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BENZOL POISONING AS A POSSIBLE HAZARD IN CHEMICAL LABORATORIES

By J. J. BLOOMFIELD, *Assistant Physical Chemist, Office of Industrial Hygiene and Sanitation, United States Public Health Service*

The hazard attending the use of benzol in industry has been well established by the recent studies conducted by the United States Public Health Service in cooperation with the National Safety Council.[1] As a result of these studies it was concluded that "The use of benzol (except in inclosed mechanical systems), even when the workers are protected by the most complete and effective systems of exhaust ventilation, keeping the average concentration of benzol in the workroom air below 100 parts per million, involves a substantial hazard. Every possible effort should, therefore, be made to develop the use of substitute solvents of a less toxic nature wherever this is possible."

Quite recently the writer's attention has been called to the fact that benzol is used to a considerable extent in chemical laboratories. This is especially true in those laboratories where tests are conducted in connection with rubber, paint, varnish, and oil products. Such tests usually involve the determination of the solubility of compounds in various solvents such as benzol, carbon disulfide, and acetone. several such laboratory workrooms were recently investigated by the writer with the purpose of determining whether or not the use of benzol in these workrooms const ituted asource of ill health. In these laboratories from 3 to 5 gallons of benzol were used weekly, mainly in the extraction of fuel oils and in certain solubility determinations. In certain tests the procedure called for centrifuging with benzol the material to be tested, a practice evolving considerable benzol vapor in the air. Air analyses made in three laboratory rooms where benzol was being used showed a concentration of vapor varying from 28 parts per million in one room to 223 parts per million in another. In the latter room two centrifuges were used intermittently in the manner just described.

Besides using benzol for experimental purposes it was observed that this solvent was also employed in cleaning apparatus and in washing the hands and arms free from stains. This practice is quite

[1] Greenburg, Leonard: Benzol Poisoning as an Industrial Hazard. Reprint No. 1096 from the Public Health Reports, July 2, 9, 23, 1926.

common, since many of the materials tested contain asphalt, coal tar, and varnishes, substances difficult to remove from glassware and the skin with ordinary cleansing agents. It is quite obvious that such practice on the part of chemists tends to add to the amount of benzol vapor in the laboratory air and should be abolished. Even though the use of benzol for experimental purposes may be justified in certain instances, certainly by some less toxic solvent, such as xylol, should be substituted for use in cleaning apparatus and as a skin wash. In one laboratory room as much as 3 gallons of benzol per week was used as a cleansing agent.

As stated earlier, the study of benzol poisoning in industry disclosed the fact that the exposure to benzol vapor of concentrations even as low as 100 parts per million involves a substantial hazard. Conditions in chemical laboratories differ from those in industry in that the use of benzol is usually intermittent. So that it does not seem practical to apply the standards of vapor concentrations evolved for industrial establishments to those laboratories not using benzol constantly throughout the workday. A better criterion for evaluating the extent of benzol poisoning is a blood examination of the worker exposed, since the most characteristic pathological effect of benzol is its destructive influence upon the cells of the blood and the blood-forming organs. In chronic benzol poisoning the white-blood cell count is reduced to a considerable extent. Hence, in attempting to fix a standard for the white-cell count which would, along with a history of exposure, be indicative of benzol poisoning, the investigators of United States Public Health Service decided that a fall in the count below 5,600 per cubic millimeter might be accepted as reasonably clear evidence of the condition in question. Chronic benzol poisoning produces also a marked change in the relationship between the various types of white-blood cells present. In benzol poisoning the percentage of lymphocyte cells is relatively increased and that of the polymorphonuclear leucocytes is markedly decreased. In making a diagnosis of benzol poisoning these aspects of the differential count must be carefully considered.

Blood examinations of the workers exposed to benzol vapor in the chemical laboratories visited by the writer did not show an abnormal white-blood cell count. However, the blood of three of the men showed a departure in the relationship between the various types of white-blood cells. Such a blood picture, coupled with a definite exposure to solvent vapors of a concentration considered toxic, according to present-day standards, tends to indicate that the possibility of benzol poisoning in chemical laboratories must be considered.

Many industrial plants still use benzol, since the claim is made that the cost of suitable substitute solvents is prohibitive. Certain chemical laboratories use a sufficient amount of benzol to be considered as a potential hazard, but not enough of this sovent is utilized to justify its retention on the above claim. It is felt that in practically all chemical laboratories benzol could be substituted by some solvent known to be less toxic, such as toluol, xylol, or highflash naphtha. It is recommended at this time that in case the use of benzol in chemical laboratories is continued, it should be confined to the testing of materials only, and should not be employed as a cleansing agent. Also, in order to detect incipient benzol poisoning at a stage when its effects can be minimized, all laboratory workers exposed to benzol fumes should be given a thorough medical examination before employment, and reexamined, with systematic blood counts, once every month or two thereafter. Any worker whose blood picture, on reexamination, shows a marked departure from the normal (obtained from a previous examination) should be promptly excluded from benzol exposure.

SUMMARY OF PROVISIONAL BIRTH, DEATH, AND INFANT MORTALITY FIGURES FOR THE BIRTH-REGISTRATION AREA, 1927 [1]

The Department of Commerce announces that birth rates for 1927 were lower than for 1926 in 23 of the 33 States for which figures for the two years are shown in the following summary. The highest 1927 birth rate (28.8 per 1,000 population) is shown for North Carolina and the lowest (13.6) is for Montana.

Death rates for 1927 were lower than for 1926 in 28 of the 33 States shown for both years. The highest 1927 death rate (13.9 per 1,000 population) is shown for Vermont and the lowest (7.1) for Idaho.

Infant mortality rates were lower for 1927 than for 1926 in 30 of the 33 States shown for both years. For States the highest 1927 infant mortality rate (125.8) appears for Arizona and the lowest (47.5) for Oregon.

Infant mortality rates are shown for both years for 48 cities of 100,000 population or more in 1920. For 42 of these cities the 1927 infant mortality rates were lower than those of the preceding year, the lowest 1927 rate (41.4) being for Seattle, Wash., and the highest (87.1) for Norfolk, Va.

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[1] Exclusive of Louisiana, Massachusetts, and Utah, from which complete transcripts for 1927 have not been received.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in the birth-registration area in continental United States, 1927

(Birth and death rates are omitted for cities of less than 30,000 population in 1920, as the Census Bureau has decided not to estimate 1927 populations for these places. Small areas with high infant-mortality rates, designated by the following sign (#) contain institutions for the care of children. Minor areas designated by an asterisk (*) contain State insane asylums, State hospitals, maternity hospitals, etc., where occur many deaths of nonresidents and many births to nonresident mothers. For these places and others also the nonresident factor is doubtless responsible for unusual rates)

Area	Number, 1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births)	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
Birth registration area [a]	1,763,035	981,725	113,391	20.4	20.6	11.4	12.1	64.3	73.3
STATES									
Alabama	65,853	27,061	4,343	25.8	(b)	10.6	11.8	65.9	(b)
Arizona	8,529	5,770	1,073	18.6	18.9	12.6	12.5	125.8	121.2
Arkansas	38,686	17,826	2,374	20.1	(b)	9.3	(b)	61.4	(b)
California	83,727	61,351	5,247	18.9	19.2	13.8	13.7	62.7	62.7
Connecticut	28,859	16,755	1,702	17.6	18.2	10.2	11.4	59.0	72.1
Delaware	4,255	2,999	294	17.5	17.5	12.3	14.4	69.1	93.4
Florida	34,126	18,175	2,304	25.0	26.4	13.3	15.2	67.5	74.8
Idaho	9,173	3,785	459	17.2	17.8	7.1	7.4	50.0	63.0
Illinois	133,663	82,841	8,604	18.3	18.6	11.4	11.8	64.4	69.4
Indiana	62,298	37,678	3,665	19.8	20.1	12.0	12.8	58.8	72.4
Iowa	44,296	24,471	2,467	18.3	18.9	10.1	10.5	55.7	58.7
Kansas	34,645	18,561	1,918	19.0	19.3	10.2	10.5	55.4	65.3
Kentucky	61,517	26,918	3,755	24.2	24.0	10.6	11.9	61.0	75.5
Maine	16,300	10,879	1,305	20.6	20.8	13.7	14.4	80.1	80.0
Maryland	32,418	21,102	2,645	20.3	20.8	13.2	14.3	81.6	87.1
Michigan	99,945	50,606	6,773	22.3	22.5	11.3	12.3	67.8	77.2
Minnesota	50,813	24,700	2,646	18.9	19.8	9.2	9.7	52.1	57.6
Mississippi	49,181	22,938	3,232	27.5	28.4	12.8	13.3	65.7	70.0
Missouri	66,431	40,699	3,953	18.9	(b)	11.6	12.2	59.5	(b)
Montana	9,730	5,314	650	13.6	14.2	7.4	7.8	66.8	76.9
Nebraska	27,863	12,243	1,403	20.0	20.4	8.8	9.1	50.4	59.2
New Hampshire	8,776	6,295	593	19.3	19.2	13.8	14.8	67.6	78.7
New Jersey	72,814	42,131	4,470	19.4	19.7	11.2	12.2	61.4	70.1
New York	227,546	140,905	13,526	19.9	19.7	12.3	13.4	59.4	70.5
North Carolina	83,334	32,764	6,516	28.8	28.8	11.3	12.1	78.2	82.3
North Dakota	13,825	4,896	878	21.6	23.2	7.6	8.3	63.5	69.2
Ohio	122,911	73,471	7,636	18.3	18.8	10.9	11.9	62.1	75.9
Oregon	14,620	10,184	695	16.4	16.8	11.4	11.2	47.5	52.5
Pennsylvania	210,018	111,257	14,491	21.6	21.6	11.4	12.5	69.0	82.4
Rhode Island	13,726	7,899	912	19.5	19.6	11.2	12.7	66.4	82.0
Tennessee	54,407	28,993	3,886	21.9	(b)	11.7	12.7	71.4	(b)
Vermont	7,022	4,883	490	19.9	20.3	13.9	14.8	69.8	72.0
Virginia	58,193	28,553	4,343	22.9	22.9	11.2	12.2	74.6	83.7
Washington	23,308	15,929	1,159	14.9	15.6	10.2	10.2	49.7	56.4
West Virginia	44,857	16,990	3,227	26.4	26.3	10.0	10.9	71.9	81.8
Wisconsin	57,232	29,519	3,394	19.6	19.3	10.1	10.5	59.3	69.1
Wyoming	4,472	1,976	308	18.6	18.6	8.2	8.1	68.9	75.9
CITIES									
Alabama:									
Anniston	572	282	46	-------	(b)	-------	18.0	80.4	(b)
Bessemer	497	336	39	-------	(b)	-------	20.5	78.5	(b)
Birmingham	6,097	3,446	479	28.0	(b)	15.8	17.7	78.6	(b)
Dothan*	241	238	22	-------	(b)	-------	19.1	91.3	(b)
Florence	294	193	32	-------	(b)	-------	15.0	108.8	(b)
Gadsden	426	231	27	-------	(b)	-------	12.4	63.4	(b)
Mobile	1,493	1,100	110	22.1	(b)	16.2	16.6	73.7	(b)
Montgomery	1,213	884	85	25.5	(b)	18.6	21.0	70.1	(b)
Selma*	448	410	44	-------	(b)	-------	26.9	98.2	(b)
Tuscaloosa*	393	325	22	-------	(b)	-------	38.9	56.0	(b)

[a] Exclusive of Alabama, Arkansas, Louisiana, Missouri, Tennessee, Massachusetts, and Utah for both years. The first five of these States were not in the registration area in 1926. The 1927 data for Louisiana, Massachusetts, and Utah are incomplete.

[b] Not in the registration area in 1926.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in the birth-registration area in continental United States, 1927—Continued

Area	Number, 1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births)	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
CITIES—continued									
Arizona:									
Phoenix *	1,504	1,353	151	-------	33.7	-------	28.9	100.4	91.0
Tucson *	885	880	124	-------	29.6	-------	33.5	140.1	146.4
Arkansas:									
Fort Smith *	664	515	66	-------	(b)	-------	15.7	99.4	(b)
Hot Springs *	339	463	25	-------	(b)	-------	36.3	73.7	(b)
Little Rock *	1,424	1,720	108	18.4	(b)	22.2	22.7	75.8	(b)
North Little Rock	332	191	32	-------	(b)	-------	11.8	96.4	(b)
Pine Bluff	396	349	30	-------	(b)	-------	(b)	75.8	(b)
California:									
Alameda	548	360	5	-------	18.7	-------	11.1	9.1	33.1
Bakersfield	611	277	37	-------	25.8	-------	12.0	60.6	87.9
Berkeley	758	596	32	10.9	12.7	8.6	9.9	42.2	41.7
Eureka	369	289	18	-------	30.4	-------	19.9	48.8	65.2
Fresno#	1,172	531	61	18.8	18.6	8.5	8.6	52.0	58.9
Glendale *	854	688	38	-------	31.5	-------	23.5	44.5	47.1
Long Beach	1,951	1,316	98	18.7	20.0	12.6	12.5	50.2	46.2
Los Angeles	18,167	12,918	1,218	(c)	(c)	(c)	(c)	67.0	59.3
Oakland	4,810	2,952	253	18.0	16.9	11.0	10.8	52.6	62.9
Pasadena	1,255	904	52	20.7	19.8	14.9	15.1	41.4	36.3
Pomona	368	199	14	-------	21.2	-------	15.7	38.0	66.1
Richmond	375	150	23	-------	15.7	-------	6.4	61.3	54.1
Riverside	655	491	45	-------	(c)	-------	(c)	68.7	65.9
Sacramento	1,965	1,347	108	26.3	26.7	18.1	18.7	55.0	57.7
San Bernardino *	836	564	68	-------	36.1	-------	22.7	81.3	88.1
San Diego	2,719	2,087	164	23.6	21.4	18.1	16.7	60.3	45.7
San Francisco	8,324	7,826	414	14.5	14.7	13.6	13.5	49.7	49.7
San Jose	906	580	36	20.2	20.7	12.9	12.9	39.7	56.7
Santa Ana	536	331	22	-------	26.9	-------	13.6	41.0	34.2
Santa Barbara	568	353	30	-------	22.5	-------	13.5	52.8	75.4
Santa Cruz	222	210	10	-------	22.1	-------	21.5	45.0	53.9
Santa Monica	763	402	39	-------	34.3	-------	19.0	51.1	60.7
Stockton *	870	554	43	17.5	18.3	11.1	12.6	49.4	61.9
Vallejo	219	192	15	-------	9.0	-------	6.8	68.5	40.2
Connecticut:									
Ansonia	229	129	11	-------	11.9	-------	8.8	48.0	113.5
Bridgeport	3,122	1,514	133	(c)	(c)	(c)	(c)	42.6	72.9
Bristol	644	230	43	-------	26.6	-------	10.3	66.8	81.5
Danbury town	576	366	44	-------	23.5	-------	17.9	76.4	66.8
Derby	424	180	19	-------	32.4	-------	13.9	44.8	75.2
East Hartford town	133	91	6	-------	10.7	-------	7.4	45.1	80.0
Enfield town	203	83	13	-------	18.8	-------	8.6	64.0	81.3
Fairfield town	136	103	10	-------	8.9	-------	7.9	73.5	104.5
Greenwich town	460	260	20	-------	19.5	-------	9.8	43.5	57.4
Hartford	4,168	2,073	310	24.8	25.2	12.3	13.0	74.4	72.8
Manchester town	407	171	10	-------	18.2	-------	7.7	24.6	33.2
Meriden	791	418	42	21.5	19.1	11.4	13.0	53.1	77.1
Middletown *	612	459	34	-------	24.9	-------	23.0	55.6	60.9
Milford town	150	132	8	-------	8.0	-------	9.5	53.3	106.2
Naugatuck	103	94	7	-------	7.2	-------	5.5	68.0	83.3
New Britain	1,569	574	114	22.0	22.5	8.1	9.2	72.7	81.0
New Haven	3,560	2,070	193	19.3	20.4	11.2	12.2	54.2	53.9
New London	751	406	55	-------	26.8	-------	14.0	73.2	59.0
Norwalk	690	385	28	-------	22.6	-------	15.2	40.6	73.5
Norwich town *	721	462	37	-------	24.4	-------	17.1	51.3	80.2
Orange town	351	197	14	-------	18.3	-------	13.5	39.9	56.9
Stamford town	1,219	558	54	28.5	23.4	13.0	13.1	44.3	65.4
Stonington town	151	101	6	-------	11.6	-------	12.5	39.7	62.5
Stratford town	184	90	11	-------	10.2	-------	7.8	59.8	87.2
Torrington town	464	211	22	-------	18.3	-------	9.1	47.4	67.9

b Not in the registration area in 1926.

c Estimate of population unsatisfactory.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in the birth-registration area in continental United States, 1927—Continued

