299,000	16	8	1		2	1	0	3
Toledo	313,200	66	13	1	1	1	237	5	9
Indiana:									
Fort Wayne	105,300	6	5	3		1	0	0	7
Indianapolis	382,100	35	9	2		0	15	4	19
South Bend	86,100	1	1	1		0	0	0	0
Terre Haute	73,500	3	2	1		0	0	0	0
Illinois:									
Chicago	3,157,400	123	100	170	10	8	9	17	82
Springfield	67,200	8	2	0	1	1	0	0	1
Michigan:									
Detroit	1,378,900	71	64	64	3	2	91	18	26
Flint	148,800	33	6	0		0	1	0	2
Grand Rapids	164,200	1	4	3		0	0	0	1

[1] No estimate of population made.

City reports for week ended December 28, 1929—Continued

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued									
Wisconsin:									
Kenosha	56,500	5	2	0	----	0	0	0	0
Milwaukee	544,200	144	23	0	3	3	3	9	6
Racine	74,400	10	3	0	----	0	2	0	0
Superior	(1)	2	0	0	----	0	21	0	4
WEST NORTH CENTRAL									
Minnesota:									
Duluth	116,800	3	1	0	----	1	24	0	2
Minneapolis	455,900	137	20	4	----	1	2	2	14
St. Paul	(1)	12	13	0	----	2	6	2	23
Iowa:									
Davenport	(1)	3	1	0	----	----	0	0	----
Des Moines	151,900	0	4	0	----	----	9	0	----
Sioux City	80,000	6	1	0	----	----	0	4	----
Waterloo	37,100	9	0	1	----	----	33	0	----
Missouri:									
Kansas City	391,000	18	9	6	----	0	0	2	7
St. Joseph	78,500	1	2	0	----	0	0	0	3
St. Louis	848,100	10	47	16	2	1	1	10	----
North Dakota:									
Fargo	(1)	8	0	0	----	0	0	1	0
South Dakota:									
Aberdeen	(1)	8	0	0	----	----	0	2	----
Sioux Falls	(1)	0	0	0	----	----	0	0	----
Nebraska:									
Omaha	222,800	8	6	7	----	0	7	1	4
Kansas:									
Topeka	62,800	33	2	0	----	0	1	5	0
Wichita	99,300	13	4	1	----	0	2	0	5
SOUTH ATLANTIC									
Delaware:									
Wilmington	128,500	11	2	3	----	0	0	0	4
Maryland:									
Baltimore	830,400	69	38	14	3	4	1	2	24
Cumberland	(1)	0	1	1	----	0	0	0	0
Frederick	(1)	1	1	0	----	0	0	0	0
District of Columbia:									
Washington	552,000	24	19	3	----	0	0	0	15
Virginia:									
Lynchburg	38,600	1	3	0	----	0	11	5	3
Norfolk	184,200	1	3	0	----	0	0	0	13
Richmond	194,400	3	8	7	----	0	1	1	7
Roanoke	64,600	0	2	5	----	2	0	0	0
West Virginia:									
Charleston	55,200	16	1	2	----	0	0	0	1
Wheeling	(1)	1	2	0	1	0	3	0	2
North Carolina:									
Raleigh	(1)	2	1	0	----	0	0	0	0
Wilmington	39,100	0	1	3	----	0	0	0	0
Winston-Salem	80,000	4	1	1	2	0	0	3	1
South Carolina:									
Charleston	75,900	0	1	0	57	0	0	0	2
Columbia	50,600	6	1	0	----	1	0	0	7
Georgia:									
Atlanta	255,100	7	4	0	20	6	0	2	11
Brunswick	(1)	0	0	0	----	0	0	0	0
Savannah	99,900	7	1	2	5	1	0	0	1
Florida:									
Miami	156,700	1	3	1	----	0	0	1	4
Tampa	113,400	0	2	1	----	0	0	1	3
EAST SOUTH CENTRAL									
Kentucky:									
Covington	59,000	0	1	5	----	0	0	0	5

[1] No estimate of population made.

City reports for week ended December 28, 1929—Continued

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL—continued									
Tennessee:									
Memphis	190,200	6	7	4	-------	0	0	0	7
Nashville	139,600	2	2	0	-------	1	0	0	3
Alabama:									
Birmingham	222,400	5	5	6	16	3	0	0	7
Mobile	69,600	2	1	1	2	0	0	0	4
Montgomery	63,100	0	1	0	1	-------	0	0	-------
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	(1)	0	1	3	-------	-------	0	0	-------
Little Rock	79,200	0	1	0	-------	1	0	0	3
Louisiana:									
New Orleans	429,400	1	12	23	13	16	9	0	20
Shreveport	81,300	0	1	0	-------	0	0	2	7
Oklahoma:									
Oklahoma City	(1)	6	3	0	2	3	1	0	8
Tulsa	170,500	2	3	4	-------	-------	3	0	-------
Texas:									
Dallas	217,800	25	13	12	1	0	14	0	12
Fort Worth	170,600	1	5	3	-------	3	0	0	11
Galveston	50,600	0	1	1	-------	0	0	0	2
Houston	(1)	5	6	4	-------	2	0	1	8
San Antonio	218,100	1	4	2	-------	5	0	0	8
MOUNTAIN									
Montana:									
Billings	(1)	0	0	0	-------	0	0	9	4
Great Falls	(1)	6	1	0	-------	0	0	30	2
Helena	(1)	0	0	0	-------	0	0	5	1
Missoula	(1)	0	0	0	-------	0	2	2	1
Idaho:									
Boise	(1)	2	0	0	-------	0	0	0	3
Colorado:									
Denver	294,200	30	11	4	-------	3	2	16	9
Pueblo	44,200	14	2	0	-------	0	0	5	1
New Mexico:									
Albuquerque	(1)	1	1	1	-------	0	0	0	1
Utah:									
Salt Lake City	138,000	33	3	0	-------	0	5	5	2
Nevada:									
Reno	(1)	0	0	0	-------	0	0	0	1
PACIFIC									
Washington:									
Seattle	383,200	33	5	5	-------	-------	0	11	-------
Spokane	109,100	18	2	1	-------	-------	0	0	-------
Tacoma	110,500	9	3	3	-------	0	1	0	2
Oregon:									
Portland	(1)	11	11	4	-------	1	0	7	8
Salem	(1)	0	0	1	3	0	0	1	0
California:									
Los Angeles	(1)	30	43	17	19	2	6	12	25
Sacramento	75,700	3	3	0	2	2	2	20	2
San Francisco	585,300	44	21	8	7	2	126	15	4

[1] No estimate of population made.