Area	Number, 1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births)	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
CITIES—continued									
Connecticut—Continued.									
Wallingford town	97	117	6	-------	7.8	-------	9.8	61.9	51.0
Waterbury	2,063	1,082	128	(c)	(c)	(c)	(c)	62.0	81.5
Windham town	290	159	16	-------	20.3	-------	12.6	55.2	64.0
Delaware:									
Wilmington	2,110	1,461	148	16.7	16.9	11.6	13.0	70.1	87.1
District of Columbia:									
Washington	9,043	6,987	611	16.7	16.9	12.9	14.0	67.6	85.0
Florida:									
Jacksonville	3,169	2,024	205	22.8	23.1	14.6	16.5	64.7	83.3
Key West	327	239	29	-------	27.1	-------	16.5	88.7	83.6
Miami	2,769	1,256	200	-------	26.2	-------	13.5	72.2	88.4
Pensacola	781	519	77	(c)	27.9	(c)	20.5	98.6	113.2
St. Petersburg	901	606	60	-------	22.6	-------	14.8	66.6	54.1
Tampa	2,477	1,277	153	23.0	27.2	11.8	16.0	61.8	86.1
Idaho:									
Boise	477	315	24	-------	24.1	-------	13.9	50.3	51.8
Pocatello	473	217	28	-------	26.7	-------	11.2	58.6	67.3
Illinois:									
Alton	647	401	55	-------	26.8	-------	14.6	85.0	82.4
Aurora	1,092	605	63	23.5	23.8	13.0	12.9	57.7	56.8
Belleville	456	314	18	-------	18.3	-------	13.6	39.5	61.9
Berwyn	405	210	18	-------	16.8	-------	8.7	44.4	51.5
Bloomington	554	468	30	-------	18.0	-------	14.1	54.2	75.9
Blue Island	376	195	32	-------	28.9	-------	15.3	85.1	64.1
Cairo	241	256	27	-------	16.1	-------	19.0	112.0	115.5
Canton	227	147	11	-------	19.6	-------	17.7	48.5	83.3
Centralia	250	154	15	-------	18.8	-------	11.0	60.0	59.0
Champaign	448	211	20	-------	22.0	-------	11.8	44.6	56.5
Chicago	60,888	35,753	3,819	19.6	19.7	11.5	11.7	62.7	66.8
Chicago Heights	440	215	28	-------	17.0	-------	10.5	63.6	114.6
Cicero	474	338	40	6.9	8.0	4.9	5.5	84.4	74.7
Danville	753	553	52	19.7	23.1	14.5	16.5	69.1	93.1
Decatur	1,247	794	74	22.3	23.2	14.2	13.7	59.3	72.9
East St. Louis	1,479	881	136	20.2	20.3	12.1	12.8	92.0	100.6
Elgin*	702	767	38	-------	18.2	-------	22.3	54.1	71.1
Evanston	1,851	652	107	39.9	38.2	14.1	13.8	57.8	51.6
Forest Park	77	98	5	-------	5.2	-------	9.9	64.9	56.3
Freeport	534	374	33	-------	23.2	-------	17.2	61.8	80.4
Galesburg	551	396	36	-------	21.8	-------	16.2	65.3	78.9
Granite City	533	224	41	-------	32.0	-------	13.8	76.9	90.8
Herrin	224	127	20	-------	20.1	-------	12.4	89.3	83.3
Jacksonville*	336	576	23	-------	22.1	-------	39.7	68.5	65.2
Joliet	843	548	98	20.3	19.8	13.2	14.5	116.3	92.6
Kankakee	428	251	28	-------	23.8	-------	15.6	65.4	82.8
Kewanee	394	231	30	-------	19.0	-------	11.8	76.1	94.5
La Salle	323	165	22	-------	20.6	-------	12.7	68.1	89.7
Lincoln*	229	223	19	-------	17.5	-------	20.4	83.0	118.7
Mattoon	319	170	17	-------	22.3	-------	14.1	53.3	65.9
Maywood	157	156	13	-------	10.9	-------	9.5	82.8	88.1
Moline	714	365	34	20.3	19.2	10.4	10.4	47.6	60.4
Murphysboro	175	125	14	-------	13.1	-------	11.6	80.0	124.3
Oak Park	2,514	779	87	45.2	47.3	14.0	15.4	34.6	35.2
Ottawa	336	185	28	-------	25.8	-------	17.4	83.3	52.5
Pekin	335	161	30	-------	20.7	-------	11.1	89.6	71.2
Peoria	1,562	1,148	126	18.7	18.2	13.7	13.4	80.7	61.9
Quincy	773	583	54	19.6	19.3	14.8	15.5	69.9	72.7
Rockford	1,666	816	104	20.6	21.1	10.1	10.6	62.4	60.7
Rock Island	443	380	28	10.6	10.0	9.1	9.9	63.2	48.8

* Estimate of population unsatisfactory.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in the birth-registration area in continental United States, 1927—Continued

Area	Number, 1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births)	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
CITIES—continued									
Illinois—Continued.									
Springfield	1,373	1,034	101	20.7	20.4	15.6	16.9	73.6	74.4
Streator	431	204	22	-------	27.5	-------	14.6	51.0	60.2
Urbana	186	146	11	-------	14.3	-------	11.5	59.1	78.8
Waukegan	566	275	34	-------	20.9	-------	12.5	60.1	92.5
Indiana:									
Anderson	758	418	52	-------	21.4	-------	12.5	68.6	75.7
Bloomington	439	174	24	-------	31.5	-------	16.8	54.7	94.3
Clinton	124	101	12	-------	10.9	-------	7.6	96.8	123.4
Crawfordsville	205	169	8	-------	16.9	-------	15.8	39.0	50.3
East Chicago	1,109	395	86	22.6	23.8	8.0	9.6	77.5	119.7
Elkhart	642	380	29	-------	23.3	-------	13.0	45.2	57.5
Elwood	274	146	27	-------	24.1	-------	12.7	98.5	84.0
Evansville	1,765	1,119	110	18.3	17.6	11.6	13.2	62.3	69.9
Fort Wayne	2,181	1,217	120	21.2	22.7	11.8	12.4	55.0	53.6
Frankfort	256	173	14	-------	16.9	-------	12.1	54.7	84.4
Gary	2,373	996	148	27.9	26.8	11.7	13.2	62.4	97.8
Hammond	1,396	619	86	25.8	25.9	11.4	11.4	61.6	76.0
Huntington	263	165	15	-------	17.2	-------	10.3	57.0	71.4
Indianapolis	6,736	4,900	417	18.0	18.7	13.1	14.0	61.9	76.8
Jeffersonville	286	184	23	-------	24.7	-------	17.9	80.4	96.4
Kokomo	674	319	44	17.2	19.8	8.2	10.5	65.3	82.6
La Fayette	711	530	43	-------	27.8	-------	22.7	60.5	87.0
La Porte	369	235	31	-------	25.1	-------	12.5	84.0	71.0
Logansport	322	320	21	-------	14.5	-------	11.7	65.2	41.2
Marion	488	344	30	-------	17.5	-------	12.6	61.5	75.1
Michigan City	510	259	32	-------	26.4	-------	14.6	62.7	74.8
Mishawaka	782	245	38	-------	45.3	-------	17.0	48.6	75.8
Muncie	899	511	57	19.6	18.2	11.2	11.5	63.4	65.1
New Albany	519	374	35	-------	22.9	-------	16.0	67.4	96.8
New Castle	341	167	28	-------	22.0	-------	11.7	82.1	112.3
Peru	273	160	22	-------	18.7	-------	14.8	80.6	92.4
Richmond	492	342	33	-------	15.1	-------	11.5	67.1	85.3
South Bend	2,139	972	127	25.4	27.1	11.5	12.1	59.4	71.0
Terre Haute	1,164	902	82	16.0	15.8	12.4	12.8	70.4	60.9
Vincennes	417	275	29	-------	20.6	-------	15.1	69.5	99.7
Whiting	203	66	12	-------	18.5	-------	6.0	59.1	112.6
Iowa:									
Boone	256	166	15	-------	18.3	-------	12.6	58.6	84.7
Burlington	547	385	40	-------	21.4	-------	14.3	73.1	62.1
Cedar Rapids	893	600	45	16.5	16.6	11.1	10.4	50.4	55.6
Clinton	437	361	32	-------	15.2	-------	13.6	73.2	56.0
Council Bluffs	792	534	54	19.0	22.3	12.8	12.8	68.2	70.3
Davenport	871	760	58	(c)	17.6	(c)	14.2	66.6	56.2
Des Moines	2,949	1,628	175	19.8	20.2	10.9	11.8	59.3	68.5
Dubuque	821	625	60	19.6	19.6	14.9	14.9	73.1	71.3
Fort Dodge	490	266	44	-------	22.9	-------	12.6	89.8	89.5
Fort Madison	279	182	17	-------	24.9	-------	16.1	60.9	78.6
Iowa City*	494	483	48	-------	29.0	-------	26.5	97.2	94.1
Keokuk	368	271	14	-------	24.2	-------	18.1	38.0	59.8
Marshalltown	339	252	26	-------	18.8	-------	17.4	76.7	126.9
Mason City	472	259	38	-------	22.0	-------	11.8	80.5	67.6
Muscatine	297	251	24	-------	19.2	-------	13.8	80.8	61.3
Ottumwa	516	358	38	-------	20.6	-------	13.7	73.6	83.2
Sioux City	1,679	881	133	21.3	22.1	11.2	12.4	79.2	81.7
Waterloo	774	378	35	20.9	20.5	10.2	11.8	45.2	67.3
Kansas:									
Arkansas City	334	176	19	-------	20.2	-------	12.7	56.9	70.7
Atchinson	264	175	12	-------	17.3	-------	12.0	45.5	74.1
Chanute	221	135	9	-------	22.2	-------	16.5	40.7	96.3
Coffeyville	325	180	30	-------	19.2	-------	10.0	92.3	67.7
El Dorado	257	104	21	-------	23.2	-------	13.9	81.7	100.0

c Estimate of population unsatisfactory.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in the birth-registration area in continental United States, 1927—Continued

Area	Number, 1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births)	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
CITIES—continued									
Kansas—Continued.									
Emporia	345	194	21	-------	28.1	-------	15.9	60.9	57.0
Fort Scott	228	199	13	-------	18.8	-------	18.8	57.0	97.3
Hutchinson	532	296	28	-------	18.5	-------	10.0	52.6	60.6
Independence	256	155	14	-------	20.5	-------	14.2	54.7	67.3
Kansas City	2,352	1,553	177	20.0	21.2	13.2	13.6	75.3	84.4
Lawrence	286	199	17	-------	21.1	-------	14.9	59.4	46.2
Leavenworth	264	258	15	-------	12.4	-------	11.2	56.8	73.5
Parsons	208	230	12	-------	15.4	-------	16.3	57.7	100.4
Pittsburg	296	168	17	-------	18.5	-------	7.1	57.4	60.9
Salina	401	198	19	-------	23.2	-------	11.8	47.4	67.9
Topeka	1,308	754	67	21.1	21.1	12.2	13.6	51.2	65.4
Wichita	2,043	1,167	119	21.3	20.7	12.1	12.5	58.2	80.5
Kentucky:									
Ashland	778	312	59	-------	32.4	-------	13.4	75.8	94.4
Covington	1,627	923	103	27.7	25.2	15.7	16.6	63.3	81.5
Henderson	277	214	25	-------	23.6	-------	18.7	90.3	117.8
Lexington*	845	997	77	17.6	19.1	20.7	20.3	91.1	96.8
Louisville	6,431	4,092	424	20.1	20.1	12.8	15.2	65.9	93.8
Newport	495	324	38	-------	17.2	-------	10.9	76.8	87.1
Owensboro	472	376	50	-------	23.0	-------	16.6	105.9	80.2
Paducah	625	463	47	-------	23.1	-------	18.8	75.2	94.7
Maine:									
Auburn	227	215	26	-------	13.8	-------	10.9	114.5	98.8
Augusta*	298	295	32	-------	19.1	-------	23.1	107.4	96.1
Bangor*	541	550	41	-------	22.3	-------	20.8	75.8	71.9
Bath	146	150	10	-------	(c)	-------	(c)	68.5	74.3
Biddeford	519	289	32	-------	28.9	-------	14.9	61.7	91.1
Lewiston*	953	559	98	26.4	25.9	15.5	17.4	102.8	117.3
Portland	1,541	1,111	116	19.9	18.4	14.3	15.1	75.3	75.3
Sanford Town	432	166	42	-------	35.8	-------	14.2	97.2	85.3
Waterville	362	207	33	-------	27.7	-------	14.6	91.2	61.7
Maryland:									
Annapolis	243	155	11	-------	18.6	-------	13.1	45.3	73.8
Baltimore	16,304	11,578	1,332	19.9	20.4	14.1	15.1	81.7	82.5
Cumberland	924	440	75	-------	27.6	-------	14.8	81.2	90.6
Frederick	362	244	30	-------	30.2	-------	21.1	82.9	73.8
Hagerstown	624	389	60	-------	22.0	-------	13.9	96.2	98.2
Michigan:									
Adrian	296	197	19	-------	24.2	-------	18.4	64.2	85.2
Alpena	252	153	15	-------	29.2	-------	15.9	59.5	83.3
Ann Arbor*	732	917	69	-------	32.4	-------	42.0	94.3	97.8
Battle Creek	917	575	68	19.9	22.3	12.5	14.3	74.2	82.3
Bay City	1,003	608	59	20.3	21.9	12.3	12.8	58.8	69.6
Benton Harbor	412	214	10	-------	25.9	-------	15.0	24.3	27.0
Detroit	33,423	14,437	2,342	25.0	26.4	10.8	12.6	70.1	84.3
Escanaba	443	185	26	-------	32.6	-------	17.2	58.7	63.2
Flint	4,005	1,420	339	28.1	24.3	10.0	9.5	84.6	84.5
Grand Rapids	3,614	1,591	190	22.3	22.6	9.8	11.3	52.6	66.5
Hamtramck	1,063	288	66	11.3	12.5	3.1	4.7	62.1	118.5
Highland Park	1,850	571	95	22.6	22.2	7.0	8.1	51.4	56.2
Holland	309	103	8	-------	21.4	-------	9.7	25.9	66.7
Ironwood	299	123	23	-------	17.9	-------	8.1	76.9	107.6
Ishpeming	203	108	5	-------	21.6	-------	14.4	24.6	96.9
Jackson	1,158	719	81	18.8	20.5	11.7	12.6	69.9	80.3
Kalamazoo*	1,276	950	94	23.0	23.4	17.1	17.9	73.7	74.4
Lansing	1,670	792	121	22.1	22.1	10.5	10.5	72.5	68.6
Marquette	318	197	32	-------	26.6	-------	15.0	100.6	78.0
Monroe	407	169	30	-------	26.9	-------	12.7	73.7	101.0

c Estimate of population unsatisfactory.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in the birth-registration area in continental United States, 1927—Continued

Area	Number, 1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births)	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
CITIES—continued									
Michigan—Continued.									
Muskegon	1,189	514	92	26.1	25.9	11.3	13.1	77.4	79.4
Owosso	344	220	22	-------	21.9	-------	15.6	64.0	91.2
Pontiac*	1,323	533	84	24.6	22.8	9.9	11.8	63.3	73.2
Port Huron	743	446	68	-------	23.8	-------	14.7	91.5	80.7
Saginaw	1,741	947	161	23.4	21.9	12.7	14.8	92.5	93.6
Sault Ste. Marie	355	199	28	-------	25.8	-------	14.7	78.9	80.1
Traverse City*	220	362	12	-------	17.1	-------	30.2	54.5	64.2
Wyandotte	672	256	69	-------	28.1	-------	11.9	102.7	87.2
Minnesota:									
Austin	293	101	9	-------	23.4	-------	9.9	30.7	56.1
Duluth	2,247	1,140	119	19.6	21.4	9.9	10.6	53.0	58.1
Faribault*	292	194	9	-------	24.4	-------	17.0	30.8	29.1
Hibbing	387	112	18	-------	23.5	-------	7.4	46.5	76.1
Mankato	447	223	15	-------	32.2	-------	14.5	33.6	46.1
Minneapolis	8,630	4,719	405	19.3	21.2	10.5	11.5	46.9	56.1
Rochester*	450	969	25	-------	25.3	-------	50.8	55.6	67.1
St. Cloud	617	232	45	-------	32.2	-------	11.4	72.9	76.9
St. Paul	5,480	2,951	267	21.9	22.9	11.8	12.3	48.7	56.0
Virginia	228	123	18	-------	18.5	-------	7.9	78.9	56.1
Winona	417	249	14	-------	21.6	-------	13.1	33.6	37.9
Mississippi:									
Biloxi	476	215	43	-------	35.7	-------	18.1	90.3	108.5
Columbus	260	252	32	-------	25.5	-------	19.6	123.1	85.3
Greenville	338	487	42	-------	25.7	-------	26.5	124.3	101.0
Hattiesburg	551	301	57	-------	33.5	-------	21.6	103.4	56.8
Jackson*	909	752	70	-------	29.2	-------	22.9	77.0	94.7
Laurel	762	386	56	-------	37.5	-------	19.8	73.5	49.4
Meridian*	697	616	58	-------	28.7	-------	24.7	83.2	61.2
Natchez	334	321	26	-------	32.1	-------	27.1	77.8	54.2
Vicksburg*	530	748	45	-------	23.4	-------	37.7	84.9	85.1
Missouri:									
Cape Girardeau	419	216	27	-------	(b)	-------	16.5	64.4	(b)
Carthage	209	143	6	-------	(b)	-------	14.5	28.7	(b)
Columbia	294	201	22	-------	(b)	-------	19.5	74.8	(b)
Hannibal	410	315	40	-------	(b)	-------	16.4	97.6	(b)
Independence	368	190	25	-------	(b)	-------	16.0	67.9	(b)
Jefferson City	386	306	36	-------	(b)	-------	13.8	93.3	(b)
Joplin	817	538	60	-------	(b)	-------	17.1	73.4	(b)
Kansas City	6,456	5,012	450	16.9	(b)	13.1	13.7	69.7	(b)
Moberly	182	211	20	-------	(b)	-------	14.1	109.9	(b)
St. Joseph*	1,181	1,286	82	15.0	(b)	16.4	15.6	69.4	(b)
St. Louis	15,462	10,857	888	18.4	(b)	12.9	13.9	57.4	(b)
Sedalia	339	287	21	-------	(b)	-------	12.1	61.9	(b)
Springfield	1,065	685	67	20.8	(b)	13.4	14.0	62.9	(b)
Montana:									
Anaconda	209	169	11	-------	18.8	-------	11.7	52.6	83.7
Billings	394	219	32	-------	19.6	-------	10.7	81.2	102.2
Butte	620	601	40	14.3	15.5	13.9	15.6	64.5	85.3
Great Falls	718	326	25	-------	21.7	-------	9.8	34.8	72.9
Helena	246	169	8	-------	22.6	-------	14.9	32.5	36.8
Missoula	340	243	30	-------	26.4	-------	19.7	88.2	68.9
Nebraska:									
Grand Island	385	235	33	-------	24.7	-------	14.6	85.7	91.8
Hastings	332	180	14	-------	27.0	-------	16.4	42.2	103.9
Lincoln	1,351	766	74	19.3	20.6	11.0	12.8	54.9	64.4
North Platte	233	119	20	-------	17.2	-------	8.3	85.8	56.9
Omaha	4,462	2,664	259	20.4	21.3	12.2	13.0	58.4	64.3
New Hampshire:									
Berlin	569	200	58	-------	28.4	-------	9.0	101.9	77.8
Concord*	480	472	23	-------	19.1	-------	24.6	58.3	64.8
Dover	314	172	20	-------	20.6	-------	17.7	63.7	67.2
Keene	324	193	14	-------	22.9	-------	16.7	43.2	72.7

[b] Not in the registration area in 1926.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in the birth-registration area in continental United States, 1927—Continued

Area	Number, 1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births)	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
CITIES—continued									
New Hampshire—Con.									
Laconia*	246	210	20	-------	23.8	-------	15.4	81.3	92.3
Manchester	1,658	865	121	19.6	19.8	10.2	11.4	73.0	91.8
Nashua	717	416	41	-------	28.2	-------	12.9	57.2	66.2
Portsmouth	277	178	21	-------	16.9	-------	12.8	75.8	113.7
New Jersey:									
Asbury Park	188	164	12	-------	13.4	-------	12.8	63.8	118.3
Atlantic City*	1,263	1,113	101	23.3	24.0	20.5	22.8	80.0	78.2
Bayonne	1,873	647	107	20.1	21.1	6.9	8.0	57.1	73.9
Belleville*	349	280	35	-------	18.2	-------	11.4	100.3	84.7
Bloomfield	231	182	24	-------	10.3	-------	7.9	103.9	87.0
Bridgeton	333	244	21	-------	26.3	-------	19.4	63.1	68.8
Camden	3,269	1,645	221	24.6	23.3	12.4	13.5	67.6	86.7
Carteret	218	76	27	-------	16.1	-------	6.3	123.9	86.4
Clifton	531	214	33	-------	15.7	-------	6.2	62.1	59.9
East Orange	724	483	19	11.4	4.9	7.6	7.3	26.2	63.1
Elizabeth	2,581	1,250	171	(c)	(c)	(c)	(c)	66.3	77.8
Englewood*	697	272	35	-------	49.3	-------	21.7	50.2	58.6
Garfield	530	121	26	-------	23.1	-------	6.3	49.1	66.2
Gloucester	249	140	28	-------	14.3	-------	8.7	112.4	85.7
Hackensack*	827	395	37	-------	41.5	-------	20.7	44.7	51.5
Harrison	248	90	16	-------	17.5	-------	8.0	64.5	103.8
Hoboken	1,169	855	72	(c)	18.3	(c)	13.2	61.6	71.2
Irvington	643	392	40	-------	17.7	-------	10.7	62.2	53.8
Jersey City	6,730	3,550	427	20.9	21.8	11.0	11.9	63.4	66.8
Kearny	583	295	23	-------	17.4	-------	9.3	39.5	55.4
Long Branch*	663	425	48	-------	46.4	-------	33.7	72.4	73.9
Millville	307	206	20	-------	18.5	-------	12.0	65.1	86.7
Montclair	331	270	24	-------	9.6	-------	9.0	72.5	71.0
Morristown*	599	347	46	-------	47.0	-------	29.8	76.8	72.6
Newark	10,055	5,090	611	21.5	22.8	10.9	11.9	60.8	70.4
New Brunswick	1,026	502	52	25.7	26.3	12.6	14.7	50.7	65.6
Orange*	1,826	619	77	50.6	49.2	17.1	17.6	42.2	50.0
Passaic	1,631	717	86	23.0	22.9	10.1	10.4	52.7	55.6
Paterson	2,984	1,757	166	20.8	20.3	12.2	12.8	55.6	64.4
Perth Amboy	1,032	463	71	21.0	20.5	9.4	10.1	68.8	84.3
Phillipsburg	421	223	32	-------	18.9	-------	13.1	76.0	81.0
Plainfield	966	465	54	-------	29.5	-------	14.4	55.9	59.5
Rahway	238	147	14	-------	20.6	-------	14.3	58.8	59.8
Summit	344	158	5	-------	27.0	-------	16.0	14.5	49.4
Trenton	3,049	1,809	226	22.3	21.9	13.2	14.1	74.1	77.5
Union City	1,027	370	44	16.0	16.3	5.8	7.4	42.8	42.5
West New York	610	213	25	-------	15.4	-------	5.5	41.0	44.6
West Orange	118	129	9	-------	8.7	-------	6.1	76.3	93.2
New York:									
Albany	2,517	1,899	170	21.1	21.1	15.9	16.8	67.5	60.8
Amsterdam	689	396	43	19.2	20.0	11.0	12.3	62.4	79.9
Auburn	696	492	39	(c)	17.9	(c)	14.7	56.0	71.9
Batavia	506	292	35	-------	32.1	-------	19.8	69.2	64.2
Beacon*	198	215	16	-------	14.8	-------	17.4	80.8	46.2
Binghamton*	1,573	1,044	105	21.3	20.1	14.1	16.8	66.8	73.6
Buffalo	12,106	7,225	865	22.0	22.7	13.1	14.3	71.5	83.8
Cohoes	471	309	40	-------	19.6	-------	13.6	84.9	91.5
Corning	365	193	24	-------	22.0	-------	15.6	65.8	78.0
Cortland	364	277	25	-------	24.4	-------	18.6	68.7	61.6
Dunkirk	408	227	36	-------	22.2	-------	11.9	88.2	72.2
Elmira	1,029	714	59	20.8	20.7	14.4	16.5	57.3	104.5
Fulton	281	144	14	-------	23.5	-------	13.5	49.8	94.6
Geneva	343	235	28	-------	21.5	-------	14.0	81.6	65.9
Glens Falls	422	310	23	-------	22.5	-------	19.3	54.5	61.4

c Estimate of population unsatisfactory.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in the birth-registration area in continental United States, 1927—Continued

Area	Number, 1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births)	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
CITIES—continued									
New York—Continued.									
Gloversville	405	346	25	-------	17.5	-------	18.4	61.7	69.8
Herkimer	216	127	11	-------	22.6	-------	12.0	50.9	48.2
Hornell	277	257	19	-------	18.6	-------	13.7	68.6	81.1
Hudson	411	255	24	-------	33.9	-------	23.8	58.4	80.0
Ilion	163	112	11	-------	15.6	-------	12.3	67.5	42.7
Ithaca	408	316	20	-------	22.2	-------	18.4	49.0	79.4
Jamestown	1,009	563	50	22.4	20.6	12.5	13.0	49.6	54.9
Johnstown	114	122	10	-------	10.8	-------	14.3	87.7	94.8
Kingston	589	519	41	-------	19.6	-------	18.5	69.6	73.5
Lackawanna# *	1,024	341	93	-------	44.9	-------	18.0	90.8	113.0
Little Falls	235	159	20	-------	17.9	-------	12.6	85.1	67.3
Lockport	428	322	26	-------	22.4	-------	14.1	60.7	57.5
Middletown*	339	425	15	-------	17.0	-------	21.0	44.2	68.0
Mount Vernon	1,196	493	59	22.4	20.3	9.2	10.5	49.3	50.2
Newburgh	682	478	51	22.4	21.7	15.7	16.5	74.8	60.7
New Rochelle	872	420	35	18.4	18.8	8.9	10.2	40.1	69.8
New York	128,559	70,399	7,206	21.5	21.1	11.8	12.8	56.1	67.9
Niagara Falls	1,627	653	103	24.4	26.8	9.8	11.8	63.8	92.8
North Tonawanda	377	179	24	-------	22.7	-------	11.9	63.7	87.1
Ogdensburg*	394	461	36	-------	23.2	-------	28.9	91.4	110.8
Olean	575	325	38	-------	27.9	-------	15.6	66.1	73.8
Oneida	245	179	12	-------	23.6	-------	16.9	49.0	43.5
Oneonta	253	197	12	-------	20.7	-------	15.1	47.4	59.3
Ossining	261	179	21	-------	20.5	-------	14.2	80.5	51.7
Oswego	435	316	28	-------	19.2	-------	14.7	64.4	88.4
Peekskill	330	208	13	-------	17.0	-------	11.6	39.4	70.3
Plattsburg	345	235	33	-------	27.4	-------	21.9	95.7	87.2
Port Chester	625	233	21	-------	34.6	-------	13.4	33.6	46.7
Port Jervis	211	189	18	-------	20.5	-------	17.2	85.3	78.3
Poughkeepsie	704	533	46	19.6	20.2	14.8	16.9	65.3	103.7
Rensselaer	74	101	6	-------	7.9	-------	10.3	81.1	131.9
Rochester	6,440	3,787	408	19.8	19.2	11.7	12.8	63.4	67.2
Rome*	700	586	63	-------	22.0	-------	17.7	90.0	93.6
Saratoga Springs	301	207	19	-------	21.6	-------	21.3	63.1	62.7
Schenectady	1,667	997	114	17.9	18.7	10.7	11.7	68.4	71.5
Syracuse	4,293	2,420	247	21.8	21.6	12.3	13.6	57.5	69.3
Tonawanda	205	77	7	-------	18.5	-------	9.6	34.1	75.1
Troy	1,367	1,232	118	18.9	19.6	17.0	18.0	86.3	79.1
Utica*	2,216	1,568	130	21.4	21.8	15.2	16.4	58.7	81.4
Watertown	705	500	54	21.1	23.4	15.0	16.6	76.6	87.9
Watervliet	175	141	11	-------	11.0	-------	10.7	62.9	89.9
White Plains	638	286	31	-------	24.6	-------	11.3	48.6	49.6
Yonkers	2,331	1,114	140	19.6	19.5	9.4	10.4	60.1	75.0
North Carolina:									
Asheville *	1,137	875	127	-------	33.8	-------	25.5	111.7	89.6
Charlotte	1,545	906	136	27.6	27.3	16.2	16.9	88.4	108.1
Durham	1,384	730	134	-------	(c)	-------	(c)	96.9	107.1
Gastonia	702	261	72	-------	31.7	-------	14.4	102.6	107.5
Goldsboro *	414	240	39	-------	24.5	-------	17.6	94.2	110.2
Greensboro	1,339	662	136	-------	25.7	-------	14.3	101.7	100.8
High Point	968	360	76	-------	39.8	-------	15.4	78.5	98.2
New Bern	256	269	51	-------	24.3	-------	24.8	199.2	195.9
Raleigh *	774	642	73	-------	27.1	-------	22.4	94.3	85.7
Rocky Mount	577	330	62	-------	34.5	-------	20.9	107.5	111.5
Salisbury	428	197	37	-------	23.5	-------	13.5	86.4	87.8
Wilmington	924	565	118	24.1	25.3	14.7	14.6	127.7	112.2
Wilson	388	253	53	-------	32.0	-------	20.2	136.6	130.3
Winston-Salem	1,896	1,007	231	24.6	25.3	13.1	13.2	121.8	108.4

(c) Estimate of population unsatisfactory.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in the birth-registration area in continental United States, 1927—Continued

Area	Number, 1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births)	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
CITIES—continued									
North Dakota:									
Fargo	918	341	44	-------	33.4	-------	13.3	47.9	85.3
Grand Forks	532	168	16	-------	32.1	-------	13.4	30.1	50.5
Minot	418	233	26	-------	28.9	-------	19.6	62.2	70.8
Ohio:									
Akron	4,848	1,918	303	(c)	(c)	(c)	(c)	62.5	81.5
Alliance	435	270	23	-------	18.0	-------	11.7	52.9	58.6
Ashtabula	468	274	28	-------	20.6	-------	13.1	59.8	76.2
Barberton	531	208	39	-------	23.8	-------	9.7	73.4	69.8
Bellaire	333	181	23	-------	19.6	-------	11.0	69.1	58.8
Bucyrus	152	120	8	-------	14.5	-------	10.8	52.6	92.0
Cambridge	288	171	20	-------	22.2	-------	14.4	69.4	66.7
Campbell	389	100	34	-------	24.3	-------	6.5	87.4	94.3
Canton	2,218	1,101	143	19.6	19.8	9.7	10.4	64.5	90.8
Chillicothe	398	266	27	-------	22.1	-------	15.6	67.8	53.8
Cincinnati	8,807	6,878	643	21.4	21.0	16.7	17.3	73.0	88.6
Cleveland	19,175	9,503	1,077	19.5	20.3	9.7	11.1	56.2	71.6
Cleveland Heights	62	247	4	-------	2.5	-------	10.0	64.5	84.7
Columbus	5,607	3,908	358	19.2	19.7	13.4	13.9	63.8	75.5
Coshocton	250	134	5	-------	18.7	-------	15.0	20.0	73.1
Cuyahoga Falls	243	128	10	-------	18.3	-------	7.6	41.2	45.8
Dayton	3,287	2,214	234	18.2	17.9	12.3	12.2	71.2	83.6
East Cleveland	93	209	8	-------	2.8	-------	6.3	86.0	54.1
East Liverpool	613	335	39	-------	27.5	-------	17.1	63.6	93.9
Elyria	491	246	22	-------	20.7	-------	11.9	44.8	57.4
Findlay	379	287	31	-------	22.7	-------	15.5	81.8	73.8
Fremont	179	139	15	-------	14.1	-------	10.6	83.8	85.0
Hamilton	1,260	532	94	28.8	29.1	12.2	13.9	74.6	71.4
Ironton #	346	236	35	-------	23.0	-------	17.0	101.2	132.2
Kenmore	368	93	18	-------	18.0	-------	4.3	48.9	62.3
Lakewood	626	491	36	10.1	10.8	7.9	7.9	57.5	48.1
Lancaster	377	233	25	-------	19.7	-------	12.2	66.3	76.9
Lima	934	559	73	19.2	20.9	11.5	11.2	78.2	50.2
Lorain	1,024	410	71	23.3	24.6	9.3	10.0	69.3	84.0
Mansfield	548	361	36	-------	19.0	-------	13.5	65.7	64.9
Marietta	288	198	18	-------	18.9	-------	14.8	62.5	90.0
Marion	595	386	42	-------	18.2	-------	11.5	70.6	87.2
Martins Ferry	321	191	22	-------	21.3	-------	13.1	68.5	68.5
Massillon	586	264	33	-------	21.6	-------	9.8	56.3	62.3
Middletown	852	299	52	-------	27.2	-------	10.6	61.0	75.0
Newark	554	404	31	-------	17.6	-------	12.5	56.0	72.4
New Philadelphia	254	139	12	-------	20.3	-------	11.4	47.2	72.6
Niles	254	105	15	-------	16.4	-------	7.1	59.1	107.1
Norwood	198	188	10	-------	5.7	-------	7.6	50.5	56.5
Piqua	311	223	15	-------	19.1	-------	16.8	48.2	87.1
Portsmouth	1,167	567	86	28.8	28.0	14.0	15.3	73.7	100.4
Salem	285	160	17	-------	23.7	-------	17.0	59.6	64.2
Sandusky	483	333	36	-------	19.7	-------	13.5	74.5	55.2
Springfield	1,201	819	83	16.8	16.9	11.4	12.6	69.1	81.9
Steubenville	754	439	60	-------	21.6	-------	15.5	79.6	115.2
Tiffin	320	222	16	-------	20.9	-------	14.6	50.0	54.5
Toledo	5,403	3,641	338	17.7	18.5	11.9	12.6	62.6	81.9
Warren	982	447	51	-------	26.8	-------	13.8	51.9	83.8
Youngstown	3,961	1,696	261	23.4	23.8	10.0	10.7	65.9	84.7
Zanesville	802	582	73	-------	26.9	-------	19.0	91.0	76.5
Oregon:									
Astoria	225	154	6	-------	12.2	-------	8.6	26.7	43.5
Eugene *	549	269	27	-------	45.0	-------	24.2	49.2	40.5
Portland	4,793	3,561	224	(c)	(c)	(c)	(c)	46.7	38.9
Salem	430	725	23	-------	22.9	-------	29.9	53.5	39.1

* Estimate of population unsatisfactory.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in the birth-registration area in continental United States, 1927—Continued

Area	Number, 1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births)	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
CITIES—continued									
Pennsylvania:									
Allentown	1,889	1,227	124	19.5	19.5	12.6	15.1	65.6	87.7
Altoona	1,565	806	92	23.1	25.4	11.9	13.1	58.8	74.7
Ambridge	455	106	23	-------	22.9	-------	7.9	50.5	112.7
Beaver Falls	354	236	24	-------	26.4	-------	16.9	67.8	66.1
Berwick	315	125	21	-------	20.7	-------	11.0	66.7	81.1
Bethlehem	1,052	403	57	15.9	17.1	6.1	8.3	54.2	88.0
Braddock	650	295	44	-------	28.1	-------	15.1	67.7	99.0
Bradford	448	255	37	-------	25.8	-------	15.3	82.6	49.0
Bristol	337	128	17	-------	25.5	-------	9.5	50.4	43.6
Butler	438	200	25	-------	18.5	-------	7.4	57.1	55.2
Canonsburg	306	118	23	-------	23.1	-------	9.0	75.2	83.6
Carbondale	597	304	49	-------	28.7	-------	15.9	82.1	93.8
Carlisle	288	195	19	-------	22.6	-------	17.4	66.0	92.3
Carnegie	264	85	20	-------	23.2	-------	9.0	75.8	86.2
Chambersburg	286	194	22	-------	20.8	-------	15.8	76.9	81.9
Charleroi	215	71	9	-------	19.0	-------	7.3	41.9	94.7
Chester	1,202	669	102	16.6	18.1	9.3	11.5	84.9	99.9
Coatesville	248	119	16	-------	14.2	-------	7.7	64.5	71.1
Columbia	240	142	19	-------	22.9	-------	14.7	79.2	40.3
Connellsville	315	135	26	-------	19.7	-------	11.8	82.5	88.3
Dickson City	300	92	15	-------	24.3	-------	7.6	50.0	80.8
Donora	346	92	26	-------	22.2	-------	4.3	75.1	79.5
Du Bois	283	162	17	-------	19.0	-------	11.3	60.1	87.6
Dunmore	431	244	57	-------	19.0	-------	12.3	132.3	148.3
Duquesne	469	146	43	-------	26.3	-------	8.7	91.7	104.1
Easton	775	562	55	20.4	20.7	14.8	17.2	71.0	85.2
Erie	2,455	1,276	143	(c)	(c)	(c)	(c)	58.2	88.9
Farrell	340	96	22	-------	18.8	-------	6.8	64.7	97.0
Greensburg	486	254	40	-------	27.7	-------	17.3	82.3	57.9
Harrisburg	1,657	1,308	125	19.3	18.1	15.3	16.1	75.4	86.8
Hazleton	1,033	483	78	27.5	26.2	12.9	12.4	75.5	69.4
Homestead	525	225	47	-------	26.6	-------	10.8	89.5	90.4
Jeannette	404	124	18	-------	22.8	-------	8.1	44.6	71.6
Johnstown	2,150	944	141	29.5	30.7	12.9	14.3	65.6	82.6
Lancaster	1,447	948	117	25.1	25.5	16.4	17.6	80.9	63.8
Lebanon	592	332	32	-------	22.2	-------	15.6	54.1	60.5
McKeesport	1,382	752	122	27.7	26.1	15.1	14.6	88.3	86.6
McKees Rocks	380	143	35	-------	22.2	-------	7.4	92.1	96.1
Mahanoy City	347	147	28	-------	21.0	-------	10.6	80.7	118.9
Meadville	371	264	17	-------	23.0	-------	18.9	45.8	79.9
Monessen	519	128	37	-------	26.3	-------	6.1	71.3	59.3
Mount Carmel	484	171	32	-------	27.2	-------	10.5	66.1	92.4
Nanticoke	717	307	42	-------	27.2	-------	14.0	58.6	68.8
New Castle	1,235	528	58	23.9	25.4	10.2	12.1	47.0	72.9
New Kensington	437	194	36	-------	30.0	-------	13.8	82.4	69.4
Norristown*	889	782	60	24.8	21.7	21.8	22.6	67.5	113.4
North Braddock	379	112	26	-------	24.9	-------	7.4	68.6	80.2
Oil City	506	243	27	-------	21.5	-------	10.8	53.4	63.0
Old Forge	341	78	21	-------	24.3	-------	9.0	61.6	138.3
Olyphant	242	73	23	-------	22.2	-------	8.4	95.0	130.4
Philadelphia	38,536	24,761	2,461	18.9	19.2	12.2	13.8	63.9	77.8
Phoenixville	331	147	23	-------	29.2	-------	17.0	69.5	91.5
Pittsburgh [d]	15,589	9,092	1,122	23.4	23.6	13.7	14.1	72.0	82.2
Pittston	591	201	40	-------	24.8	-------	9.8	67.7	68.7
Plymouth	419	134	30	-------	24.0	-------	10.2	71.6	101.0

[c] Estimate of population unsatisfactory.