City reports for week ended December 28, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	2	5	0	0	0	1	0	0	0	0	25
New Hampshire:											
Concord	1	1	0	0	0	0	0	0	0	0	9
Vermont:											
Barre	0	0	0	0	1	4	0	0	0	2	7
Burlington	1	2	0	0	0	0	0	0	0	0	7
Massachusetts:											
Boston	70	68	0	0	0	10	1	0	0	43	226
Fall River	3	1	0	0	0	2	0	0	0	0	24
Springfield	9	12	0	0	0	2	0	0	0	12	40
Worcester	12	13	0	0	0	1	0	0	0	2	43
Rhode Island:											
Pawtucket	1	8	0	0	0	0	0	0	0	0	12
Providence	8	13	0	0	0	2	0	0	0	5	70
Connecticut:											
Bridgeport	10	5	0	0	0	1	0	0	0	0	27
Hartford	6		0				0				
New Haven	6	2	0	0	0	1	0	0	0	6	38
MIDDLE ATLANTIC											
New York:											
Buffalo	26	20	1	0	0	7	1	0	0	12	152
New York	218	143	0	0	0	83	10	4	2	23	1,547
Rochester	12	5	0	0	0	4	1	0	0	0	61
Syracuse	12	11	0	0	0	3	0	0	0	4	51
New Jersey:											
Camden	6	2	0	0	0	0	0	1	0	0	37
Newark	22	25	0	0	0	7	0	1	0	9	92
Trenton	3	13	0	0	0	4	0	0	0	0	45
Pennsylvania:											
Philadelphia	83	90	0	0	0	31	3	0	0	21	446
Pittsburgh	37	28	0	0	0	12	1	0	0	5	167
Reading	3	4	0	0	0	0	0	0	0	8	25
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	16	22	0	0	0	5	1	0	0	1	121
Cleveland	40	35	0	0	0	15	1	0	0	44	201
Columbus	11	15	1	0	0	5	0	0	1	4	74
Toledo	14	5	0	2	0	5	0	0	0	0	90
Indiana:											
Fort Wayne	4	2	0	18	0	3	1	0	0	0	39
Indianapolis	10	15	7	5	0	8	0	0	0	6	138
South Bend	3	1	1	0	0	0	0	0	0	0	13
Terre Haute	3	4	1	0	0	0	0	0	0	0	18
Illinois:											
Chicago	122	239	1	2	0	37	4	1	0	5	777
Springfield	2	0	0	0	0	0	0	0	0	2	21
Michigan:											
Detroit	94	106	2	2	0	22	2	0	0	41	278
Flint	12	9	0	4	0	1	0	0	0	5	26
Grand Rapids	12	8	0	0	0	0	0	0	0	1	43
Wisconsin:											
Kenosha	3	1	0	0	0	0	0	0	0	6	9
Milwaukee	29	20	0	0	0	3	1	0	0	20	116
Racine	6	8	0	0	0	1	0	0	0	7	20
Superior	2	3	0	0	0	0	0	0	0	0	9
WEST NORTH CENTRAL											
Minnesota:											
Duluth	9	8	0	0	0	2	0	0	0	2	24
Minneapolis	54	14	3	0	0	3	1	1	0	1	113
St. Paul	27	7	4	0	0	7	0	0	0	5	81
Iowa:											
Davenport	2	1	0	5			0	0		0	
Des Moines	8	4	1	7			0	0		0	28
Sioux City	2	1	0	2			0	0		1	
Waterloo	3	1	0	22			0	0		5	

City reports for week ended December 28, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—con.											
Missouri:											
Kansas City	14	18	3	0	0	9	0	0	0	3	112
St. Joseph	2	0	0	1	0	0	0	0	0	0	38
St. Louis	39	13	1	2	0	6	2	0	0	5	220
North Dakota:											
Fargo	2	2	0	1	0	1	0	0	0	0	7
South Dakota:											
Aberdeen	0	0	0	0			0	0		3	
Sioux Falls	2	1	0	7			0	0		0	12
Nebraska:											
Omaha	6	2	2	1	0	1	0	0	0	0	
Kansas:											
Topeka	2	12	0	1	0	1	0	0	0	1	11
Wichita	4	15	0	0	0	1	0	0	0	0	43
SOUTH ATLANTIC											
Delaware:											
Wilmington	4	0	0	0	0	0	0	0	0	6	20
Maryland:											
Baltimore	29	25	0	0	0	20	2	4	1	10	207
Cumberland	0	2	0	0	0	0	0	0	0	0	10
Frederick	0	1	0	0	0	0	0	0	0	0	3
District of Col.:											
Washington	23	25	0	0	0	14	1	1	0	3	140
Virginia:											
Lynchburg	0	1	0	0	0	1	0	0	0	5	14
Norfolk	3	1	0	0	0	0	0	0	0	0	
Richmond	6	4	0	0	0	2	0	0	0	0	59
Roanoke	2	3	0	0	0	0	0	0	0	0	26
West Virginia:											
Charleston	2	0	0	0	0	1	0	0	0	1	14
Wheeling	2	3	0	0	0	1	0	0	0	2	25
North Carolina:											
Raleigh	0	1	0	0	0	0	0	0	0	0	17
Wilmington	0	1	0	0	0	0	0	0	0	0	15
Winston-Salem	2	2	0	0	0	1	0	0	0	4	23
South Carolina:											
Charleston	0	1	0	0	0	2	0	0	0	0	33
Columbia	0	1	0	0	0	1	0	0	0	5	23
Georgia:											
Atlanta	4	5	0	1	0	2	0	0	0	2	90
Brunswick	0	0	0	0	0	1	0	0	0	0	3
Savannah	1	2	0	0	0	5	1	0	0	0	51
Florida:											
Miami	2	0	0	0	0	0	0	1	0	0	43
Tampa	1	0	1	0	0	1	0	0	0	0	24
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	0	0	1	0	1	0	1	0	0	13
Tennessee:											
Memphis	4	4	0	0	0	3	0	0	0	0	70
Nashville	3	0	0	0	0	2	0	3	0	2	28
Alabama:											
Birmingham	4	5	1	0	0	4	1	1	0	1	73
Mobile	0	0	0	0	0	3	0	0	0	0	32
Montgomery	0	2	0	0			0	0		0	
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	3	0	0			0	0		0	
Little Rock	2	1	0	0	0	0	0	0	0	0	
Louisiana:											
New Orleans	6	16	0	0	0	19	2	1	1	0	204
Shreveport	2	1	0	0	0	2	0	0	0	0	34
Oklahoma:											
Oklahoma City	3	0	0	0	0	1	0	4	0	0	41
Tulsa	2	2	1	8			0	0		1	

City reports for week ended December 28, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL—contd.											
Texas:											
Dallas	5	5	0	0	0	1	0	0	0	0	68
Fort Worth	2	1	0	2	0	3	0	0	0	0	42
Galveston	0	0	0	0	0	0	0	0	0	0	21
Houston	3	2	0	6	0	3	0	0	0	0	81
San Antonio	2	4	0	1	0	11	0	1	0	0	77
MOUNTAIN											
Montana:											
Billings	1	0	0	0	0	0	0	0	0	0	7
Great Falls	2	13	0	0	0	0	1	0	0	0	11
Helena	0	0	0	0	0	0	0	0	0	0	9
Missoula	0	0	0	5	0	0	0	0	0	0	3
Idaho:											
Boise	2	0	0	0	0	0	0	0	0	0	8
Colorado:											
Denver	12	13	0	0	0	7	0	0	0	13	92
Pueblo	3	1	1	0	0	1	0	0	0	0	6
New Mexico:											
Albuquerque	0	0	0	0	0	4	0	1	0	0	8
Utah:											
Salt Lake City	3	10	2	0	0	0	0	0	0	12	35
Nevada:											
Reno	0	0	-------	0	0	0	0	0	0	0	5
PACIFIC											
Washington:											
Seattle	8	16	2	2	-------	-------	1	1	-------	1	-------
Spokane	7	3	3	19	-------	-------	0	2	-------	0	-------
Tacoma	3	9	3	3	0	1	0	0	0	1	23
Oregon:											
Portland	7	5	8	5	0	0	0	0	1	0	88
Salem	0	0	0	0	0	0	0	0	0	0	-------
California:											
Los Angeles	28	51	3	1	0	24	2	1	0	14	286
Sacramento	2	7	1	3	0	2	0	0	0	0	28
San Francisco	16	16	1	4	0	4	0	0	0	2	140