[d] Includes Carrick.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in the birth-registration area in continental United States, 1927—Continued

Area	Number, 1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births)	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
CITIES—continued									
Pennsylvania—Continued.									
Pottstown	424	274	43	-------	19.4	-------	14.7	101.4	79.9
Pottsville	568	493	59	-------	24.6	-------	22.4	103.9	134.5
Punxsutawney	239	118	13	-------	18.8	-------	15.1	54.4	128.0
Reading	1,847	1,210	115	16.1	19.8	10.6	12.7	62.3	76.2
Scranton	3,265	1,903	216	22.7	21.6	13.2	13.2	66.2	77.7
Shamokin	583	207	46	-------	22.4	-------	10.2	78.9	116.8
Sharon	702	287	34	-------	25.2	-------	14.5	48.4	91.9
Shenandoah	553	251	49	-------	22.2	-------	10.1	88.6	107.7
Steelton	270	129	30	-------	21.3	-------	12.0	111.1	108.4
Sunbury	309	240	29	-------	19.7	-------	11.6	93.9	80.6
Swissvale	225	103	16	-------	14.2	-------	7.6	71.1	58.2
Tamaqua	262	123	26	-------	18.3	-------	8.3	99.2	110.7
Uniontown	600	341	44	-------	28.3	-------	19.3	73.3	60.7
Warren	426	228	28	-------	26.2	-------	14.6	65.7	67.3
Washington	648	376	54	-------	24.1	-------	18.1	83.3	142.3
West Chester*	403	312	31	-------	30.8	-------	28.8	76.9	97.0
Wilkes-Barre	2,663	1,327	205	29.3	29.1	14.6	15.9	77.0	79.3
Wilkinsburg	574	310	34	-------	20.4	-------	12.8	59.2	66.5
Williamsport	1,078	629	66	24.7	24.2	14.4	15.5	61.2	71.8
Woodlawn	597	104	43	-------	27.2	-------	6.9	72.0	81.0
York	1,042	701	70	21.0	21.7	14.1	15.2	67.2	75.5
Rhode Island:									
Bristol town	193	111	10	-------	14.6	-------	11.8	51.8	152.6
Central Falls	649	258	49	-------	24.2	-------	11.2	75.5	90.2
Cranston	523	695	25	14.3	12.5	19.0	20.1	47.8	80.9
Cumberland town	183	93	10	-------	18.3	-------	11.4	54.6	121.7
East Providence town	465	229	21	-------	15.6	-------	11.5	45.2	115.8
Newport	428	333	22	(c)	17.3	(c)	13.5	51.4	52.1
Pawtucket	1,413	864	122	19.6	20.4	12.0	12.2	86.3	96.1
Providence	6,034	3,169	381	21.5	22.1	11.3	12.9	63.1	68.5
Warwick town	296	198	11	-------	14.3	-------	10.4	37.2	75.8
West Warwick town	381	156	27	-------	19.6	-------	10.5	70.9	108.4
Woonsocket	1,253	518	90	24.0	24.6	9.9	11.7	71.8	103.3
Tennessee:									
Chattanooga*	1,857	1,690	233	25.5	(b)	23.2	26.4	125.5	(b)
Jackson	381	343	41	-------	(b)	-------	16.4	107.6	(b)
Johnson City*	419	291	47	-------	(b)	-------	22.2	112.2	(b)
Knoxville	2,381	1,482	185	23.3	(b)	14.5	14.4	77.7	(b)
Memphis	4,420	3,450	356	24.7	(b)	19.3	20.0	80.5	(b)
Nashville	3,133	2,396	224	22.7	(b)	17.4	19.7	71.5	(b)
Vermont:									
Barre	261	152	24	-------	26.8	-------	16.6	92.0	82.1
Burlington	647	399	33	-------	26.5	-------	15.8	51.0	51.2
Rutland	370	276	26	-------	19.9	-------	16.2	70.3	107.6
Virginia:									
Alexandria	482	277	41	-------	27.3	-------	15.5	85.1	101.0
Charlottesville	260	186	19	-------	16.5	-------	11.2	73.1	58.8
Danville	520	326	57	-------	25.4	-------	14.4	109.6	93.4
Lynchburg	967	610	66	25.1	28.1	15.8	16.3	68.3	100.8
Newport News	738	436	61	14.3	10.9	8.4	8.2	84.6	106.7
Norfolk	2,514	1,751	216	14.0	14.4	9.8	10.7	87.1	89.6
Petersburg	616	534	68	16.6	17.2	14.4	16.3	110.7	137.4
Portsmouth	889	689	136	14.6	15.5	11.4	11.6	154.2	108.6
Richmond	3,817	2,715	304	19.9	21.2	14.2	16.0	80.0	107.4
Roanoke	1,737	858	150	27.5	29.2	13.6	15.6	86.5	103.3
Staunton*	212	320	13	-------	15.8	-------	29.2	61.3	155.7
Washington:									
Aberdeen	413	241	19	-------	25.6	-------	14.4	46.0	55.0
Bellingham	653	414	36	-------	23.1	-------	14.0	55.1	59.2
Everett	614	368	28	-------	19.8	-------	12.8	45.6	53.0
Hoquiam	211	112	13	-------	22.2	-------	9.6	61.6	71.7
Seattle	4,901	3,560	203	13.1	(c)	9.5	(c)	41.4	46.6

[b] Not in the registration area in 1926.

[c] Estimate of population unsatisfactory.

Births and deaths (exclusive of stillbirths), with rates per 1,000 estimated population, and infant mortality, in the birth-registration area in continental United States, 1927—Continued

Area	Number, 1927			Rate per 1,000 estimated population				Infant mortality (deaths under 1 year per 1,000 births)	
	Births	Deaths		Births		Deaths			
		All ages	Under 1 year	1927	1926	1927	1926	1927	1926
CITIES—continued									
Washington—Continued.									
Spokane	2,018	1,483	111	18.5	19.9	13.6	13.9	55.0	65.5
Tacoma	1,980	1,301	78	18.5	21.0	12.1	12.1	39.4	48.6
Vancouver	232	199	13	-------	20.9	-------	10.7	56.0	38.
Walla Walla	297	219	15	-------	19.6	-------	15.0	50.5	46.1
Yakima	708	342	44	-------	29.4	-------	15.2	62.1	91.2
West Virginia:									
Bluefield	503	240	43	-------	23.7	-------	14.2	85.5	113.0
Charleston	1,310	817	148	24.5	26.4	15.3	16.8	113.0	101.0
Clarksburg	715	367	47	-------	24.8	-------	12.3	65.7	69.2
Fairmont	516	364	53	-------	26.7	-------	15.4	102.7	78.4
Huntington *	1,573	937	137	23.5	25.8	14.0	13.9	87.1	101.1
Martinsburg	366	235	37	-------	28.0	-------	16.9	101.1	122.4
Morgantown	441	207	33	-------	31.3	-------	15.9	74.8	74.7
Moundsville	336	152	27	-------	29.2	-------	13.2	80.4	31.2
Parkersburg	680	393	46	-------	26.9	-------	19.0	67.6	103.8
Wheeling *	1,465	884	91	(c)	25.9	(c)	16.9	62.1	86.4
Wisconsin:									
Appleton	613	293	27	-------	23.3	-------	14.0	44.0	60.1
Ashland *	271	226	21	-------	25.6	-------	19.2	77.5	93.1
Beloit	521	221	26	-------	19.2	-------	10.6	49.9	78.0
Eau Claire *	648	386	32	-------	27.5	-------	16.5	49.4	69.1
Fond du Lac	701	364	31	-------	25.5	-------	14.9	44.2	78.4
Green Bay	1,148	560	72	32.3	29.7	15.8	17.2	62.7	81.2
Janesville	528	243	23	-------	19.6	-------	12.0	43.6	67.5
Kenosha	1,085	372	58	19.9	19.3	6.8	7.9	53.5	76.8
La Crosse *	1,080	598	68	35.5	32.1	19.7	20.2	63.0	64.6
Madison	1,336	757	51	27.4	27.3	15.5	15.7	38.2	65.5
Manitowoc	468	258	34	-------	22.7	-------	11.8	72.6	95.7
Marinette	317	212	25	-------	20.1	-------	13.4	78.9	73.3
Milwaukee	11,685	5,753	795	21.8	21.9	10.7	11.1	68.0	75.5
Oshkosh	849	442	44	25.6	24.7	13.3	14.9	51.8	56.1
Racine	1,449	565	76	20.3	19.3	7.9	9.5	52.4	80.5
Sheboygan	836	390	50	24.2	23.8	11.3	10.7	59.8	72.9
Stevens Point	304	150	19	-------	24.2	-------	13.0	62.5	81.3
Superior	764	411	46	(c)	19.1	(c)	10.5	60.2	65.9
Waukesha	349	178	19	-------	21.8	-------	13.6	54.4	76.0
Wausau	658	256	36	-------	29.8	-------	13.7	54.7	81.0
West Allis	505	157	31	-------	23.9	-------	8.0	61.4	61.0
Wyoming:									
Casper	423	179	19	-------	(c)	-------	(c)	44.9	61.9
Cheyenne	377	203	32	-------	22.5	-------	9.4	84.9	102.0

* Estimate of population unsatisfactory.

COURT DECISION RELATING TO PUBLIC HEALTH

Offices of city physician and city health officer held separate.—(St. Louis, Mo., Court of Appeals; State ex rel. Blue *v.* Waldo, 5 S. W. (2d) 653; decided May 1, 1928.) A mandamus proceeding was brought to compel the city physician of the city of Hannibal to inspect, test, and grade the milk and milk products produced and sold by the relator, and to issue to the latter a proper permit. The relator claimed that the city physician was also ex officio health officer of the city. The city milk ordinance provided that it be administered

by the health officer. The city of Hannibal and Marion County had formed a joint health unit and one health officer had been designated to have charge of the unit. Various amendments to the health ordinances of the city had been passed to make effective the change in organization, the only inconsistent provision of the ordinances as they stood at the time of the mandamus proceeding being one to the effect that the city physician should be the city health officer and act as a member of the board of health. The court stated that it seemed clear that the city council intended to segregate the office of city physician from that of health officer and to devolve the duties of health officer upon some person other than the city physician, and also stated that, while there was no express repeal of the above-mentioned inconsistent provision, it thought it was repealed by necessary implication. But the court held that, even if it could be said that under the ordinances the city physician was ex officio health officer, the office of health officer was nevertheless a distinct de jure office and the then incumbent was at least a de facto officer, and that a writ of mandamus would not issue without a previous ouster of the de facto incumbent by quo warranto.

PUBLIC HEALTH ENGINEERING ABSTRACTS

Pennsylvania Takes Steps to Guard Public Water Supplies. W. L. Stevenson. *Water Works Engineering*, vol. 81, No. 8, April 11, 1928, pp. 496–499. (Abstract by H. V. Pedersen.)

Pennsylvania is most active in protecting public surface water supplies from industrial wastes. Through the efforts of the health department an interstate stream conservation agreement has been made which includes the States of Ohio, West Virginia, Kentucky, New York, Maryland, Indiana, Illinois, and Tennessee.

The sanitary water board has influenced a number of industries in building experimental plants for the purpose of studying the ways and means of treating their water. The tanneries have proved their interest and have obtained considerable valuable data. A number of laundries have also been experimenting on how to treat their wastes.

The health department has made a survey of the river in 45 counties and has made scientific study of several parts of streams affected by industrial wastes. It has classified its streams and knows approximately how many miles of class A streams there are in the State. The sanitary water board is doing a fine piece of work in bringing order out of chaos. If this work continues it will not be long before Pennsylvania will be well advanced in the work of guarding the streams and sources of public water supplies from objectionable industrial wastes.

Behavior of Two Separate Sludge Digestion Tanks. Willem Rudolfs and P. J. A. Zeller. Report of the Department of Sewage Disposal of the New Jersey Agricultural Experiment Station for year ending June 30, 1927, pp. 264–272. (Abstract by W. L. Havens.)

During a seven and one-half months' period from November, 1926, to April, 1927, two separate sludge digestion tanks were operated at Plainfield. The tanks were seeded with ripe Imhoff sludge and were covered with wooden floating

covers and provided with hot-water heating systems. Fresh solids and partly decomposed material were added during the operating period. The temperature of the sludge was maintained at 67° to 68° F. The pH of the tank contents varied between 7.2 and 7.6, with an average of 7.3 in the sludge. The solids in the sludge drawn averaged about 7.5 per cent. The reduction in volume amounted to about 20 per cent and is accounted for only by concentration and shrinkage due to digestion. The sludge withdrawn from the tanks appeared to be well digested and had no odor, except that associated with methane.

Control Tests in Sewage Treatment. Edward C. Cromwell. *Bulletin* of the Maryland State Department of Health, vol. 1, No. 3, April, 1928, pp. 139–142. (Abstract by C. R. Cox.)

This article deals with the application of certain standard methods of sewage analysis in the efficient operation of sewage-treatment works, with special reference to the sewage treatment works of the city of Baltimore. The following tests are described: The determinations of solids, pH, nitrates and relative stability, dissolved oxygen, biological oxygen demand, and tests upon sludge, consisting of the determination of moisture, volatile solids, pH, and total nitrogen. It is stated that the pH of the raw sewage reaching the Back River sewage-disposal plant varies from 6.8 to 7.0. The nitrate content of the trickling filter effluent varies from 5.0 to 7.0 p. p. m., and the dissolved oxygen content of the same effluent from 1.0 to 4.0 p. p. m. The water of Back River, which receives the final effluent, has a dissolved oxygen content varying from 8.0 to 18.0 per cent saturation during the open season. The supersaturation is due to the prolific growth of large quantities of algæ feeding upon the dissolved organic matter, so that this algal growth is an important factor in the reaeration of the water receiving the effluent. The raw sewage has a biological oxygen demand of 222 p. p. m. and the final effluent an average of 29 p. p. m.

Sludge Digestion from a Practical Standpoint. George K. Armeling. *Bulletin* of the Maryland State Department of Health, vol. 1, No. 3, April, 1928, pp. 143–144. (Abstract by C. R. Cox.)

The practical operation of the separate sludge digestion tanks at the Baltimore city sewage treatment works is reviewed. Experience has shown that discharge of settling tank sludge into digestion tanks containing 30 per cent digested sludge results in about 40 per cent reduction in volume. With a temperature of 50° F. as long as 14 months were required to secure complete digestion, whereas with a temperature of 68° F. the time is reduced to about 130 days, and at 77° F. to about 100 days. The pH of raw sludge is at times as low as 5.1, and as the digestion proceeds the pH increases and the volatile organic matter content drops until a pH of about 7.1 is reached. The digested sludge has a moisture content of about 92 per cent and contains a considerable quantity of entrained gases which facilitate drainage on the sludge-drying beds. The dried sludge has a moisture content of 68 per cent and is used without further treatment by farmers as fertilizer.

Eliminating Turbidity and Trade Wastes. Grover E. Rickard. *Water Works Engineering*, vol. 81, No. 11, May 23, 1928, pp. 671–672 and 686–693. (Abstract by E. H. Gage.)

This is a description of the experiences in operating the Wheeling, W. Va., filtration plant since it began to function on February 23, 1925.

The plant was built for an average consumption of 20,000,000 gallons. The grit chamber has a detention period of 1 hour, the mixing chamber 30 minutes, and the settling basins 4 hours. There are 10 filter units of 2,000,000 gallons capacity.

The turbidity range of the raw water has been from 20 to 2,000 p. p. m. The low turbidity occurs from June through September, when the river is fed from underground sources and is highly polluted with industrial wastes. The carbon dioxide content of the raw water has varied from 3 to 40 p. p. m. The high content is due mostly to trade wastes. The alkalinity of the raw water has a range from minus 12 to plus 32 p. p. m., and the iron content has varied from 0.1 to 7.2 p. p. m. Qualitative tests for ferrous iron are made in order that the application of alum may be a minimum. The iron content of the filtered water has been reduced to a trace or zero. The chlorides from December to June vary from 8 to 15 p. p. m., depending upon the flood condition of the river. From July to November, when there is little rainfall, the chlorides average 25, with peaks of 42 p. p. m.

Medicinal tastes, due to phenols uniting with chlorine, were very noticeable during the winter 1925–26. Owing to public sentiment, the chlorine dose was reduced to 1.10 lbs. m/g., which is stated to be "of little value except that it kept the chlorine machine in continuous operation" (since January 1, 1927).

The finished water has conformed to the Treasury Department standard except for about 15 days, and then from 2 to 3 of the five 10 c. c. tubes showed gas. "At these times the maximum amount of chlorine, 0.44 p. p. m., was used and the organism would thrive. No characteristic colonies of *B. coli* could be obtained on E–M. B. agar and no positive gas formations were produced from transfers from this agar. Further confirmation tests failed to place it in the *B. coli* group."

The following conclusions are drawn by the author: (1) The application of large quantities of chemicals in treating water causes a great amount of unnecessary trouble when a lesser amount does more good and improves the operating conditions. The alum was cut from 0.94 grains per gallon in 1925 to 0.32 in 1927. (At the same time the lime was cut from 0.65 to 0.49 gr./gal.) The length of filter runs was increased from 31.8 hours in 1925 to 51.9 hours in 1927. (At the same time the percentage of wash water was reduced from 2.17 to 1.58); (2) a small amount of ferrous iron in a highly turbid water cuts the amount of alum used 50 to 60 per cent; (3) "my experience at Wheeling justifies the statement that a more satisfactory way in adjusting chemicals is the attention paid to the distance that the 'floc' travels in the settling basins, and the amount of 'floc' left in the applied water"; (4) bacteria counts and the *B. coli* index are lower in Wheeling than in other Ohio River cities, due to the fact that the Warwood Dam is only about three-fourths mile below the plant. This, in normal pool stage, tends to form a primary settling basin, due to the presence of ferrous salts; (5) a saving of $1.07 per m/g. was accomplished in 1927 over 1925.

Rural Sanitation with Special Reference to Water Supply. X. H. Goodnough *The Commonwealth,* Massachusetts Department of Public Health, vol. 15, No. 1, Jan.-Feb.-Mar., 1928, pp. 3–7. (Abstract by F. J. Laverty.)

In Massachusetts 97 per cent of the inhabitants are served with water from public supplies. The remaining population (137,784) receive their water supply principally from three sources, as follows: (*a*) Tubular driven shallow wells, (*b*) springs, (*c*) dug wells. The latter class serves the greater population in this group of users.

Under average conditions and with a sand or gravel soil, 250 feet is suggested by the author as an adequate distance for the location of sewage disposal, unless the selected location is uphill or in a direction from which ground water drains most readily toward the well, or such that the sewage is discharged at a lower level than the water in the well.