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Maine:									
Portland	1	0	0	0	0	0	0	0	0
Connecticut:									
Bridgeport	0	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	12	8	2	1	0	0	1	1	0
New Jersey:									
Newark	1	1	0	0	0	0	0	0	0
Pennsylvania:									
Philadelphia	3	1	0	0	0	1	0	0	0
Pittsburgh	1	1	0	0	0	0	0	0	0

City reports for week ended December 28, 1929—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cleveland	2	2	0	0	0	0	0	0	0
Toledo	0	0	1	1	0	0	0	0	0
Indiana:									
Fort Wayne	1	1	0	0	0	0	0	0	0
Indianapolis	24	22	0	0	0	0	0	0	0
Illinois:									
Chicago	7	5	0	0	0	0	0	1	1
Michigan:									
Detroit	9	4	0	0	0	0	0	0	1
Wisconsin:									
Milwaukee	0	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	3	0	0	0	0	0	0	0	0
St. Paul	1	0	0	0	0	0	0	0	0
Missouri:									
Kansas City	0	3	0	0	0	0	0	0	0
St. Louis	2	0	1	0	0	0	0	0	0
Nebraska:									
Omaha	3	0	0	0	0	0	0	0	0
SOUTH ATLANTIC									
Virginia:									
Richmond	0	2	0	0	0	0	0	0	0
South Carolina:									
Charleston	0	0	0	0	1	2	0	0	0
Georgia:									
Atlanta	1	1	0	0	0	0	0	0	0
Savannah	0	0	0	0	2	1	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	4	1	0	0	0	0	0	0	0
Alabama:									
Mobile	0	0	0	0	0	2	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	1	2	0	0	0	1	0	0	0
Shreveport	1	1	0	0	0	0	0	0	0
Oklahoma:									
Oklahoma City	2	0	0	2	0	0	0	0	0
Tulsa	1	0	0	0	0	0	0	0	0
Texas:									
San Antonio	0	0	0	0	0	0	0	1	1
MOUNTAIN									
Colorado:									
Denver	1	2	0	0	0	0	0	0	0
Utah:									
Salt Lake City	1	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	2	0	0	0	0	0	0	1	0
Spokane	2	0	0	0	0	0	0	0	0
California:									
Los Angeles	6	2	0	0	1	1	0	1	0
Sacramento	1	1	0	0	0	0	0	0	0
San Francisco	1	1	0	1	2	3	0	0	0

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended December 28, 1929, compared with those for a like period ended December 29, 1928. The population figures used in computing the rates are approximate estimates, authoritative figures for many of the cities not being available. The 98 cities reporting cases have an estimated aggregate population of more than 31,000,000. The 91 cities reporting deaths have nearly 30,000,000 estimated population. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, November 24 to December 28, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Nov. 30, 1929	Dec. 1, 1928	Dec. 7, 1929	Dec. 8, 1928	Dec. 14, 1929	Dec. 15, 1928	Dec. 21, 1929	Dec. 22, 1928	Dec. 28, 1929	Dec. 29, 1928
98 cities	140	152	147	166	134	159	129	146	[2] 120	133
New England	179	195	113	209	118	216	170	159	[2] 125	170
Middle Atlantic	123	131	110	159	112	139	106	146	113	156
East North Central	166	185	191	190	170	208	167	166	166	133
West North Central	113	164	121	149	148	149	110	139	67	119
South Atlantic	144	128	127	143	107	130	107	122	79	105
East South Central	156	175	224	140	136	98	122	133	109	105
West South Central	269	223	376	259	304	251	233	191	178	174
Mountain	17	53	157	35	61	18	61	71	35	18
Pacific	57	72	87	100	60	61	57	95	85	43

MEASLES CASE RATES

98 cities	74	116	98	148	113	183	110	179	[2] 92	161
New England	70	605	81	736	86	837	93	800	[2] 98	676
Middle Atlantic	33	46	54	46	47	91	59	68	51	77
East North Central	101	132	93	187	133	194	94	251	97	206
West North Central	100	66	215	194	202	272	210	225	146	201
South Atlantic	22	69	4	55	28	88	39	52	30	73
East South Central	0	0	14	14	14	0	0	28	0	0
West South Central	40	16	47	41	63	12	138	12	91	4
Mountain	131	230	165	186	104	257	139	204	78	106
Pacific	257	72	389	43	479	64	431	49	337	84

SCARLET FEVER CASE RATES

98 cities	213	173	253	201	276	203	250	184	[2] 217	183
New England	260	186	278	237	378	251	312	241	[2] 314	308
Middle Atlantic	116	102	148	142	172	143	176	145	164	138
East North Central	360	237	409	259	438	290	354	233	311	220
West North Central	183	221	231	264	271	252	235	241	179	262
South Atlantic	139	145	159	176	193	163	253	166	144	132
East South Central	136	161	143	259	88	168	48	154	75	182
West South Central	123	186	162	219	142	174	103	101	126	162
Mountain	348	115	392	80	322	62	583	27	322	27
Pacific	274	261	367	197	352	182	252	197	254	151

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1929, and 1928, respectively.
[2] Hartford, Conn., not included.

Summary of weekly reports from cities, November 24 to December 28, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928—Continued

SMALLPOX CASE RATES

	Week ended—									
	Nov. 30, 1929	Dec. 1, 1928	Dec. 7, 1929	Dec. 8, 1928	Dec. 14, 1929	Dec. 15, 1928	Dec. 21, 1929	Dec. 22, 1928	Dec. 28, 1929	Dec. 29, 1928
98 cities	14	6	19	4	23	8	23	8	[1] 18	4
New England	0	5	0	2	2	0	0	2	[1] 0	2
Middle Atlantic	0	0	0	0	0	0	0	0	0	0
East North Central	13	12	26	10	29	16	31	4	20	3
West North Central	48	8	63	2	56	0	60	6	58	10
South Atlantic	0	6	0	0	0	2	0	0	2	2
East South Central	0	0	0	28	0	7	7	0	7	7
West South Central	12	12	20	4	36	24	36	41	28	12
Mountain	35	35	78	0	78	44	52	44	44	35
Pacific	77	8	62	8	122	20	117	56	80	15

TYPHOID FEVER CASE RATES

98 cities	5	6	5	8	6	5	5	4	[1] 4	5
New England	2	5	2	5	7	7	0	2	[1] 0	2
Middle Atlantic	2	7	4	7	6	4	4	4	3	4
East North Central	5	5	4	7	3	1	3	1	1	5
West North Central	6	8	2	4	6	4	8	2	2	6
South Atlantic	4	10	6	8	7	6	4	8	9	6
East South Central	34	0	48	14	14	21	0	7	34	7
West South Central	16	16	0	49	8	16	40	8	8	8
Mountain	26	9	26	0	9	9	17	9	0	9
Pacific	2	3	10	5	7	8	2	10	10	8

INFLUENZA DEATH RATES

91 cities	11	34	17	50	16	80	19	118	[1] 19	180
New England	5	9	11	9	7	9	9	14	[1] 10	14
Middle Atlantic	5	10	14	17	9	27	18	66	13	129
East North Central	10	14	9	18	15	44	14	124	13	201
West North Central	21	18	27	64	12	174	15	220	15	254
South Atlantic	17	31	28	54	19	101	13	134	26	281
East South Central	15	31	59	84	59	100	52	77	30	268
West South Central	57	54	49	54	81	96	69	212	97	379
Mountain	17	310	17	514	0	735	26	594	26	266
Pacific	13	239	13	293	20	317	30	212	20	182

PNEUMONIA DEATH RATES

91 cities	107	139	137	161	151	202	159	250	[1] 144	315
New England	93	85	75	80	136	108	158	159	[1] 96	159
Middle Atlantic	101	142	139	149	156	190	165	247	155	294
East North Central	83	120	126	135	115	171	117	255	116	382
West North Central	126	150	126	190	174	318	180	444	174	364
South Atlantic	129	145	131	170	191	251	184	228	152	344
East South Central	222	184	237	306	215	199	215	207	193	261
West South Central	162	141	248	179	239	182	243	254	243	408
Mountain	157	186	165	337	192	629	235	399	209	363
Pacific	108	239	144	293	111	222	144	169	108	169

[1] Hartford, Conn., not included.

Number of cities included in summary of weekly reports and aggregate population of cities of each group, approximated as of July 1, 1929 and 1928, respectively

Groups of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1929	1928	1929	1928
Total	98	91	31,568,400	31,052,700	29,995,100	29,498,600
New England	12	12	2,305,100	2,273,900	2,305,100	2,273,900
Middle Atlantic	10	10	10,809,700	10,702,200	10,809,700	10,702,200
East North Central	16	16	8,181,900	8,001,300	8,181,900	8,001,300
West North Central	12	9	2,712,100	2,673,300	1,736,900	1,708,100
South Atlantic	19	19	2,783,200	2,732,900	2,783,200	2,732,900
East South Central	6	5	767,900	745,500	704,200	682,400
West South Central	8	7	1,319,100	1,289,900	1,285,000	1,256,400
Mountain	9	9	598,800	590,200	598,800	590,200
Pacific	6	4	2,090,600	2,043,500	1,590,300	1,551,200

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Week ended December 21, 1929.—The Department of Pensions and National Health reports cases of certain communicable diseases in Canada for the week ended December 21, 1929, as follows:

Provinces	Cerebro-spinal fever	Influenza	Smallpox	Typhoid fever
Prince Edward Island [1]				
Nova Scotia [1]				
New Brunswick				2
Quebec				8
Ontario			4	2
Manitoba	1		2	1
Saskatchewan		2	18	
Alberta			5	1
British Columbia			6	1
Total	1	2	35	15

[1] No case of any disease included in the table was reported for the week.

Ontario Province—Communicable diseases (comparative)—Four weeks ended December 28, 1929.—The following table shows the number of cases of certain communicable diseases with deaths reported in the Province of Ontario, Canada, during the four weeks ended December 28, 1929, as compared with the corresponding period of 1928:

Disease	1928		1929	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis	4	4	4	2
Chancroid	13			
Chicken pox	1,492	1	1,550	
Conjunctivitis	1			
Diphtheria	409	19	267	13
Dysentery	1			
Erysipelas	2			
German measles	27		73	
Gonorrhea	257		141	
Influenza	4,528	94	6	9
Lethargic encephalitis	1	2	1	
Measles	2,565	4	384	
Mumps	507		113	
Paratyphoid fever	8		1	
Pneumonia		257		148
Poliomyelitis	4		6	1
Scarlet fever	544	7	585	7
Septic sore throat	10	1	2	
Smallpox	16		55	
Syphilis	149		159	
Tetanus			2	2
Trachoma	1			
Tuberculosis	165	44	71	30
Typhoid fever	91	4	22	
Undulant fever	1			
Whooping cough	460		283	2

Quebec Province—Communicable diseases—Week ended December 28, 1929.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended December 28, 1929, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	2	Ophthalmia neonatorum	2
Chicken pox	87	Scarlet fever	113
Diphtheria	57	Smallpox	1
German measles	4	Tuberculosis	82
Influenza	2	Typhoid fever	4
Measles	154	Whooping cough	54
Mumps	42		

CHINA

Meningitis.—The following table shows the numbers of cases of meningitis, with deaths, which have been reported in Canton, China, for the weeks indicated below:

Week ended [1]—	Cases	Deaths	Week ended [1]—	Cases	Deaths
Nov. 23, 1929	7	6	Dec. 14, 1929	4	3
Nov. 30, 1929	7	7	Dec. 28, 1929	7	6

[1] No reports were received for the weeks ended Dec. 7 and Dec. 21, 1929.

CUBA

Habana—Communicable diseases—December, 1929.—During the month of December, 1929, certain communicable diseases were reported in the city of Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox	3		Scarlet fever	8	
Diphtheria	6	2	Tuberculosis	82	13
Malaria	24		Typhoid fever	31	7
Measles	16				

CZECHOSLOVAKIA

Communicable diseases—October, 1929.—During the month of October, 1929, certain communicable diseases were reported in Czechoslovakia, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	7	2	Puerperal fever	49	18
Cerebrospinal meningitis	8	3	Rabies	2	2
Diphtheria	2,291	152	Scarlet fever	3,220	52
Dysentery	131	2	Trachoma	261	
Malaria	12		Typhoid fever	987	79
Paratyphoid fever	28	1			

MEXICO

Vera Cruz—Communicable diseases—Six weeks ended December 14, 1929.—During the six weeks ended December 14, 1929, deaths from certain communicable diseases were reported in Vera Cruz, Mexico, as follows:

Disease	Week ended—					
	Nov. 9	Nov. 16	Nov. 23	Nov. 30	Dec. 7	Dec. 14
Bronchitis	1	1				3
Cancer		1	3		2	1
Cerebrospinal meningitis		1				1
Dysentery						1
Gastro-intestinal disorders	5	10	5	6	3	6
Hookworm disease			1			
Malaria	1					
Pneumonia	2	1		1	1	1
Syphilis		1	1			2
Tuberculosis	5	5	7	6	7	7
Tetanus		1	1	1	1	
Typhoid fever	1			1		2

NETHERLANDS

Smallpox (alastrim)—Week ended December 14, 1929.—During the week ended December 14, 1929, 1 case of smallpox (alastrim) was reported in The Netherlands. It occurred at The Hague.