Attention is directed to the care which must be exercised when sewage passes near by the source of water supply. In such cases a cast-iron pipe, made tight with lead joints and suitably tested for tightness, is recommended.

The importance of chemical and bacteriological examinations as a guide for the quality of water is stressed, rather than dependence on appearance, taste, and odor; the sudden appearance of turbidity, however, should cast suspicion on a supply which has been previously clear. In such cases the safety should be ascertained by definite means, and conditions bearing on the selection of a new supply are then laid down. Before any considerable amount is invested in a new supply, the services of a competent engineer of experience should be secured to pass judgment thereon.

Relation of State Health Board to Water Supplies. Earnest Boyce. *Water Works Engineering*, vol. 81, No. 11, May 23, 1928, pp. 706–709. (Abstract by E. H. Gage.)

A discussion of the function of State health departments in protecting and improving public water supplies, with particular reference to this activity in Kansas.

The establishment and operation of the water and sewage laboratory of the State Board of Health in the University of Kansas is described, together with the fee system in use.

Routine inspection by the sanitary engineering division, sampling, and both chemical and bacteriological analyses of public water supplies are required by regulation. Surface waters receive weekly bacteriological analyses, annual field test, for which a portable laboratory is used, and one complete chemical analysis yearly. Ground waters receive two bacteriological analyses and one complete chemical analysis yearly.

"The schedule of fees charged is based on the population of the city and on the type of supply, one schedule applying to treated waters, which, in most cases, means a surface supply, and the other to ground-water supplies. For ground-water supplies these fees range from $12.50 per year for towns of less than 500 population to $50 for cities of over 15,000. For surface-water supplies a minimum fee of $30 is charged for towns of less than 1,500, with a maximum fee of $150 for cities of over 10,000."

A distinction is made between requirement and recommendation by a governmental agency. A requirement should cover the minimum consistent with safety and no more. A recommendation may recognize the desirability of a much higher degree of refinement.

Report of the Convention of the Association for Water, Earth, and Air Hygiene Held in Essen in June, 1927. Essen number in German. Published by and obtainable through the Landesanstalt für Wasser-, Boden-, und Lufthygiene, Berlin-Dahlem, Eherenbergstr. 38–42. 518 pages. (Abstract by A. M. Buswell.)

This volume contains the proceedings of the twenty-fifth annual convention of the Association for Water, Earth, and Air Hygiene held in Essen in June, 1927. The location of Essen in the Ruhr Valley in the heart of a thickly populated industrial section offered exceptional attractions for a convention of sanitarians.

At the same time as the convention there was an exposition ("Achema") of chemical apparatus held in Essen under the auspices of the division for water chemistry of the Association of German Chemists (Vereins Deutscher Chemicker). Part 9, pages 439–494, of the volume is given over to a description, profusely illustrated, of the apparatus exhibited at this exposition.

The papers covered the entire field of sanitary science from the engineering phases of water supply and waste treatment, the effects of air pollution on human population and vegetation, to the disinfection of clothing and the control of vermin. The following is a list of the papers presented at this convention:

Water and Sewage in the Rhine-Westfall Industrial Area, especially, with reference to the Emscher- and Lippe Association, by H. Helgig; Sewage Treatment Works of the Emsch Association, by M. Pruss; The Disposal of Settled Sludge

from a Chemical Standpoint, by H. Bach; The Work of Ruhrverband, by Dr. K. Imhoff; River Clarification and Power Installation at Hengstey, by O. Spetzler; Biological and Chemical Sewage Purification with the Aid of Air, by Dr. F. Sierp; The Left Lower Rhine Drainage Board in Moers Niederrhein, by K. Fehring; the Ruhr Valley Reservoirs, the Mohne and Sorpe Reservoirs, by E. Link; The Water Supply of the Ruhr Coal District from the Hygienic Standpoint, by H. Bruns; The Water Supply of the City of Essen, by B. Nerreter; Permutit Water Purification with a Special Reference to the Circulatory Regeneration System of Hufschmidt, by K. Hofer; Air Hygiene, by E. Wernicke; Vegetation and Poisonous Gas, especially Sulphur Dioxide, by E. Tiegs; Chemical Questions of Air Hygiene, by W. Liesegang; Air and Dust Investigation of the Rhine-Westfall Industrial Area, by H. Reisener; Air Pollution and Prevention, by L. Diesfeld; Question of Health Hazard of Factory Air, by F. Muller-Voigt; Communal Hygiene Questions in the Field of Vermin Control, by J. Wilhelmi; and Description of Apparatus Exhibited at the Chemical Exposition ("Achema") by H. Bach.

The subjects are all clearly and authoritatively treated, and profusely illustrated. The volume furnishes an exceedingly valuable summary of current practice in the field of sanitation. The questions are naturally discussed from the standpoint of applications to German conditions, but references are frequently made to recent progress in other countries. Of the 350 delegates to this convention, a considerable number came from foreign countries.

PUBLIC HEALTH SERVICE PUBLICATIONS

A List of Publications Issued During the Period July, 1927–June, 1928

Below is printed a list of publications of the United States Public Health Service issued during the period July, 1927–June, 1928.

The most important articles that appear each week in the Public Health Reports are reprinted in pamphlet form, making possible a wider and more economical distribution of information that is of especial value and interest to public-health workers and the general public.

All of the publications listed below except those marked with an asterisk (*) are available for free distribution and, as long as the supply lasts, may be obtained by addressing the Surgeon General, United States Public Health Service, Washington, D. C. Those publications marked with an asterisk are not available for free distribution but may be purchased from the SUPERINTENDENT OF DOCUMENTS, Government Printing Office, Washington, D. C., *at the prices noted.* (No remittances should be sent to the Public Health Service.)

Reprints from the Public Health Reports

1168. Court decisions on pasteurization. By James A. Tobey. July 1, 1927. 5 pages.

1169. The Public Health Service nursing corps. By Lucy Minnigerode. July 8, 1927. 4 pages.

1170. Experimental studies of water purification. III. Discussion of B. coli results obtained from primary experiments. By H. W. Streeter. July 15, 1927. 19 pages.

1171. Anopheles atropos Dyar and Knab. A note on its breeding and other habits. By T. H. D. Griffitts. July 22, 1927. 2 pages.
1172. The illness rate among males and females. Hagerstown morbidity studies No. VI. By Edgar Sydenstricker. July 29, 1927. 19 pages.
1173. Some tests of the larvicide "stoxal." By M. A. Barber and W. H. W. Komp. August 5, 1927. 8 pages.
1174. Pellagra: Its nature and prevention. By Joseph Goldberger. September 2, 1927. 8 pages.
1175. Dietetics in institutions and in the field. By Lucy Minnigerode. August 19, 1927. 5 pages.
1176. The unexplored field of preventive medicine in private practice. By W. F. Draper. September 9, 1927. 5 pages.
1177. City health officers, 1927. Directory of those in cities of 10,000 or more population. September 9, 1927. 12 pages.
1178. Shellfish sanitation. By L. M. Fisher. September 16, 1927. 10 pages.
1179. Public Health Service publications. A list of publications issued during the period April, 1926–June, 1927. August 26, 1927. 8 pages.
1180. Mosquito control by airplane. Memorandum on the distribution of Paris green by airplane in the control of anopheles production in uncleared pond near Bamberg, S. C., September 8, 1927. September 23, 1927. 2 pages.
1181. A study of the pellagra-preventive action of the cowpea (Vigna sinensis) and of commercial wheat germ. By Joseph Goldberger and G. A. Wheeler. September 30, 1927. 8 pages.
1182. The diagnosis of poliomyelitis. By J. P. Leake. October 7, 1927. 12 pages.
1183. The susceptibility to malaria parasites and the relation to the transmission of malaria of the species of anopheles common in southern United States. By M. A. Barber, W. H. W. Komp, and T. B. Hayne. October 14, 1927. 16 pages.
1184. Cooperative rural health work of the Public Health Service in the fiscal year 1927. By L. L. Lumsden. October 21, 1927. 53 pages.
1185. The epidemiology of typhus fever in Ireland. By M. R. King. October 28, 1927. 21 pages.
1186. Moist sand method of applying Paris green for destruction of subsurface-feeding mosquito larvæ. By T. H. D. Griffitts. November 4, 1927. 5 pages.
1187. Pellagra in the Mississippi flood area. Report of an inquiry relating to prevalence of pellagra in the area affected by the overflow of the Mississippi and its tributaries in Tennessee, Arkansas, Mississippi, and Louisiana in the spring of 1927. By Joseph Goldberger and Edgar Sydenstricker. November 4, 1927. 20 pages.
1188. State and insular health authorities, 1927. Directory with data as to appropriations and publications. November 11, 1927. 23 pages.
1189. Endemic goiter in Oregon. By Robert Olesen. November 18, 1927. 18 pages.
1190. The university in relation to the public health. By J. W. Kerr. November 25, 1927. 8 pages.
1191. Seasonal incidence of tularaemia and sources of infection. December 2, 1927. 3 pages.
1192. Some Public Health Service publications suitable for general distribution. December 2, 1927. 13 pages.

1193. Benzocaine-chaulmoogra oil in the treatment of leprosy. Preliminary note on the use of an oil-soluble analgesic which renders intramuscular injections of chaulmoogra oil painless. By Frederick A. Johansen. December 9, 1927. 7 pages.
1194. On the significance of spleens palpable on deep inspiration in the measurement of malaria. By K. F. Maxcy, M. A. Barber, and W. H. W. Komp. December 9, 1927. 12 pages.
1195. Tetanus following vaccination against smallpox, and its prevention. With special reference to the use of vaccination shields and dressings. By Charles Armstrong. December 16, 1927. 12 pages.
1196. Report on the disposal of Zyklon-B residue following the fumigation of the holds of vessels. By G. C. Sherrard. December 16, 1927. 4 pages.
1197. Muscle training in the treatment of infantile paralysis. Revised from an article which appeared in the Boston Medical and Surgical Journal and reprinted by permission of that journal. By Wilhelmine G. Wright. December 23, 1927. 16 pages.
1198. Clonorchiasis investigations. A summary of surveys and experiments to determine whether clonorchiasis may be disseminated on the Pacific slope of the United States. By N. E. Wayson. December 23, 1927. 8 pages.
1199. Endemic goiter among school children. Comparison of endemic goiter incidence among school children in the States of Minnesota, Oregon, Colorado, Montana, Connecticut, and Massachusetts, and in the city of Cincinnati, Ohio. By Robert Olesen, December 30, 1927. 9 pages.
1200. The tadpole of the spadefoot toad an enemy of mosquito larvæ. By M. A. Barber and C. H. King. December 30, 1927. 9 pages.
1201. The food of culicine larvæ. Food organisms in pure culture. By M. A. Barber. January 6, 1928. 6 pages.
1202. Scarlet fever: Its prevention and control. By J. W. Schereschewsky. Revised by R. E. Dyer. January 13, 1928. 12 pages. (Revision of Supplement No. 21.)
1203. How to give artificial respiration by the prone pressure method. January 20, 1928. 4 pages.
1204. A resurvey of endemic thyroid enlargement in Cincinnati. By Robert Olesen. January 20, 1928. 9 pages.
1205. Experimental black tongue of dogs and its relation to pellagra. By Joseph Goldberger and G. A. Wheeler. January 27, 1928. 45 pages.
1206. Tularæmia among meadow mice (Microtus californicus æstuarinus) in California. By J. C. Perry. February 3, 1928. 4 pages.
1207. Sickness among persons in different occupations of a public utility. By Dean K. Brundage. February 10, 1928. 22 pages.
1208. Electron equilibria in biological systems. I. A method for the continuous measurement of the electrical potential in living cells. By Carl Voegtlin and Floyd De Eds. February 17, 1928. 13 pages.
1209. Infant mortality from different causes and at different ages in nine cities of the United States. By Selwyn D. Collins. February 17, 1928. 12 pages.
1210. Trachoma in the State's health program. By Paul D. Mossman. February 24, 1928. 4 pages.
1211. Infant and maternal mortality in the United States. By E. Blanche Sterling. March 2, 1928. 8 pages.
1212. Malta fever: A problem for State and municipal laboratories. By A. V. Hardy. March 2, 1928. 9 pages.

1213. The health record of university students as related to tonsillectomy. By Warren E. Forsythe. March 9, 1928. 4 pages.
1214. Importance of respiratory diseases as a cause of disability among industrial workers. By Dean K. Brundage. March 16, 1928. 8 pages.
1215. Rat-flea survey of the port of San Juan, Porto Rico. A preliminary report. By O. H. Cox, Arturo L. Carrion, and Carroll Fox. March 16, 1928. 6 pages.
1216. A further study of experimental blacktongue with special reference to the blacktongue preventive in yeast. By Joseph Goldberger, G. A. Wheeler, R. D. Lillie, and L. M. Rogers. March 23, 1928. 38 pages.
1217. The problem of automobile exhaust gas in streets and repair shops in large cities. By J. J. Bloomfield and H. S. Isbell. March 30, 1928. 16 pages.
1218. Alcoholism and drug addiction as seen in United States Marine Hospitals. By H. McG. Robertson. April 6, 1928. 4 pages.
1219. National Leper Home (United States Marine Hospital), Carville, La. Review of the more important activities during the fiscal year ended June 30, 1927. By O. E. Denney. April 6, 1928. 7 pages.
1220. Extent of rural health service in the United States, 1924–1928. By L. L. Lumsden. April 13, 1928. 14 pages.
1221. Effect of salt on sludge digestion. By Willem Rudolfs. April 13, 1928. 8 pages.
1222. The action of currents of very high frequency upon tissue cells. A. Upon a transplantable mouse sarcoma. By J. W. Schereschewsky. B. Upon a transplantable fowl sarcoma. By J. W. Schereschewsky and H. B. Andervont. April 20, 1928. 20 pages.
1223. Effect of certain trade wastes on sludge digestion. By Willem Rudolfs April 20, 1928. 7 pages.
1224. The practical application of two qualitative tests for HCN in ship fumigation. By G. C. Sherrard. April 27, 1928. 6 pages.
1225. The causes of illness at different ages. Hagerstown morbidity studies No. VII. By Edgar Sydenstricker. May 4, 1928. 8 pages.
1226. Whole-time county health officers, 1928. May 4, 1928. 7 pages.
1227. The incidence of various diseases according to age. Hagerstown morbidity studies No. VIII. By Edgar Sydenstricker. May 11, 1928. 33 pages.
1228. The full-time county health program developed in the Mississippi Valley following the flood. By J. G. Townsend. May 18, 1928. 9 pages.
1229. Sex differences in the incidence of certain diseases at different ages. Hagerstown morbidity studies No. IX. By Edgar Sydenstricker. May 25, 1928. 18 pages.
1230. Loosely bound sulphur in pituitary extracts. By M. X. Sullivan and M. I. Smith. June 1, 1928. 9 pages.
1231. A study of the blacktongue-preventive action of 16 foodstuffs, with special reference to the identity of blacktongue of dogs and pellagra of man. By Jospeh Goldberger, G. A. Wheeler, R. D. Lillie, and L. M. Rogers. June 8, 1928. 70 pages.
1232. Sewage-polluted surface waters as a source of water supply. By H. W. Streeter. June 15, 1928. 25 pages.
1233. Occupational mortality among males in England and Wales, 1921–1923. A summary of the report of the Registrar General. Rollo H. Britten. June 22, 1928. 50 pages.
1234. A unit for scarlet fever streptococcus antitoxin. R. E. Dyer. June 29, 1928. 5 pages.

Supplements to the Public Health Reports

65. Public health laws and regulations adopted during 1926. Compiled by William Fowler. 1927. 204 pages.
66. Studies on oxidation-reduction. XII. A note on the Schardinger reaction (in reply to Kodama). By W. Mansfield Clark, Barnett Cohen, and M. X. Sullivan. 1927. 10 pages.
67. The notifiable diseases. Prevalence during 1926 in States. 1927. 67 pages.
68. Municipal ordinances and regulations pertaining to public health 1923–1926. Compiled by William Fowler. 1928. 237 pages.

Public Health Bulletins

170. Report of an investigation of the pollution of Lake Michigan in the vicinity of South Chicago and the Calumet and Indiana harbors, 1924–1925. By H. R. Crohurst and M. V. Veldee. April, 1927. 134 pages.
171. A study of the pollution and natural purification of the Illinois River. I. Surveys and laboratory studies. By J. K. Hoskins, C. C. Ruchhoft, and L. G. Williams. May, 1927. 208 pages.
172. Studies of the efficiency of water purification processes. I. Results obtained from a preliminary study of the Cincinnati and Louisville municipal filtration plants. II and III. Results obtained from a collective survey of seventeen municipal filtration plants. By H. W. Streeter. May, 1927. 423 pages.
173. The oxygen demand of polluted waters. I. Bibliographical. A critical review. II. Experimental. The rate of deoxygenation. By Emery J. Theriault. July, 1927. 185 pages.
174. Mortality among negroes in the United States. By Mary Gover and Edgar Sydenstricker. June, 1927. 63 pages.
175. An epidemiological and statistical study of tonsillitis, including related throat conditions. By Selwyn D. Collins and Edgar Sydenstricker. July, 1927. 159 pages.
176. The health of workers in dusty trades. I. Health of workers in a Portland cement plant. By L. R. Thompson, Dean K. Brundage, Albert E. Russell, and J. J. Bloomfield. April, 1928. 138 pages.
178. Transactions of the twenty-fifth annual conference of State and Territorial health officers with the United States Public Health Service, held at Washington, D. C., May 20 and 21, 1927. May, 1928. 108 pages.

Hygienic Laboratory Bulletins

149. I. A method for estimating the potency of smallpox vaccine. By John N. Force and James P. Leake. II. The immunological relationship of alastrim and mild smallpox. By James P. Leake and John N. Force. April, 1927. 64 pages.
150. Key catalogue of insects of importance in public health. By C. W. Stiles and Albert Hassall. March, 1928. 117 pages.
151. Studies on oxidation-reduction I–X. By the staff of the Division of Chemistry, Hygienic Laboratory, United States Public Health Service. February, 1928. 363 pages.

Annual Report

Annual report of the Surgeon General of the United States Public Health Service for the fiscal year 1927. 355 pages. Cloth.

Miscellaneous Publication

11. Official list of commissioned and other officers of the United States Public Health Service; also list of United States marine hospitals, quarantine, immigration, and relief stations and quarantine vessels. July 1, 1927. 75 pages.

Unnumbered Publications

*National negro health week program. This pamphlet is published annually, usually about the middle of March, for community leaders in an effort to suggest ways and means by which interested individuals and organizations may be organized for a concerted and effective attack upon the community's disease problems. 1928. 24 pages. (Out of print.)

*National negro health week poster. 1928. In colors. (Out of print.)

Venereal Disease Publications

Venereal Disease Compilation No. 6. Syphilis of the circulatory system. July 1, 1927. 102 pages.