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

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

CHOLERA

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

Place		June 2–29, 1929	June 30–July 27, 1929	July 28–Aug. 24, 1929	Aug. 25–Sept. 21, 1929	Week ended— Sept. 28, 1929	October, 1929 5	12	19	26	November, 1929 2	9	16	23	30	December, 1929 7	14	21
Ceylon: Colombo	C	1																
	D	1																
China:																		
Amoy	C	4	7	1														
Canton	C	10	6	5	1									1	1			
	D	5	5	3	1													
Hankow	C						2		2	1		1						
Manchuria—																		
Kwantung—Dairen	C			1														
Newchwang	C				1													
Nanking	C				P						P	P						
Shanghai	C		2	1,306	984	3	30		2									
	D		3	98	69	9	2											
Swatow	C	P																
	D	4	7	12	37	8	6	8		6	3	3		1	1			
Tientsin	C				P	P												
Chosen: Chemulpo	C																	
India	C	29,449	32,081	41,090	26,896	5,251	3,372	3,476	4,255	4,973	3,978							
	D	19,910	19,343	24,005	16,667	3,092	2,144	2,090	2,725	2,971	2,496							
Bassein	D	2		6														
Bombay	C	2		2		1												
	D	2		1														
Calcutta	C	354	275	170	135	21	30	28	81	71	52	74	55	85	55		65	40
	D	176	157	106	59	12	12	15	31	41	11	48	29	45	29	40		28
Karachi	D			10	11													
Madras	C		1							1	1	1			1	1		
	D		2							1	1				1	1		
Moulmein	D	5	1															
Negapatam	D	1	1									1	1					
Rangoon	C	8	1	1					1			1						1
	D	8	1	1					1									

Tuticorin	C	34	6				2	6	10	2	2	1		7	9	7		32
	D	30	2				1	5	5	1	1	1		4	1	1		6
Vizagapatam	D		1															
India (French):																		
Chandernagor	C	3	2	1				1		3	1	1		2	10			
	D	3	2							1	1	2	1	4	4			
Karikal	C			1														
Pondicherry Province	C	3							3					2	2			
	D	3							3					1	2			
India (Portuguese)	C			1	2				1									
	D			1	1													
Indo-China (see also table below):																		
Pnompenh	C	11	7	3	3	5	5	16	35	28	8	7		1	2	1		2
	D	4	5	3	2	3	5	11	27	20	4	4			2	1		2
Saigon and Cholon	C	188	9	2						1						1		
	D	139	14	2														
Japan	C						29	5										
Kobe	C			2	9	3												
Osaka	C			5	41	14												
Shimonoseki	C			P	2													
Siam	C	469	371	180	26	6	1		2									
	D	285	202	112	19	4												
Anthoang	C		4	10														
	D		4	3			9											
Ayudhaya	C	25	18	2				1	1									
	D	11	11															
Bangkok	C	30	7	9	10	2	1		1					2		3		1
	D	3	1	3	5	2										1		
Dhannapuri	C					1	1											
	D					1	1											
Lobpuri	C			2	3													
	D			2	3													
Nagara Rajsima	C		57	5				1	1									
	D		29	5				1	1									
Smud Songram	C		3															
	D		3															
Sridharmaraj Province [1]	C			15														
	D			13														
On vessel:																		
S. S. Angby, at Saigon-Cholon	C	1																
	D	1																
S. S. Cap. St. Jacques, at Singapore, from Saigon-Cholon	C		P															
S. S. Shinsei, at Shanghai	D				3													
S. S. Tokushima, at Hong Kong	C	2																
	D	2																
S. S. Texas Maru, at Nagasaki, from Shanghai	C			1														

[1] There were 98 cases of cholera with 16 deaths in Nagara Sridharmaraj Province, Siam, from May 16 to July 7, 1929.

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

CHOLERA—Continued

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

Place		May, 1929	June, 1929	July, 1929	August, 1929	September, 1929			October, 1929			November, 1929	
						1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20
Indo-China (French) (see also table above):													
Annam	C	[1] 20		9	17	1							2
Cambodia	C	[1] 215		186	35	4		34		121	100		43
Cochin-China	C	[1] 123		315	60	45					3		15
Laos	C			13	3								
Tonkin	C	5	4										

PLAGUE

Place		June 2-29, 1929	June 30-July 27, 1929	July 28-Aug. 24, 1929	Aug. 25-Sept. 21, 1929	Sept. 22-Oct. 19, 1929	Week ended—								
							Oct. 26, 1929	November, 1929					December, 1929			
								2	9	16	23	30	7	14	21	28
Algeria:																
Algiers	C				2											
Philippeville	C		3	3												
Argentina:																
Rosario	C							1	1							
Plague-infected rats							1	1	1							
Santa Fe	C						1									
Tucuman	C								1							
Azores: St. Michaels Island	C		1													
Belgian Congo:																
Blukwa	C	3														
	D	3														
Buki	C		2													
	D		2													
Djugu	C	3	5	1	2											
	D	3	5	1	2							2				
Rekwa	C		2													
	D		2													

British East Africa (see also table below): Uganda	C	1,437	1,437	840	528	405	110	93	71	62	72					
	D	1,072	1,199	730	556	343	101	84	66	59	66					
Canary Islands: Tenerife	D		1													
Ceylon:																
Colombo	C	2	P		1	3					1		2			
	D	3			1	1					1		1			
Plague-infected rats			6	1	7								1			
Galle	C		3		8	1										
	D		3		6											
Kandy	C			1	1											
	D			1	1											
Matara	C		12													
	D		11													
China:																
Amoy	C			P												
Foochow	C		P	P	P	P										
Hong Kong	C			1	1											
	D			1	1											
Plague-infected rats				3	2											
Manchuria—Tungliao District	C		P	16												
Dutch East Indies: Java—																
Batavia and West Java	C	47	69	122	180	131	61	66	62	77						
	D	47	68	121	178	128	60	65	61	76						
Plague-infected rats									1		3	2	3			
Celebes—Makassar	C												1			
East Java and Madura	C		3	3	7	60	35									
	D		3	3	7	60	36									
Surabaya	C	3	11	3	7	4										
	D	3	11	3	7	2										
Ecuador (see table below).																
Egypt:																
Alexandria	C	1	7	5	11	13	4	4	2	1	1	1	2	2		2
	D	1	3	1	5	3	3		1		1		1	1	2	1
Assiout	C			1		1								1	4	
	D													1	2	
Assuan	C		4		1											
	D		4													
Behelra	C		2											1		
	D		2													
Beni Suef	C	6	4	1	1				1	1						
	D	2														
Dakahlieh	C	1	1		2									1		
	D			1	2											
Gharbieh	C		9	1		5	4		1	1				3		
	D		1	1		4								2		
Girga	C		3													
Kena	C		2													
	D		2													
Menufieh Province	C		3													
Miniah	C		7	1												

[2] Reports incomplete.