Venereal Disease Information, Reprint No. 6. A survey of venereal disease prevalence in Detroit. By Walter M. Brunet and Mary S. Edwards. From Venereal Disease Information, Vol. VIII, No. 6. 12 pages.

Venereal Disease Information, Reprint No. 7. Hospitals and dispensaries for treatment of venereal diseases. From Venereal Disease Information, Vol. VIII, No. 7. 13 pages.

Venereal Disease Information, Reprint No. 8. Venereal disease prevalence in 14 communities. By Thomas Parran, jr., Willard C. Smith, and Selwyn D. Collins. From Venereal Disease Information, Vol. IX, No. 2. 16 pages.

Venereal Disease Information, Reprint No. 9. A study of venereal disease prevalence in 22 Kansas counties. By Earle G. Brown. From Venereal Disease Information, Vol. IX, No. 5, 8 pages.

DEATHS DURING WEEK ENDED JULY 7, 1928

Summary of information received by telegraph from industrial insurance companies for the week ended July 7, 1928, and corresponding week of 1927. (From the Weekly Health Index, July 10, 1928, issued by the Bureau of the Census, Department of Commerce)

	Week ended July 7, 1928	Corresponding week, 1927
Policies in force	71, 340, 161	68, 059, 895
Number of death claims	9, 850	9, 353
Death claims per 1,000 policies in force, annual rate	7. 2	7. 2

Deaths from all causes in certain large cities of the United States during the week ended July 7, 1928, infant mortality, annual death rate, and comparison with corresponding week of 1927. (From the Weekly Health Index, July 10, 1928, issued by the Bureau of the Census, Department of Commerce)

City	Week ended July 7, 1928		Annual death rate per 1,000 corresponding week, 1927	Deaths under 1 year		Infant mortality rate week ended July 7, 1928 [2]
	Total deaths	Death rate [1]		Week ended July 7, 1928	Corresponding week, 1927	
Total (69 cities)	6,867	11.8	11.0	683	661	55
Akron	32			3	6	33
Albany [3]	37	16.1	10.5	0	1	0
Atlanta	68	13.9	17.0	9	11	
White	33		11.6	4	3	
Colored	35	(4)	29.6	5	8	
Baltimore [3]	190	12.0	11.9	15	25	48
White	144		10.7	7	19	28
Colored	46	(4)	19.0	8	6	125
Birmingham	85	20.0	17.3	11	5	94
White	39		13.3	6	4	83
Colored	46	(4)	23.4	5	1	113
Boston	197	12.9	12.2	22	23	61
Bridgeport	32			5	1	92
Buffalo	138	13.0	23.5	14	9	60
Cambridge	23	9.6	11.8	1	3	18
Camden	30	11.6	9.0	4	5	64
Canton	26	11.6	10.1	5	3	119
Chicago [3]	654	10.8	9.7	64	72	55
Cincinnati	143	18.1	18.7	14	12	85
Cleveland	176	9.1	9.8	17	15	46
Columbus	74	13.0	12.3	9	6	84
Dallas	51	12.3	9.6	4	6	
White	39		8.2	2	4	
Colored	12	(4)	19.0	2	2	
Dayton	36	10.2	9.8	5	3	83
Denver	76	13.5	14.9	6	7	
Des Moines	30	10.3	14.7	3	5	50
Detroit	274	10.4	10.9	40	47	62
Duluth	27	12.1	9.5	4	1	93
El Paso	48	21.3	14.7	10	3	
Erie	25			1	1	21
Fall River [3]	28	10.9	11.0	5	4	86
Flint	24	8.4	9.1	3	2	38
Fort Worth	45	14.0	10.8	3	1	
White	36		10.1	2	1	
Colored	9	(4)	16.0	1	0	
Grand Rapids	24	7.6	16.9	1	4	15
Houston	66			11	8	
White	46			6	7	
Colored	20	(4)		5	1	
Indianapolis	103	14.1	11.8	6	5	46
White	90		10.9	6	3	52
Colored	13	(4)	18.6	0	2	0
Jersey City	57	9.2	9.6	9	5	67
Kansas City, Kans	38	16.8	9.8	2	6	42
White	32		8.1	2	4	49
Colored	6	(4)	17.2	0	2	0
Kansas City, Mo	125	16.7	12.0	8	9	57
Knoxville	36	17.9	15.3	8	2	174
White	25		12.8	7	2	169
Colored	11	(4)	34.2	1	0	213
Los Angeles	226			20	17	57
Louisville	78	12.4	12.5	5	6	42
White	65		11.5	5	6	48
Colored	13	(4)	18.1	0	0	0
Lowell	38	18.0	15.1	4	6	84
Lynn	24	11.9	6.6	1	2	25
Memphis	68	18.7	21.9	7	9	82
White	36		17.6	1	6	19
Colored	32	(4)	29.6	6	3	188
Milwaukee	108	10.4	10.3	18	12	80
Minneapolis	83	9.5	7.8	9	6	54

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left bank are not in the registration area for births.
[3] Deaths for week ended Friday, July 6, 1928.
[4] 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.

Deaths from all causes in certain large cities of the United States during the week ended July 7, 1928, infant mortality, annual death rate, and comparison with corresponding week of 1927—Continued.

City	Week ended July 7, 1928		Annual death rate per 1,000 corresponding week, 1927	Deaths under 1 year		Infant mortality rate week ended July 7, 1928
	Total deaths	Death rate		Week ended July 7, 1928	Corresponding week, 1927	
Nashville	36	13.6	16.6	7	5	110
White	21		14.2	7	1	149
Colored	15	(4)	22.8	0	4	0
New Bedford	23	10.1	11.3	2	5	43
New Haven	40	11.1	11.6	2	7	28
New Orleans	137	16.7	17.2	16	18	77
White	82		12.6	8	5	58
Colored	55	(4)	30.3	8	13	116
New York	1,277	11.1	10.3	126	115	51
Bronx Borough	152	8.3	8.3	11	6	33
Brooklyn Borough	422	9.6	9.4	47	51	47
Manhattan Borough	528	15.8	13.8	56	47	66
Queens Borough	123	7.8	6.7	11	7	44
Richmond Borough	47	16.3	14.2	1	4	18
Newark, N. J	101	11.2	10.6	15	11	77
Oakland	47	9.0	8.4	3	8	33
Oklahoma City	25			2	4	
Omaha	58	13.6	8.3	6	4	70
Paterson	38	13.7	8.7	4	0	69
Philadelphia	398	10.1	9.3	37	36	50
Pittsburgh	152	11.8	11.3	23	19	75
Portland, Oreg	67			3	6	32
Providence	64	11.7	10.2	10	4	87
Richmond	46	12.4	14.4	4	8	52
White	23		14.2	0	4	0
Colored	23	(4)	15.0	4	4	147
Rochester	58	9.2	8.2	6	4	49
St. Louis	244	15.0	10.8	13	5	43
St. Paul	49	10.2	10.6	5	1	48
Salt Lake City [3]	26	9.9	12.3	3	3	49
San Antonio	64	15.3	8.9	12	9	
San Diego	31	13.5	16.7	1	3	19
San Francisco	157	14.0	14.2	8	9	50
Schenectady	13	7.3	10.6	2	3	63
Somerville	14	7.1	5.1	1	1	35
Spokane	38	18.2	12.9	0	2	0
Springfield, Mass	38	13.3	9.2	4	1	63
Syracuse	44	11.5	10.9	3	4	36
Tacoma	22	10.4	11.7	1	1	26
Toledo	69	11.5	11.3	4	6	38
Trenton	32	12.0	8.8	2	4	34
Utica	23	11.5	11.1	2	2	45
Washington, D. C	139	13.2	11.2	6	7	34
White	86		9.0	5	5	41
Colored	53	(4)	17.6	1	2	18
Waterbury	11			1	2	29
Wilmington, Del	26	10.6	10.7	2	1	53
Worcester	43	11.4	9.6	3	7	36
Yonkers	18	7.8	11.0	1	0	23
Youngstown	40	12.0	7.7	3	7	40

[3] Deaths for week ended Friday, July 6, 1928.

[4] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentage 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 July 14, 1928, and July 16, 1927

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 14, 1928, and July 16, 1927—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended July 14, 1928	Week ended July 16, 1927	Week ended July 14, 1928	Week ended July 16, 1927	Week ended July 14, 1928	Week ended July 16, 1927	Week ended July 14, 1928	Week ended July 16, 1927
New England States:								
Maine	4	3	9	2	21	28	1	0
New Hampshire	2				25		0	
Vermont	1				66	11	0	0
Massachusetts	35	75	6	1	384	318	3	1
Rhode Island	11	6			141	1	0	0
Connecticut	17	22	1		192	41	1	2
Middle Atlantic States:								3
New York	191	284	[1] 4	3	1,045	352	11	0
New Jersey	108	75	2	1	432	18	3	
Pennsylvania	93	166			874	371	1	0
East North Central States:								
Ohio	58		19		573		3	
Indiana	9	12	3		68	30	0	0
Illinois [5]	74	65	40	13	90	104	6	6
Michigan	27	73			336	105	4	1
Wisconsin	13	30	30	10	24	214	4	8
West North Central States:								
Minnesota	17	14	5	1	18	42	4	1
Iowa	2	17			7	9	0	0
Missouri [3]	19	17	3		52	24	5	0
North Dakota	8		3		10	2	1	0
South Dakota	3	3			9	5	0	0
Nebraska	10	8	3		2	5	0	0
Kansas	4	11		7	19	79	0	0
South Atlantic States:								
Delaware					8	5	0	0
Maryland [2]	14	36	2		60	19	0	2
District of Columbia	13	7	1	1	26	2	0	0
Virginia								
West Virginia	3	6	22	1	32	38	0	0
North Carolina	14	15			85	328	1	1
South Carolina	31	7	202	96	17	112	0	0
Georgia	9	10	18	12	29	15	0	0
Florida	6	5	39	2	35	20	1	2
East South Central States:								
Kentucky	2				39		1	
Tennessee	2	6	5	6	37	7	0	0
Alabama	7	14	48	11	43	30	1	0
Mississippi	4	9					0	0
West South Central States:								
Arkansas	6	4	11	3	10	22	0	0
Louisiana	9	13	6	5	16	16	1	0
Oklahoma [4]	18	3	38	13	23	3	2	0
Texas	7	14	13	26	55	11	0	1
Mountain States:								
Montana		3			38	5	0	1
Idaho	3					3	0	0
Wyoming	2					7	0	0
Colorado	11	12			49	33	0	0
New Mexico	1	4			10		0	0
Arizona		2			44	20	0	0
Utah [2]		7	4	2	4	3	0	0

[1] New York City only.
[2] Week ended Friday.
[3] Figures for 1928 exclusive of Kansas City.
[4] Exclusive of Tulsa.
[5] Exclusive of Chicago for July 11.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 14, 1928, and July 16, 1927—continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended July 14, 1928	Week ended July 16, 1927	Week ended July 14, 1928	Week ended July 16, 1927	Week ended July 14, 1928	Week ended July 16, 1927	Week ended July 14, 1928	Week ended July 16, 1927
Pacific States:								
Washington	3	14			18	178	1	1
Oregon	9	10	5	6	23	60	0	2
California	67	75	8	10	20	127	1	1

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended July 14, 1928	Week ended July 16, 1927	Week ended July 14, 1928	Week ended July 16, 1927	Week ended July 14, 1928	Week ended July 16, 1927	Week ended July 14, 1928	Week ended July 16, 1927
New England States:								
Maine	1	0	9	18	0	0	3	2
New Hampshire	1		1		0		0	
Vermont	0	0	2	1	0	0	0	3
Massachusetts	1	4	95	147	0	0	11	8
Rhode Island	1	0	6	9	0	0	2	0
Connecticut	0	3	24	18	0	0	1	3
Middle Atlantic States:								
New York	8	6	106	222	4	6	26	22
New Jersey	2	2	44	64	0	0	8	11
Pennsylvania	0	2	104	220	0	5	33	16
East North Central States:								
Ohio	3		54		6		14	
Indiana	0	0	18	24	43	58	9	7
Illinois[5]	4	5	110	96	20	15	22	29
Michigan	1	0	96	115	37	35	7	12
Wisconsin	0	0	54	64	26	13	1	3
West North Central States:								
Minnesota	2	0	54	64	0	1	2	3
Iowa	0	0	16	16	7	19	2	4
Missouri[3]	0	0	27	15	12	11	9	11
North Dakota	4	0	45	12	1	4	2	0
South Dakota	0	0	6	14	0	8	0	0
Nebraska	0	0	15	8	13	6	0	5
Kansas	1	3	22	32	55	19	6	20
South Atlantic States:								
Delaware	0	0		1	0	0	1	1
Maryland[2]	1	0	19	14	3	0	14	12
District of Columbia	0	0	10	5	0	1	1	2
Virginia								
West Virginia	0	0		24	19	19	9	11
North Carolina	2	0	19	10	8	11	84	63
South Carolina	0	0	5	1	0	1	120	123
Georgia	0	0	7	3	0	6	38	96
Florida	0	2	5	4	0	4	16	16
East South Central States:								
Kentucky	0		4		2		5	
Tennessee	0	0	8	13	4	4	66	169
Alabama	1	0	5	3	2	10	49	90
Mississippi	2	1	4	13	0	1	48	59
West South Central States:								
Arkansas	0	2	4	6	6	0	17	34
Louisiana	0	6	1	4	1	11	27	27
Oklahoma[4]	0	2	9	18	30	36	35	74
Texas	2	4	21	12	5	4	24	10
Mountain States:								
Montana	0	0	3	7	19	5	0	3
Idaho	0	0	1	1	9	15	0	0
Wyoming	0	0	4	4	1	0	0	0
Colorado	0	0	15	39	2	0	5	10
New Mexico	0	11	7	6	6	14	7	5
Arizona	1	3	2	10	0	1	0	1
Utah[2]	0	1	9	8	4	3	1	2
Pacific States:								
Washington	1	1	10	14	32	21	8	1
Oregon	0	0	5	7	24	13	1	5
California	6	48	68	57	4	19	13	20

[2] Week ended Friday.
[3] Figures for 1928 exclusive of Kansas City.
[4] Exclusive of Tulsa.
[5] Exclusive of Chicago for July 11.

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
April, 1928										
Delaware	0	3	------	------	109	------	0	15	1	0
May, 1928										
Delaware	1	------	1	------	148	------	0	3	0	2
Florida	2	37	57	13	621	13	3	20	13	49
June, 1928										
Arizona	6	15	28	------	225	------	0	15	6	10
Connecticut	7	74	19	1	1,408	------	3	145	5	4
Florida	0	14	71	12	300	16	2	9	16	30
Nebraska	1	24	24	------	123	------	0	140	106	10
Tennessee	5	30	394	183	434	137	2	68	100	106

April, 1928

Delaware:
- Chicken pox: 22
- Mumps: 36
- Ophthalmia neonatorum: 1
- Whooping cough: 1

May, 1928

Chicken pox:
- Delaware: 6
- Florida: 184

Dysentery:
- Florida: 6

Hookworm disease:
- Florida: 134

Lethargic encephalitis:
- Florida: 1

Mumps:
- Delaware: 15
- Florida: 73

Paratyphoid fever:
- Florida: 2

Typhus fever:
- Florida: 1

Whooping cough:
- Delaware: 6
- Florida: 22

June, 1928

Chicken pox:
- Arizona: 17
- Connecticut: 204
- Florida: 35
- Nebraska: 58
- Tennessee: 54

Dengue:
- Florida: 1

Dysentery:
- Florida: 2
- Tennessee: 66

German measles:
- Connecticut: 117

Hookworm disease:
- Florida: 68

Lead poisoning:
- Connecticut: 1

Lethargic encephalitis:
- Connecticut: 2
- Tennessee: 1

Mumps:
- Arizona: 9
- Connecticut: 349
- Florida: 14
- Nebraska: 36
- Tennessee: 129

Ophthalmia neonatorum:
- Connecticut: 3

Paratyphoid fever:
- Arizona: 6
- Connecticut: 1
- Florida: 1
- Tennessee: 2

Puerperal septicemia:
- Tennessee: 2

Rabies (in animals):
- Connecticut: 3

Rabies (in man):
- Tennessee: 2

Septic sore throat:
- Connecticut: 2
- Tennessee: 4

Tetanus:
- Connecticut: 3

Typhus fever:
- Florida: 6

Undulant (Malta) fever:
- Arizona: 1
- Tennessee: 1

Whooping cough:
- Arizona: 13
- Connecticut: 492
- Florida: 31
- Nebraska: 33
- Tennessee: 115

PLAGUE-INFECTED GROUND SQUIRRELS IN CALIFORNIA

The State health officer of California has reported the finding of plague infection in rodents as follows:

In a ground squirrel received May 3, 1928, from the Lonoak district of San Benito County, township 19 south, range 9 east.

In a lot of 22 ground squirrels and 1 wood rat received June 18, 1928, from a ranch in township 1 north, range 1 east, 4 miles south of Antioch, Contra Costa County.

In a lot of three ground squirrels received June 21, 1928, from a ranch 21 miles southeast of Livermore, in the Mocho district, Alameda County.

In a lot of nine squirrels received June 26, 1928, from a ranch on the Monterey-Pacific Grove highway 11 miles southwest of Salinas.

In a lot of five squirrels received June 26, 1928, from a ranch on the Monterey-Pacific Grove highway 12 miles southwest of Salinas.

In each case plague infection was proved by animal inoculation in the California Bacteriological Laboratory.

FIRST ADMISSIONS TO INSTITUTIONS FOR THE FEEBLE-MINDED, JANUARY TO MARCH, 1928

Reports for the first quarter of the year 1928 have been received by the Public Health Service from 26 institutions for the care of the feeble-minded, located in 23 States. On March 31, 1928, there were 28,089 patients in these institutions, including those on temporary leave.

The first admissions were as follows:

	Male	Female	Total
January	167	122	289
February	174	125	299
March	172	112	284
Total	513	359	872

Of the first admissions 58.8 per cent were males and 41.2 per cent were females, the ratio being 143 males per 100 females. On March 31, 1928, there were 14,788 male patients and 13,301 female patients, giving a ratio of 111 males per 100 females.

During the three months 275 patients were discharged, 155 males and 120 females. One hundred and eighty-three patients died, the death rates being for males, 28.3 per thousand; for females, 24.3; and for persons, 26.4 per 1,000. These death rates are on an annual basis computed on the estimated population of the institutions as of the middle of February, 1928.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES.

The 98 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 30,880,000. The estimated population of the 92 cities reporting deaths is more than 30,190,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended June 30, 1928, and July 2, 1927

	1928	1927	Estimated expectancy
Cases reported			
Diphtheria:			
42 States	1,127	1,265	
98 cities	674	820	659
Measles:			
41 States	7,616	4,843	
98 cities	2,940	1,594	
Poliomyelitis:			
42 States	40	48	
Scarlet fever:			
42 States	1,709	2,043	
98 cities	619	756	550
Smallpox:			
42 States	544	420	
98 cities	58	106	59
Typhoid fever:			
42 States	409	676	
98 cities	96	87	97
Deaths reported			
Influenza and pneumonia:			
92 cities	476	439	
Smallpox:			
92 cities	1	0	
New Orleans, La	1	0	

City reports for week ended June 30, 1928

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

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1919 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations 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, 1926, 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	76,400	3	2	0	0	0	9	0	0
New Hampshire:									
Concord	[1] 22,546	0	0	0	0	0	14	0	2
Vermont:									
Barre	[1] 10,008	3	0	0	0	0	0	1	0
Burlington	[1] 24,089	1	0	1	0	0	2	0	0
Massachusetts:									
Boston	787,000	33	43	15	1	0	37	6	15
Fall River	131,000	2	2	0	2	1	47	0	3
Springfield	145,000	6	2	4	0	0	15	5	0
Worcester	193,000	10	3	1	0	1	56	6	0
Rhode Island:									
Pawtucket	71,000	0	0	1	0	0	0	0	1
Providence	275,000	0	5	3	1	0	164	0	2
Connecticut:									
Bridgeport	([3])	3	4	1	1	0	5	0	3
Hartford	164,000		4						
New Haven	182,000	3	1	1	0	0	14	5	1
MIDDLE ATLANTIC									
New York:									
Buffalo	544,000	11	8	11		0	9	12	10
New York	5,924,000	105	198	256	6	8	820	0	109
Rochester	321,000	11	7	6		0	104	11	3
Syracuse	185,000	11	4	0		0	27	4	4
New Jersey:									
Camden	131,000	2	4	7	0	0	13	2	4
Newark	459,000	27	9	46	2	0	40	3	11
Trenton	134,000	2	2	4	0	0	9	0	3
Pennsylvania:									
Philadelphia	2,008,000	48	53	39	0	4	263	17	25
Pittsburgh	637,000	20	13	10	0	0	49	28	13
Reading	114,000	2	2	3	0	0	7	2	1
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	411,000	8	6	1	0	2	3	4	7
Cleveland	960,000	42	21	25	2	0	228	20	13
Columbus	285,000	8	2	4	2	1	84	3	1
Toledo	295,000	16	4	0	5	5	75	0	4
Indiana:									
Fort Wayne	99,900	0	2	1	0	0	3	0	1
Indianapolis	367,000	5	3	1	0	0	90	10	4
South Bend	81,700	0	1	2	0	0	1	0	1
Terre Haute	71,900	0	0	0	0	0	7	0	0
Illinois:									
Chicago	3,048,000	112	61	104	6	5	57	20	40
Springfield	64,700	4	1	1	0	0	0	2	0
Michigan:									
Detroit	[3] 1,242,044	19	38	35	4	0	181	8	19
Flint	136,000	2	2	1	0	0	36	1	0
Grand Rapids	156,000	2	2	2	0	0	29	8	1

[1] Estimated, July 1, 1925. [2] No estimate made. [3] Special census.

City reports for week ended June 30, 1928—Continued

Division, State, and city	Population July 1, 1926, 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	52,700	26	0	0	0	0	1	0	1
Milwaukee	517,000	65	11	1	0	0	4	3	5
Racine	69,400	4	1	0	0	0	0	0	0
Superior	[1] 39,671	0	0	0	0	0	0	0	3
WEST NORTH CENTRAL									
Minnesota:									
Duluth	113,000	7	0	0	0	1	0	0	2
Minneapolis	434,000	31	11	8	0	0	23	5	7
St. Paul	248,000	9	9	0	0	1	9	3	7
Iowa:									
Davenport	[1] 53,469	10	0	1	0	----	0	0	----
Des Moines	146,000	2	1	1	0	----	0	0	----
Sioux City	78,000	6	0	0	0	----	0	0	----
Waterloo	36,900	4	0	0	0	----	1	5	----
Missouri:									
Kansas City	375,000	8	3	2	0	1	21	8	4
St. Joseph	78,400	0	1	0	0	0	1	1	0
St. Louis	830,000	4	23	17	0	0	100	2	----
North Dakota:									
Fargo	[1] 26,403	0	0	0	0	1	0	0	0
Grand Forks	[1] 14,811	0	0	0	0	----	0	0	----
South Dakota:									
Aberdeen	[1] 15,036	5	0	0	0	----	0	0	----
Sioux Falls	[1] 30,127	0	0	0	0	----	1	0	----
Nebraska:									
Omaha	216,000	2	1	0	0	0	1	0	1
Kansas:									
Topeka	56,500	12	1	0	0	0	7	1	1
Wichita	92,500	2	1	0	0	0	33	0	1
SOUTH ATLANTIC									
Delaware:									
Wilmington	124,000	0	1	0	0	0	28	1	0
Maryland:									
Baltimore	808,000	30	13	10	2	0	23	16	18
Cumberland	[1] 33,747	0	0	0	0	0	1	0	1
Frederick	[1] 12,035	1	0	0	0	0	4	0	0
District of Columbia:									
Washington	528,000	6	6	5	1	1	95	0	5
Virginia:									
Lynchburg	[1] 38,493	0	0	1	0	0	6	4	0
Norfolk	174,000	0	0	0	0	0	10	0	4
Richmond	189,000	0	1	0	0	0	16	0	3
Roanoke	61,900	9	0	0	0	0	1	1	0
West Virginia:									
Charleston	50,700	1	0	0	0	1	0	0	0
Wheeling	[1] 56,208	2	0	1	0	0	5	0	0
North Carolina:									
Raleigh	[1] 30,371	0	0	0	0	0	8	0	1
Wilmington	37,700	0	0	0	0	0	0	0	1
Winston-Salem	71,800	8	0	1	0	0	8	11	3
South Carolina:									
Charleston	74,100	0	0	0	31	0	0	0	0
Columbia	41,800	5	0	0	0	0	0	5	4
Greenville	[1] 27,311	2	0	0	0	0	0	0	0
Georgia:									
Atlanta	(2)	1	1	2	7	1	1	0	1
Brunswick	[1] 16,809	0	0	0	0	0	0	0	0
Savannah	94,900	1	1	0	7	0	0	1	0
Florida:									
Miami	[3] 131,286	0	1	0	0	0	3	0	0
St. Petersburg	[3] 47,629	----	0	----	----	0	----	----	1
Tampa	102,000	1	0	1	0	0	0	0	0

[1] Estimated, July 1, 1925. [2] No estimate made. [3] Special census.

City reports for week ended June 30, 1928—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									
Kentucky:									
Covington	58,580	0	0	0	0	1	0	0	4
Louisville	311,000	1	1	1	0	0	5	2	5
Tennessee:									
Memphis	177,000	1	1	1	0	2	2	1	4
Nashville	137,000	1	0	0	0	3	8	1	1
Alabama:									
Birmingham	211,000	6	1	0	5	1	15	2	7
Mobile	66,800	0	0	0	3	0	0	0	0
Montgomery	47,000	0	0	0	0	-------	0	0	-------
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	[1] 31,643	5	0	0	0	-------	0	0	-------
Little Rock	75,900	1	0	0	0	0	1	1	1
Louisiana:									
New Orleans	419,000	0	4	9	2	3	1	0	6
Shreveport	59,500	0	0	0	0	0	0	0	2
Oklahoma:									
Oklahoma City	[2]	0	0	1	0	0	0	0	5
Tulsa	133,000	0	0	0	0	-------	2	0	-------
Texas:									
Dallas	203,000	5	3	1	0	0	3	0	1
Forth Worth	159,000	0	0	1	0	1	1	1	3
Galveston	49,100	0	0	1	0	0	0	0	0
Houston	[1] 164,954	0	2	0	0	0	1	0	5
San Antonio	205,000	0	2	1	0	0	2	1	2
MOUNTAIN									
Montana:									
Billings	[1] 17,971	0	0	0	0	0	0	0	0
Great Falls	[1] 29,883	2	0	0	0	0	3	0	0
Helena	[1] 12,037	-------	0	-------	-------	-------	-------	-------	-------
Missoula	[1] 12,668	0	0	0	0	0	0	0	0
Idaho:									
Boise	[1] 23,042	1	0	0	0	0	0	0	0
Colorado:									
Denver	285,000	38	9	2	-------	1	34	39	4
Pueblo	43,900	4	1	0	0	0	8	0	1
New Mexico:									
Albuquerque	[1] 21,000	0	0	0	0	0	3	0	0
Utah:									
Salt Lake City	133,000	22	3	0		1	0	0	2
Nevada:									
Reno	[1] 12,665	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[2]	13	4	0	0	-------	15	7	-------
Spokane	109,000	17	2	0	0	-------	0	0	-------
Tacoma	106,000	3	2	1	0	0	7	10	2
Oregon:									
Portland	[1] 282,383	4	5	2	0	0	15	1	6
California:									
Los Angeles	[2]	38	36	22	11	1	4	28	14
Sacramento	73,400	6	2	1	0	0	3	2	3
San Francisco	567,000	-------	12	-------	-------	-------	-------	-------	-------

[1] Estimated, July 1, 1925.

[2] No estimate made.

City reports for week ended June 30, 1928—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	1	2	0	0	0	0	1	1	0	4	12
New Hampshire:											
Concord	0	0	0	0	0	1	0	0	0	0	12
Vermont:											
Barre	0	0	0	0	0	0	0	0	0	0	0
Burlington	1	0	0	0	0	0	0	0	0	0	20
Massachusetts:											
Boston	32	40	0	0	0	22	2	2	0	36	208
Fall River	2	2	0	0	0	4	0	0	0	1	26
Springfield	3	3	0	0	0	1	0	6	0	3	34
Worcester	5	13	0	0	0	2	0	0	0	8	41
Rhode Island:											
Pawtucket	1	1	0	0	0	0	0	0	0	0	21
Providence	5	15	0	0	0	1	1	1	0	1	66
Connecticut:											
Bridgeport	4	2	0	0	0	1	1	0	0	9	27
Hartford	2		0				0				
New Haven	2	1	0	0	0	2	1	0	0	14	34
MIDDLE ATLANTIC											
New York:											
Buffalo	12	16	0	0	0	6	0	0	0	19	97
New York	101	125	0	0	0	89	16	6	0	114	1,370
Rochester	7	3	0	0	0	1	0	1	0	6	55
Syracuse	4	0	0	0	0	0	0	0	0	8	47
New Jersey:											
Camden	3	1	0	0	0	1	0	0	0	1	43
Newark	12	11	0	0	0	10	1	0	0	28	109
Trenton	2	1	0	0	0	1	0	2	0	2	40
Pennsylvania:											
Philadelphia	46	34	1	0	0	38	4	1	0	69	454
Pittsburgh	16	13	0	0	0	6	1	6	0	14	136
Reading	1	1	0	0	0	0	0	0	0	13	27
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	7	8	1	1	0	16	1	0	0	3	128
Cleveland	20	9	1	1	0	16	2	0	0	43	182
Columbus	4	0	1	0	0	3	0	0	0	5	85
Toledo	8	0	0	0	0	6	1	1	0	21	71
Indiana:											
Fort Wayne	1	0	1	1	0	3	0	0	0	0	20
Indianapolis	3	0	4	1	0	8	1	0	0	14	78
South Bend	1	0	0	0	0	1	0	0	0	0	13
Terre Haute	1	1	0	1	0	1	0	0	0	0	17
Illinois:											
Chicago	61	67	1	0	0	57	4	6	0	67	604
Springfield	1	5	0	1	0	0	0	0	0	11	20
Michigan:											
Detroit	42	59	3	1	0	18	3	1	0	77	235
Flint	3	1	0	6	0	1	1	1	0	2	16
Grand Rapids	4	1	0	0	0	3	0	1	0	1	27
Wisconsin:											
Kenosha	1	1	1	0	0	0	0	0	0	13	4
Milwaukee	14	25	1	0	0	8	0	0	0	28	97
Racine	3	0	1	0	0	1	0	0	0	4	11
Superior	1	0	2	0	0	1	0	0	0	0	16
WEST NORTH CENTRAL											
Minnesota:											
Duluth	4	6	2	1	0	1	0	0	0	5	21
Minneapolis	17	10	4	0	0	2	0	0	0	3	72
St. Paul	9	4	1	0	0	5	0	0	0	41	54
Iowa:											
Davenport	1	0	1	1			0	0		1	
Des Moines	2	0	2	3			0	0		0	
Sioux City	0	0	1	0			0	0		3	
Waterloo	0	3	0	0			0	0		0	

City reports for week ended June 30, 1928—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—continued											
Missouri:											
Kansas	3	8	0	0	0	5	1	0	0	11	92
St. Joseph	0	4	0	2	0	2	0	1	0	6	11
St. Louis	12	19	1	2	0	16	2	3	0	20	207
North Dakota:											
Fargo	0	2	0	0	0	1	0	0	0	7	6
Grand Forks	0	0	0	0	----	----	0	0	----	0	----
South Dakota:											
Aberdeen	1	0	0	0	----	----	0	0	----	0	----
Sioux Falls	1	5	0	0	----	----	0	0	----	0	----
Nebraska:											
Omaha	1	2	3	3	0	5	0	1	0	2	41
Kansas:											
Topeka	0	0	0	2	0	1	1	1	0	5	17
Wichita	0	0	0	6	0	0	0	0	0	7	15
SOUTH ATLANTIC											
Delaware:											
Wilmington	2	3	0	0	0	1	0	0	0	3	29
Maryland:											
Baltimore	13	10	0	0	0	13	4	2	0	65	179
Cumberland	0	0	0	0	0	0	0	0	0	0	6
Frederick	0	0	0	0	0	0	0	0	0	0	5
Dist. of Columbia:											
Washington	9	21	0	0	0	17	2	0	0	12	131
Virginia:											
Lynchburg	0	0	0	0	0	0	0	0	0	3	14
Norfolk	0	8	1	0	0	2	1	0	0	4	----
Richmond	1	1	0	0	0	3	1	1	0	2	45
Roanoke	0	0	1	0	0	0	0	0	0	0	9
West Virginia:											
Charleston	1	0	0	0	0	0	1	0	0	0	14
Wheeling	2	0	0	0	0	0	0	0	0	0	10
North Carolina:											
Raleigh	0	0	0	0	0	1	1	1	1	7	14
Wilmington	0	0	0	0	0	0	0	0	0	3	16
Winston-Salem	0	0	1	0	0	3	1	3	1	0	23
South Carolina:											
Charleston	0	0	0	0	0	1	1	5	1	0	23
Columbia	0	0	0	0	0	0	1	1	1	1	20
Greenville	0	2	0	0	0	0	1	1	0	1	4
Georgia:											
Atlanta	2	3	3	1	0	5	3	3	0	3	79
Brunswick	0	0	0	0	0	0	1	0	0	0	2
Savannah	0	0	0	0	0	4	1	0	0	0	29
Florida:											
Miami	0	0	0	0	0	2	1	0	0	0	26
St. Petersburg	0	----	0	----	0	0	0	----	0	----	9
Tampa	0	0	0	0	0	3	0	2	0	0	23
EAST SOUTH CENTRAL											
Kentucky:											
Covington	0	0	0	0	0	1	0	0	0	0	24
Louisville	3	10	0	0	0	3	2	0	0	1	80
Tennessee:											
Memphis	1	2	1	0	0	7	4	2	0	0	70
Nashville	1	0	0	2	0	5	4	4	1	0	46
Alabama:											
Birmingham	1	0	2	0	0	5	3	5	1	5	70
Mobile	0	1	1	0	0	2	1	8	0	0	14
Montgomery	0	0	1	0	----	----	1	1	----	0	----
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	0	0	0	----	----	0	0	----	1	----
Little Rock	0	3	0	0	0	0	1	0	0	0	----
Louisiana:											
New Orleans	2	5	1	1	1	15	4	7	1	4	138
Shreveport	0	0	0	0	0	2	0	0	0	2	27

City reports for week ended June 30, 1928—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—continued											
Oklahoma:											
Oklahoma City	0	2	2	4	0	1	0	1	0	0	26
Tulsa	1	3	0	0			2	2		5	
Texas:											
Dallas	1	1	1	1	0	3	3	2	0	16	48
Fort Worth	0	1	1	4	0	3	1	0	1	0	34
Galveston	0	0	0	0	0	1	1	0	0	0	8
Houston	1	0	1	0	0	5	1	1	1	0	78
San Antonio	1	1	0	0	0	7	1	0	0	0	55
MOUNTAIN											
Montana:											
Billings	0	0	0	3	0	0	0	1	0	3	3
Great Falls	0	0	1	0	0	0	0	0	0	0	6
Helena	0		0				0				
Missoula	0	0	0	0	0	0	0	0	0	0	9
Idaho:											
Boise	0	0	0	0	0	0	0	0	0	0	7
Colorado:											
Denver	7	5	0	0	0	6	1	0	0	22	73
Pueblo	1	2	0	2	0	1	0	0	0	0	12
New Mexico:											
Albuquerque	0	0	0	0	0	1	0	0	0	0	5
Utah:											
Salt Lake City	2	1	1	11	0	4	0	2	0	15	34
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	8
PACIFIC											
Washington:											
Seattle	6	1	3	1			1	1		9	
Spokane	3	2	3	5			1	0		3	
Tacoma	1	0	3	1	0	0	0	1	0	0	25
Oregon:											
Portland	4	3	7	11	0	2	0	0	0	0	67
California:											
Los Angeles	16	11	4	0	0	24	3	0	0	69	230
Sacramento	1	7	0	1	0	4	2	1	0	4	31
San Francisco	7		1				1				

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									
New Hampshire:									
Concord	0	0	0	0	0	1	0	0	0
Massachusetts:									
Boston	0	1	0	1	0	0	0	0	1
Fall River	0	0	0	0	0	0	0	1	0
MIDDLE ATLANTIC									
New York:									
New York	25	10	2	1	0	0	2	3	0
New Jersey:									
Newark	1	0	0	0	0	0	0	0	0
Pennsylvania:									
Philadelphia	1	1	0	0	0	0	0	0	0
Pittsburgh	0	1	0	0	0	0	0	0	0

City reports for week ended June 30, 1928—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	0	1	0	0	0	0	0	0	0
Cleveland	1	2	1	0	0	0	1	0	0
Columbus	0	0	1	1	0	0	0	0	0
Toledo	2	1	0	0	0	0	0	0	0
Illinois:									
Chicago	8	3	3	1	0	0	0	0	0
Michigan:									
Detroit	4	0	2	0	0	0	0	0	0
Wisconsin:									
Milwaukee	3	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	1	0	0	0	0	0	0	0	0
Iowa:									
Des Moines	0	1	0	0	0	0	0	0	0
Missouri:									
Kansas City	2	2	0	0	0	1	0	0	0
St. Louis	1	0	0	0	0	0	0	0	0
Nebraska:									
Omaha	1	0	0	0	0	0	0	0	0
SOUTH ATLANTIC [1]									
Maryland:									
Baltimore	0	0	0	0	0	0	0	3	0
Virginia:									
Norfolk	3	0	0	0	0	0	0	0	0
North Carolina:									
Wilmington	0	0	0	0	0	1	0	2	0
Winston-Salem	0	0	0	0	0	1	0	0	0
South Carolina:									
Charleston	0	0	0	0	4	2	0	0	0
Columbia	0	0	0	0	0	1	0	0	0
Georgia:									
Savannah [1]	0	0	0	0	4	0	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	0	0	0	0	0	1	0	0	0
Nashville	1	0	0	0	2	0	0	0	0
Alabama:									
Birmingham	0	0	0	0	1	2	0	0	0
Montgomery	0	0	0	0	2	0	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock	0	0	0	0	0	1	0	0	0
Louisiana:									
New Orleans	0	0	0	0	9	3	1	0	0
Shreveport	0	0	0	0	0	1	0	0	0
Texas:									
Dallas	0	0	0	0	1	0	1	0	0
Fort Worth	0	1	0	1	0	1	0	0	0
Houston	0	0	0	0	0	0	0	1	0
MOUNTAIN									
Colorado:									
Denver	1	1	0	0	0	0	0	0	0
Pueblo	0	1	0	0	0	0	0	0	0
Utah:									
Salt Lake City	1	1	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Tacoma	0	0	0	0	0	0	0	1	0
California:									
Los Angeles	0	0	0	0	0	0	1	1	0

[1] Typhus fever: 2 cases; 1 at Savannah, Ga., and 1 at Tampa, Fla.