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

PLAGUE—Continued

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

Place		June 2–29, 1929	June 30–July 27, 1929	July 28–Aug. 24, 1929	Aug. 25–Sept. 21, 1929	Sept. 22–Oct. 19, 1929	Week ended— Oct. 26, 1929	November, 1929					December, 1929			
								2	9	16	23	30	7	14	21	28
Egypt—Continued.																
Port Said	C	2	3	6	2	2										
	D	1	2	6	3	1										
Suez	C		1													
France: Paris	C					1										
Greece (see also table below):																
Messenia	C								2							
Patras	C				3	3			1	1						
Piraeus	C				3								1			
Pyrgos	C									6	2					
Hawaii: Hamakua—Kukuihaele—Plague-infected rats	C	1				3										
India	C	677	1,812	4,221	6,326	8,334	2,291	1,938								
	D	414	1,059	2,266	3,354	4,395	1,132	1,053								
Bassein	C		9	13	4											
	D	4	1	14	4											
Bombay	C			1	2	1										
	D	4		1	2	1										
Plague-infected rats		35	23	10	28	32	6	3	10	12	11	9	9	7	3	
Madras Presidency	C	85	97	215	186	139		27	13	11			18	42		
	D	38	52	112	107	64		14	8	2			10	17		
Rangoon	C		24	15	11	5			1	1	1					1
	D	9	18	12	9	6			1	1	1					1
Plague-infected rats		6	9	10	15	6	3		1	2	1	1				
Indo-China (see also table below):																
Pnompenh	C	4	7	8	4	1	1			1	2	2		1		
	D	3	8	8	4	1	1			1	2	2		1		
Saigon and Cholon	C	1	6	4	1	2										
	D		1	4		2										
Iraq:																
Baghdad	C	12	1	2		8	1	1	1	1	1	1		1	1	
	D	2				1	1			1				1		
Diyalah Liwa	C	1	1													
Naudham	C	1	1												1	

Italy: Naples Province	C					2											
	D					1											
Plague-infected rats						3											
Madagascar (see also table below):																	
Tamatave	C	2	5	1	2	5	1	2									1
	D	2			13	10	1	2									
Morocco	C	16	39	4	1		P	1	2		4	2		1			
	D	5	17														
Nigeria: Lagos	C	2	1	9	17	37	14	15	13	16	5						
	D	1	1	8	17	35	13	11	12	13	5						
Plague-infected rats		4	13	16	51	89	9	12	6	6	7						
Peru (see table below).																	
Senegal (see table below).																	
Siam	C	1	4	3	7	3	1						1				
	D	1	3	3	5	3	1						1				
Bangkok	C		1	3	1												
	D		1	3	1												
Straits Settlements: Singapore	C				1												
	D				1												
Syria: Beirut	C										1						
Tunisia:																	
Sfax district	C					13	5	3	10	26		11	5	4	9		
Tunis	C		P		10	25		5	8	28							21
	D				1												
Plague-infected rats					4												
Turkey:																	
Adalia	C			1													
Constantinople	C	P	2														
Union of Socialist Soviet Republics:																	
Caucasia	C	1	7	2													
	D	1	3	1													
Ural—Kirghiz	C	4				1											
	D	4															
Union of South Africa:																	
Cape Province	C		3			17	2	11									
	D		2			13		5									
Orange Free State	C				1				4	3							
	D								1	3							
On vessel:																	
S. S. Chaban, at Port Said, from Jaffa	C			1													
	D			1													
S. S. Tokio, at Shanghai, from Singapore	C		1														
	D		1														
Steamship at Porto Novo, from Lagos	C					1											

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

PLAGUE—Continued

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

Place		June, 1929	July, 1929	August, 1929	September, 1929	October, 1929	November, 1929
British East Africa (see also table above):							
Kenya	C	69	67	19	28	64	------
Uganda	C	1,215	1,203	866	------	------	------
	D	932	973	749	------	------	------
Ecuador: Guayaquil	C	------	1	6	7	12	14
	D	------	------	1	3	4	3
Plague-infected rats		1	------	4	8	------	9
Greece (see also table above)	C	------	3	2	5	5	2
	D	------	1	1	2	2	1
Indo-China (see also table above)	C	------	37	9	------	------	------
Madagascar (see also table above)	C	------	19	48	195	203	------
	D	------	18	46	182	193	------
Ambositra Province	C	------	------	9	9	2	------
	D	------	------	9	9	2	------
Antisirabe Province	C	------	2	1	13	17	------
	D	------	2	1	13	17	------
Itasy Province	C	------	------	------	5	------	------
	D	------	------	------	5	------	------
Majunga Province	C	------	------	2	------	------	------
	D	------	------	2	------	------	------
Miarinarivo	C	------	------	------	11	12	------
	D	------	------	------	11	11	------
Moramanga Province	C	------	1	2	5	27	------
	D	------	1	2	4	27	------
Tamatave Province	C	------	2	------	7	5	------
	D	------	1	------	1	4	------
Tananarive Province	C	11	16	36	141	141	------
	D	11	16	34	135	132	------
Peru	C	16	11	------	------	------	------
	D	8	3	------	------	------	------
Senegal:							
Baol [1]	C	43	22	32	42	45	23
	D	18	9	13	24	13	16
Dakar [1]	C	67	62	76	26	3	17
	D	45	45	65	17	2	5
Louga [1]	C	------	59	121	108	41	------
	D	------	39	70	64	24	1
Rufisque [1]	C	------	22	------	1	------	------
	D	------	7	------	1	------	------
Thies [1]	C	10	61	53	34	3	------
	D	6	34	33	28	3	------
Tivaouane [1]	C	93	161	188	119	41	8
	D	50	96	119	55	21	4

[1] Incomplete reports.

SMALLPOX

Place		June 2–29, 1929	June 30–July 27, 1929	July 28–Aug. 24, 1929	Aug. 25–Sept. 21, 1929	Sept. 22–Oct. 19, 1929	Week ended— Oct. 26, 1929	November, 1929 2	9	16	23	30	December, 1929 7	14	21	28
Algeria:																
Algiers	C	6	7	1		1		1	1			1	1	1		
Cherchell	C	1														
Oran	C	1	1		5						3					
Arabia: Aden	C	110	103	38	4	3	1	1			1	1	2			
	D	20	56	37	1							1				
Australia: Fremantle Quarantine Station	C		1													
Bermuda: Hamilton	C	1														
Brazil: Porto Alegre	C			3	2	2	3		2							
British East Africa (see also table below):																
Tanganyika	C	7	10	5	9	3	1	7	18	15	6					
	D				1					4	3					
British South Africa:																
Northern Rhodesia	C		73													
	D		4													
Southern Rhodesia	C		5		3	5				2						
Canada:																
Alberta	C	12		4	4	1	2	4	1	5		4	11	7	5	
Calgary	C			2		1										
Edmonton	C	4		1		3	2	4	1	5		4		7		
British Columbia—Vancouver	C	13	14	8	5	15	2	1		6	1	6	6	1	6	
Manitoba	C	6	1				1	1						6	2	
Winnipeg and vicinity	C	2														
Nova Scotia	C			2		1										
Ontario	C	84	57	7	19	7	3	5	3	6	35	5	10	13	4	
London	C							3	1							
Niagara Falls	C						1									
North Bay	C	2	7		3	7		5			1		1			
Ottawa	C	1	1	1					1		2		1	1		4
Sarnia	C								1							
Toronto	C	5	7		3	1	1	1								
Windsor	C	2	2					1	1							
Prince Edward Island	C			2												
Quebec	C	10	2	3	1	7	8	7	6	1	6	2		8		1
Montreal	C	1														
Quebec	C	2		1												
Riviere du Loup	C		2													
Saskatchewan	C			1	4		9	1		1	9	9	7	15	18	
Saskatoon	C				1	13		6	5	2						

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

SMALLPOX—Continued

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

Place		June 2–29, 1929	June 30–July 27, 1929	July 28–Aug. 24, 1929	Aug. 25–Sept. 21, 1929	Sept. 22–Oct. 19, 1929	Week ended— Oct. 26, 1929	November, 1929 2	9	16	23	30	December, 1929 7	14	21	28
China:																
Canton	C	16	12	2								1		3	1	
	D	1	2													
Chungking	C					P	P	P		P		P				
Foochow	C		P	P	P	P		P		P						
Hong Kong	C	10	1	5	2	3		4	5	6	10	7	9	36	19	
	D	6	5	4	2	3		2	7	4	8	6	8	33	12	
Manchuria—																
Harbin	C			1		1	1									
Kwantung—Dairen	C	11	14		2											
	D	3	9	1												
Nanking	C		P	P	P				P							
Shanghai—																
Foreigners only	C	7	8			2			8	1	2	2	1			
Including natives	D	5	3						1		2				2	
Swatow	D	24	15	2												
Tientsin	C				2	3				1	3	1				
Tsingtao	C	P														
Chosen (see table below).																
Colombia:																
Barranquilla	C		2		4											
Buenaventura	C					15	8	14	14	14	14	16	12			
Dutch East Indies:																
Balikpapan	C	1														
Belawan Deli	C	1	2	1	1				1	3			1		1	
	D		1													
Borneo—Samarinda	C	3	13	7		11	3	5								
	D	1				3										
Celebes—Makassar	C	20	21	4	12	156										
	D	15	11	3	5	1										
Java—																
Batavia and West Java	C	6	8	10	35	31		4	6			3	1	2	1	
	D	1	2	5	7	6		1	5				1	2		
East Java and Madura	C			3					12	1		4	9			
	D			1					9	1						
Sumatra—Medan	C	1	3	3	3				1	3						
	D		1													

Egypt:																
Alexandria	C					1					4					
Port Said	C	1														
Suez	C				5											
France (see table below).																
Great Britain:																
England and Wales	C	789	541	502	496	490	131	168	172	172	279	198	252	265		
Ashton under Lyne	C		7	3		2			1		1	1		4		
Bradford	C	4	3		8	6		4	8	1	7		9	4		
Bristol	C		1													
Cardiff	C			1		1				1				1		
Castleford	C	3	1													
Leeds	C	1	1	1	2											
London	C	167	107	78	144	156	29	44	47	54	84	60	72	105		
London and Great Towns	C	496	363	297	304	332	83	115	121	123	214	148	208	213		
	D	1	4									1				
Newcastle-on-Tyne	C	20	15	4	2	1								1		
Stoke-on-Trent	C	62	32	18	18	7	3	1	5		1					
Greece (see table below).																
Hedjaz	C	83	53	11	22	5		4	1	2	2	2	2			
	D	53	35	19	7	1		4	1	1	1					
Honduras:																
Choluteca	C					2										
India	C	11,549	7,838	5,481	4,199	3,111	838	681								
	D	3,006	2,062	1,418	954	661	169	143								
Bombay	C	147	92	63	37	16	6	1	3	2	9	8	12	13	19	
	D	99	55	31	24	11	3	1	3	1	1	5	4	4	11	
Calcutta	C	27	16	31	21	12	1	3		2	7	6	7	34	7	
	D	24	11	20	16	11	1	2		1	6	5	6	22	5	
Cochin	C			4	13	13	18	16	28	34	29	47	245	66		
	D				1		5	2	2	2	10	5	51	6		
Karachi	C	35	25	15	27	10		2			3	2	1	1	2	
	D	25	13	7	16	3		1				2			4	
Madras	C	88	122	89	82	79	15	11	21	11	22	18	14	10	27	
	D	20	32	22	21	8	1	3	4	3	2	2	5	2	7	
Moulmein	C	6	10	11	5	3	2		1		1	1	1	3	3	
	D	5	5	5	2		1		1				1	2	3	
Negapatam	C	6	4	1	3	1				1		1				
	D				1											
Rangoon	C		3	1		1					1				1	
	D		1													
Tuticorin	C	1														
Vizagapatam	C	4	3		1											
	D	2	2	1	1											
India (French):																
Karikal	C	5	1	12	14	2	2		2	1						
	D	5	1	2	13				2							
Pondicherry Province	C	18	21	12	8	5	3	2	2	12			1	6		
	D	15	16	7	8	3	3	2	2	9	1	1	1	4		
India (Portuguese)	C	9	4		1	1										

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

SMALLPOX—Continued

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

Place		June 2-29, 1929	June 30-July 27, 1929	July 28-Aug. 24, 1929	Aug. 25-Sept. 21, 1929	Sept. 22-Oct. 19, 1929	Week ended— Oct. 26, 1929	November, 1929 2	9	16	23	30	December, 1929 7	14	21	28
Indo-China (see also table below):																
Pnompenh	C	8	9	3	1	1			1	1						
	D	2	3	3	1											
Saigon and Cholon	D	1	1													
Iraq:																
Baghdad	C	1	1				8			1	3	2	5	10	4	6
	D						2			1	2		2	6	1	1
Basra	C	9	1									1	4			
	D	1														
Diyalah Liwa	C		8	13	4				18	45		33	13			
	D		2	12					9	9		3	4			
Kirkuk Liwa	C				21	16			45	45		19	51			
	D				1				13	13		6	13			
Mossoul	C	20	12	81	68	24	75	52	11	14	20	8	19	1	53	
	D			13	17	6	33	28	26	12	6	1	10		3	
Ivory Coast (see table below).																
Jamaica (outside Kingston) (alastrim)	C		7													
Japan:																
Niigata	C	2														
Tokyo	C	1														
Macao	D	2														
Mexico (see also table below):																
Acapulco	C	2	3	4	1											
	D	2	3	4	1											
Aguascalientes	D	17	11	7	6	8	1									
Coahuila	D	1							1							
Jalisco (State): Guadalajara	D	11	6	5	8	4	1					1	4	1	1	
Juarez	C			3	P	10		6								
Mexico City and surrounding territory	C	9	13	21	7	8	2	4	1	2	6	2	5			
	D	10	3	6	1	8	2	1		1		1	6			
Morocco (see table below).																
Netherlands: Rotterdam	C		40	141	110	39	4	2	8	4			5			
	D			1	7	5			1		1					

Nigeria: Lagos	C		1			1										
Panama	C		14	5	95	154	8	3								
Panama Canal Zone	C	1														
Persia (see table below).																
Philippine Islands: Sarangani and Thalut Islands.[1]																
Poland	C	66		2		1	2				1	3				
	D	2														
Portugal:																
Lisbon	C	6	4	1	17			1	1			1	1	1		
Oporto	C	2	2								1					
Rumania	C				1	2										
	D				1											
Senegal (see table below).																
Siam	C	27	71	32	23	33	2	4		1			1			
	D	1	14	7	5	2	1		1					1		
Somaliland, British: Boales	C	11	4		4	3	5	10	5	5	5	8	6	5	1	
	D	4			2	4	1	5	4	6	2	3	1	3	4	
Somaliland, French: Jibuti	C	16	123	31	10											
	D	8	21	21	11											
Spain: Valencia	C	1														
Sudan (Anglo-Egyptian)	C	1,172	1,121	87	598	250	19	11	7	54	74	7	35	138	52	30
	D	195	164	73	95	16	3	3	3	3	32	2	10	1	14	9
Sudan (French) (see table below).																
Syria (see table below).																
Tunisia: Tunis	C	2	1			6	6	6	8	1	12	12	7	16		
Turkey (see table below).																
Union of South Africa:																
Cape Province	C	P				P	P	P	P	P						
Natal	C			P	P											
Transvaal	C	P			P	P	P	P	P	P						
Upper Volta	C	10				1										
On vessel:																
S. S. Aorangi, at Sydney	C	1														
S. S. City of Hereford, at Brisbane, from Calcutta	C		1													
S. S. British Birch, at Suez, from Abadan	C	1														
S. S. Karoa, at Zanzibar	C				1			1								
S. S. Keneh, at Suakim, from Jeddah	C	4														
S. S. Taipikn, at Manila, from Australia	C						1									
S. S. Umvuma, at Cape Town, from London	C					5										

[1] 40 deaths from smallpox were reported January 4, 1930, as having occurred in Sarangani and Thalut Islands, situated 900 miles south of Manila, Philippine Islands.

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

SMALLPOX—Continued

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

Place		June, 1929	July, 1929	August, 1929	September, 1929	October, 1929			November, 1929			December, 1929	
						1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20
Dahomey	C					4					19	19	
Indo-China (see also table above)	C		159	263	64	81		47		245			
Ivory Coast	C		22	2									
Sudan (French)	C	57	15		2						P		P
	D	15											
Syria: Beirut	C	36	27	29	37	16	1	11	22	22	16	10	9
	D							1		6			

Place		July, 1929	August, 1929	September, 1929	October, 1929	November, 1929	December, 1929
British East Africa (see also table above):							
Kenya	C		60	66			
Chosen	C		1				
	D		1				
Mexico: Durango (see also table above)	D			2	2	2	4

Place		July, 1929	August, 1929	September, 1929	October, 1929	November, 1929	December, 1929
Morocco	C	9	10	3	12	41	
Persia	D	51					
Turkey	C		1	41	100		
	D			9	20		

TYPHUS FEVER

Place		June 2–29, 1929	June 30–July 27, 1929	July 28–Aug. 24, 1929	Aug. 25–Sept. 21, 1929	Week ended— Sept. 28, 1929	October, 1929				November, 1929					December, 1929	
							5	12	19	26	2	9	16	23	30	7	14
Algeria:																	
Algiers	C	1	9	4	4	3		1	6			1	1		1		
Constantine Department	C	11		2								1				1	2
Oran	C	5	9	2	3												
Bolivia: Pacajes Province—Calacoto Canton	C			19													
	D			5													
Brasil: Sao Paulo.[1]																	
Bulgaria	C	4	12		14											9	
	D	1	2													1	
Sofia	C		1										1				
	D												1				
Chile: Valparaiso	C		1	1													
China: Tientsin	C			1													
Chosen (see table below).																	
Czechoslovakia (see table below).																	
Egypt:																	
Alexandria	C				1	1	1										
	D																
Beheira Province	C	13	3	31	6	9	3		4	2							
	D	6	4		2	2			2	1							
Cairo	C		2	4	3									1			
	D				1									1			
Port Said	C	2	4	3													
Suez	C			2					1	1							
Greece (see table below).																	
Ireland (Irish Free State): Donegal County—Stranorlar	C	1															
Latvia (see table below).																	
Lithuania (see table below).																	
Mexico:																	
Aguascalientes	D		1	1													
Mexico City, including municipalities in Federal District	C	14	11	11	14	3	4	1	1		1	2		1	1	1	
	D	1		1	6						1						
Morocco	C	12	27	6				1	4	1	2	1			1		1
	D		11														
Palestine	C	2	4	1	5	1	1	1				2		1			

[1] Press reports show that 10 deaths from typhus fever have occurred in Sao Paulo, Brazil, from Nov. 3 to 30, 1929.

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

TYPHUS FEVER—Continued

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

Place		June 2-29, 1929	June 30-July 27, 1929	July 28-Aug. 24, 1929	Aug. 25-Sept. 21, 1929	Week ended— Sept. 28, 1929	October, 1929 5	12	19	26	November, 1929 2	9	16	23	30	December, 1929 7	14
Persia	C	5	56	23													
	D	4	10	8													
Peru: Arequipa (see table below).																	
Poland	C	177	90	48	26	5	10	3	13	26	8	15	13	17	16	19	
	D	7	4	7	4	1	1	1							3	3	
Portugal:																	
Lisbon	C	1									1		2	2	1		
Oporto	C	1		1		1											
Rumania	C	91	33	9	39	6	4	15		5	2	1	11	8	11		
	D	13	2	1	4	2	2	1									
Tunisia	C	23	3	4				1		1				1	1		1
Turkey (see table below).																	
Union of South Africa:																	
Cape Province	C	P	P	1	P	P	P		P	P	P	P	P				
Natal	C	P		P	P	P	P	1	1	P			P				
Orange Free State	C	P	P	P	P	P	P		P			P	P				
Transvaal	C	P	P	P	P	P	P		P	P	P	P					
Yugoslavia (see table below).																	

Place		June, 1929	July, 1929	August, 1929	September, 1929	October, 1929	November, 1929
Canada: Ontario	C	1					
Chosen: Seoul	C	2			1		
Czechoslovakia	C	2	2		1		3
	D						
Greece: Athens	C	3		6	3	7	
Latvia	C	5		1			

Place		June, 1929	July, 1929	August, 1929	September, 1929	October, 1929	November, 1929
Lithuania	C	27	10	7	3	6	4
	D	4	1	1		1	1
Peru: Arequipa	D		1		1	1	
Turkey	C	10		3	4	10	2
	D	3			1		
Yugoslavia	C		3	7		1	
	D		1	2			

Place		June 2-29, 1929	June 30-July 27, 1929	July 28-Aug. 24, 1929	Aug. 25-Sept. 21, 1929	Sept. 22-Oct. 19, 1929	Week ended— Oct. 26, 1929	November, 1929 2	9	16	23	30	December, 1929 7	14	21
Brazil:															
Bahia	C		1												
	D		1												
Nictheroy	C				1										
Para	C		1												
	D	1	1												
Rio de Janeiro	C	7	1	0	2	0	0	0	0	0	0	0	0	0	
	D	5	1												
Colombia:															
Simacota	C		4												
Socorro [1]	C		12												1
Gold Coast	C														
Liberia: Monrovia	C	4	4		1										
	D	3	1												

[1] From June 19 to July 8, 1929, 41 cases of yellow fever with 23 deaths were reported in Socorro, Colombia.