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended June 30, 1928, compared with those for a like period ended July 2, 1927. The population figures used in computing the rates are approximate estimates as of July 1, 1928 and 1927, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had estimated aggregate populations of approximately 31,657,000 in 1928 and 31,050,000 in 1927. The 95 cities reporting deaths had nearly 30,961,000 estimated population in 1928 and nearly 30,370,000 in 1927. 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, May 27 to June 30, 1928—Annual rates per 100,000 population compared with rates for the corresponding period of 1927 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	June 2, 1928	June 4, 1927	June 9, 1928	June 11, 1927	June 16, 1928	June 18, 1927	June 23, 1928	June 25, 1927	June 30, 1928	July 2, 1927
101 cities	122	158	134	[2] 161	[3] 146	150	[4] 117	161	[5] 114	140
New England	99	160	97	133	115	119	78	116	[6] 65	92
Middle Atlantic	178	234	220	247	242	216	185	269	186	212
East North Central	105	123	108	125	123	141	118	132	116	119
West North Central	84	81	53	81	[7] 69	79	62	46	53	59
South Atlantic	93	126	98	[2] 124	[8] 66	117	58	106	37	143
East South Central	45	61	20	20	[10] 29	41	25	35	10	20
West South Central	56	66	60	45	52	54	52	66	48	120
Mountain	71	179	35	368	44	206	[4] 39	152	[8] 18	126
Pacific	107	128	115	125	110	115	72	112	[11] 86	76

MEASLES CASE RATES

101 cities	1,215	447	1,023	[2] 425	[3] 865	360	[4] 652	301	[5] 498	271
New England	1,129	314	952	458	995	407	933	328	[6] 898	342
Middle Atlantic	2,164	282	1,767	298	1,399	281	1,102	247	653	200
East North Central	661	324	688	295	678	261	424	213	474	206
West North Central	752	459	594	372	[7] 539	247	341	216	382	204
South Atlantic	1,021	1,001	833	[2] 847	[8] 599	691	470	529	361	446
East South Central	1,037	380	763	157	[10] 458	132	449	132	150	81
West South Central	176	496	60	418	112	265	44	128	32	149
Mountain	991	619	734	565	681	341	[4] 262	448	[8] 406	493
Pacific	217	1,094	174	1,136	110	969	143	841	[11] 104	773

SCARLET FEVER CASE RATES

101 cities	206	219	199	[2] 240	[3] 166	198	[4] 144	189	[5] 105	128
New England	248	288	290	323	223	265	170	237	[6] 197	221
Middle Atlantic	200	255	190	286	162	223	146	222	100	148
East North Central	228	212	237	247	220	215	181	209	116	131
West North Central	232	236	177	194	[7] 150	162	138	158	113	89
South Atlantic	184	78	149	[2] 109	[8] 108	81	93	96	84	81
East South Central	284	101	259	66	[10] 80	71	85	81	65	56
West South Central	144	21	92	33	44	8	44	37	40	17
Mountain	77	780	106	717	71	663	[4] 29	439	[8] 72	287
Pacific	148	185	156	204	156	180	161	138	[11] 75	86

[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, 1928, and 1927, respectively.
[2] Greenville, S. C., not included.
[3] Waterloo, Iowa, Norfolk, Va., Greenville, S. C., and Louisville, Ky., not included.
[4] Billings and Great Falls, Mont., not included.
[5] Hartford, Conn., Helena, Mont., and San Francisco, Calif., not included.
[6] Hartford, Conn., not included.
[7] Waterloo, Iowa, not included.
[8] Helena, Mont., not included.
[9] Norfolk, Va., and Greenville, S. C., not included.
[10] Louisville, Ky., not included.
[11] San Francisco, Calif., not included.

Summary of weekly reports from cities, May 27 to June 30, 1928—Annual rates per 100,000 population compared with rates for the corresponding period of 1927—Continued

SMALLPOX CASE RATES

	Week ended—									
	June 2, 1928	June 4, 1927	June 9, 1928	June 11, 1927	June 16, 1928	June 18, 1927	June 23, 1928	June 25, 1927	June 30, 1928	July 2, 1927
101 cities	13	21	11	[2] 20	[3] 10	19	[4] 7	16	[5] 10	18
New England	0	0	0	0	0	0	0	0	[6] 0	0
Middle Atlantic	0	0	0	0	0	0	0	0	0	0
East North Central	10	33	9	21	11	21	9	12	9	21
West North Central	29	24	21	32	[7] 24	30	23	57	31	38
South Atlantic	12	32	30	[2] 20	[8] 13	36	4	29	2	18
East South Central	45	91	25	106	[10] 58	56	20	56	10	35
West South Central	24	17	24	8	20	12	24	12	8	12
Mountain	53	36	71	27	44	54	[4] 10	90	[8] 144	63
Pacific	49	60	13	91	18	65	15	21	[11] 29	73

TYPHOID FEVER CASE RATES

101 cities	12	13	9	[2] 11	[3] 7	13	[4] 7	11	[5] 16	15
New England	57	9	2	5	2	12	9	2	[6] 25	7
Middle Atlantic	1	5	10	6	2	6	1	4	8	6
East North Central	3	7	7	6	3	8	2	6	6	5
West North Central	4	12	4	14	[7] 4	6	4	6	12	8
South Atlantic	16	29	11	[2] 18	[8] 17	27	12	40	33	22
East South Central	65	61	10	41	[10] 44	81	40	61	100	132
West South Central	32	37	32	33	36	37	28	21	40	74
Mountain	0	9	9	0	9	18	[4] 0	18	[8] 27	9
Pacific	18	26	10	21	20	8	15	8	[11] 11	16

INFLUENZA DEATH RATES

95 cities	20	7	17	[2] 6	[12] 11	5	[4] 6	7	[5] 7	3
New England	16	2	14	0	14	2	5	5	[6] 5	5
Middle Atlantic	24	9	19	5	11	5	9	6	6	2
East North Central	21	4	17	4	14	5	6	5	5	3
West North Central	14	6	14	4	4	2	0	10	8	2
South Atlantic	9	16	9	[2] 9	[8] 8	9	7	2	5	5
East South Central	26	5	52	11	[10] 31	5	5	27	37	0
West South Central	25	17	33	25	16	17	4	4	12	4
Mountain	44	0	0	9	9	9	[4] 0	27	[8] 18	9
Pacific	7	3	7	7	7	0	3	10	[11] 5	3

PNEUMONIA DEATH RATES

95 cities	145	93	126	[2] 93	[12] 111	87	[4] 85	74	[5] 75	73
New England	172	116	168	88	136	107	90	86	[6] 67	60
Middle Atlantic	182	107	147	112	132	95	110	85	89	71
East North Central	130	79	115	93	111	86	60	71	63	80
West North Central	59	58	63	50	86	48	43	52	47	77
South Atlantic	137	112	130	[2] 64	[8] 79	60	93	45	72	56
East South Central	204	53	157	117	[10] 117	74	78	58	110	101
West South Central	127	81	107	102	74	93	86	42	70	72
Mountain	106	72	88	90	53	152	[4] 97	54	[8] 53	90
Pacific	71	97	81	83	88	100	84	131	[11] 103	69

[2] Greenville, S. C., not included.
[3] Waterloo, Iowa, Norfolk, Va., Greenville, S. C., and Louisville, Ky., not included.
[4] Billings and Great Falls, Mont., not included.
[5] Hartford, Conn., Helena, Mont., and San Francisco, Calif., not included.
[6] Hartford, Conn., not included.
[7] Waterloo, Iowa, not included.
[8] Helena, Mont., not included.
[9] Norfolk, Va., and Greenville, S. C., not included.
[10] Louisville, Ky., not included.
[11] San Francisco, Calif., not included.
[12] Norfolk, Va., Greenville, S. C., and Louisville, Ky., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1928 and 1927, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1928	1927	1928	1927
Total	101	95	31,657,000	31,050,300	30,960,700	30,369,500
New England	12	12	2,274,400	2,242,700	2,274,400	2,242,700
Middle Atlantic	10	10	10,732,400	10,594,700	10,732,400	10,594,700
East North Central	16	16	7,991,400	7,820,700	7,991,400	7,820,700
West North Central	12	10	2,683,500	2,634,500	2,566,400	2,518,500
South Atlantic	21	21	2,981,900	2,890,700	2,981,900	2,890,700
East South Central	7	6	1,048,300	1,028,300	1,000,100	980,700
West South Central	8	7	1,307,600	1,260,700	1,274,100	1,227,800
Mountain	9	9	591,100	581,600	591,100	581,600
Pacific	6	4	2,046,400	1,996,400	1,548,900	1,512,100

FOREIGN AND INSULAR

PLAGUE ON VESSEL

Steamship "Aloe"—From Bunbury, West Australia—At Durban, Union of South Africa—May 19, 1928.—Under date of May 19, 1928, a case of plague was reported on the steamship *Aloe* at Durban, Natal, Union of South Africa. The *Aloe* left Bunbury, Western Australia, April 18, 1928, arriving at Port Natal May 12.

ANGOLA

Communicable diseases—April, 1928.—During the month of April, 1928, communicable diseases were reported in Angola as follows:

Disease	Coast district	Land frontier	Interior	Total
Ancylostomiasis	12	61		73
Beriberi	13	1		14
Bilharzia	7	1	11	19
Chicken pox	16	1		17
Dengue				1
Diphtheria	1			1
Dysentery	25	8	6	39
Hemoglobin fever	12		7	19
Influenza	143	258	50	451
Leprosy	3			3
Malaria	451	450	237	1,138
Measles	47			47
Meningitis	1			1
Mumps	2		2	4
Pneumonia	33	6	14	53
Puerperal fever		2		2
Relapsing fever		5		5
Scabies	32			32
Smallpox	7			7
Tetanus	2			2
Trypanosomiasis	110	118	34	262
Tuberculosis	28	3	3	34
Typhoid fever	1			1
Venereal diseases	146	120	32	298
Whooping cough	16		72	88
Yaws	216	30	39	285

Population: 4,119,000.

BRAZIL

Yellow fever—June 1–July 14, 1928.—The Health Department of Brazil reports the following cases of yellow fever from June 1 to July 14, 1928: Bahia, 3 cases; Sergipe State, 3; Pernambuco, 2; Rio de Janeiro, 72 cases.

CANADA

Quebec Province—Communicable diseases—Week ended June 30, 1928.—The Bureau of Health of the Province of Quebec reports cases of certain communicable diseases for the week ended June 30, 1928, as follows:

Disease	Cases	Disease	Cases
Chicken pox	10	Scarlet fever	66
Diphtheria	58	Smallpox	32
German measles	2	Tuberculosis	74
Measles	64	Typhoid fever	8

HAWAII TERRITORY

Rodent plague—Hamakua—May 29, 1928.—The occurrence of a case of rodent plague was reported at Hamakua, Island of Hawaii, May 29, 1928.

JAPAN

Tokyo, city and prefecture—Dysentery—April 22–June 2, 1928.—During the six weeks ended June 2, 1928, dysentery was reported in the city and prefecture of Tokyo, Japan, as follows: City, cases, 175; deaths, 77; prefecture, outside of city, cases, 339; deaths, 174. Population: City, 1,995,567; prefecture, 2,489,577.

PARAGUAY

Asuncion—Plague—July 7–12, 1928.—During the period from July 7 to 12, 1928, five cases of plague with two deaths were reported at Asuncion, Paraguay.[1] The infection was stated to have been traced to a carrier from Argentina.

UNION OF SOUTH AFRICA

Cape Province—Typhus fever—May 13–19, 1928.—During the week ended May 19, 1928, fresh outbreaks of typhus fever were reported at several localities in Ngqeleni District, and one locality, Xalanga District, Cape Province, Union of South Africa.

Prevalence during month of April, 1928.—During the month of April, 1928, 135 cases of typhus fever with 18 deaths were reported in the native or colored population of the Union of South Africa, distributed as follows: Cape Province—cases, 132; deaths, 18; Natal—cases, 2; Orange Free State—1 case.

Occurrence in the European population.—During the period under report four outbreaks of typhus in European or white population were reported, of which two were in the Cape Province and two in the Orange Free State.

[1] See Public Health Reports for July 13, 1928, p. 1876.

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

From medical officers of the Public Health Service, American consuls, 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		Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Week ended— April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16	23
China:																		
Canton	C	12	1				1							1	1	1		
	D	11	1				1							1	1	1		
Swatow	C	P																
	D	P																
Tientsin	C	P	1															
Dutch East Indies: Java—Batavia	C	28	3															
	D	18	3															
India	C	23,047	25,139	15,377	12,391	13,236	21,279	7,746	7,897	8,176	8,743	8,996	7,386					
	D	12,863	15,026	8,863	6,750	7,282	11,877	4,920	5,157	4,980	5,375	5,746	4,996					
Bassein	D				1	2	51	20	6	6	9	9	16	8	7		8	
Bombay	C	2			1	1	3					1						
	D	2				1	3											
Calcutta	C	199	428	156	203	341	664	163	131	152		200	126					
	D	138	281	125	112	241	442	111	97	105	115	126	102	92	90		85	
Madras	C	13	1	1	2	14	10	5	5	5	7	7	6	10	4			
	D	7	2	1	4	18	4	4	5	4	5	3	4	5	4	6	1	
Madras Presidency	C	3,073	3,702	1,864	4,681	2,961	1,483											
	D	1,736	2,104	984	2,660	1,618	812											
Negapatam	C				4	4												
	D				6	4		1			1							
Rangoon	C	2	8	4	6	29	22	5	10	7	1		4					
	D	5	6	3	2	18	16	2	7	5	1		3		2	5	2	
Tuticorin	C		8				10	43	45	19	3							
	D	37	14				9	26	32	10	3							
India (French):																		
Chandernagor	C	6	10	14	6	5	7											
	D	6	10	9	1	5	6											
Karikal	C	1	1	8	32	6		1										
	D	1	1	4	19	5		1										
Pondicherry	C	1	25	11	12	33	1	2	3	2	1							
	D	1	21	12	10	19	1	2	3	2	1							

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

CHOLERA—Continued

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

Place		Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Week ended— April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16	23
Indo-China (see also table below):																		
Saigon	C			3	4	16	96	50	28	23	15	10		4	1	5	1	
	D			1	1	8	59	37	17	12	10	7		2		1		
Tourane	C																1	
	D																1	
Iraq [1]																		
Kwangchow-Wan (see table below).																		
Siam	C	110	88	110	200	295	291	120	85	88	56	46	25					
	D	76	64	80	139	214	218	84	61	63	26	29	18					
Ayudhaya	C															2		
	D															1		
Bangkok	C	4	3	21	101	60	60		30	24	20	17	14	11	8	3	3	1
	D	2	2	11	66	36	33		13	14	8	6	9	7	4		2	2
Trad	C																1	
Straits Settlements: Singapore	C	7	5	23	3		2			1								
	D	5	4	12	1		2			1								
On vessel:																		
S. S. Hawaii Maru at Singapore from Saigon, French Indo-China	C						11											

Place		July–September, 1927	October–December, 1927	January, 1928	February, 1928 1–10	11–20	21–29	March, 1928 1–10	11–20	21–31	April, 1928 1–10	11–20	21–30	May, 1928 1–10	11–20	21–31	June 1–10, 1928
Indo-China (French) (see also table above):																	
Annam	C	3,179	370	267	23	36	14	18	18	23	17	11	18	4	26	13	22
Cambodia	C	251	337	54	38	22	51	33	22	92	43	102	51	34	47	20	28
Cochin-China	C	469	391	295	178	113	153	206	217	245	277	316	240	140	139	125	143
Laos	C	246	77														
Tonkin	C	1,297	3	1							1	4	1	9	1	16	8
Kwangchow-Wan	C	16													16		

[1] From July 19 to Dec. 26, 1927, 1,479 cases of cholera were reported in Iraq, with 1,063 deaths.

PLAGUE

Place		Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Week ended— April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16	23	30
Algeria (see also table below):																		
Algiers	C									1								
Oran	C										1				2			
Arabia: Aden	C		19	178	343	651	108	59	34	13	5	1	1				1	
	D		7	104	206	529	97	48	30	16	7	1	1				1	
Plague-infected rats				P	P													
Argentina:																		
Avellaneda	C													1				
	D													1				
Bahia Blanca district	C	3																
Buenos Aires [1]	C			2							(1)	6						
	D											3				1		
Cordoba Province	C	10	2				5											
Entre Rios	C														2	1		
Firmat	C	1																
Loreto	C													3				
Quilino	C	3																
Rosario	C	4	5	4	1								1					
Santa Fe	C														7	1	1	
Santiago del Estero	C				1										9	1		
Suardi	C													2				
Ucacha	C	1																
Azores: St. Michaels Island	C	3	2	8	3	3		2	1	2		1			1			
	D	1	1	4	1	2		1	1			1			1			
Brazil:																		
Bahia	C		4	5	8	2	1											
	D		4	4	5													
Porto Alegre	C				2													
Rio de Janeiro	C			4	3	3												
	D			1	2	3												
Plague-infected rats				1														
British East Africa (see also table below):																		
Tanganyiki	C	P	P	2	3													
	D			2	3		5		5									
Uganda	C	67	79	23	13													
	D	61	64	18	10													

[1] 6 cases of plague reported in Buenos Aires, Argentina, before May 14, 1928.

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

PLAGUE—Continued

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

Place		Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Week ended— April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16	23	30
Canary Islands:																		
Arrecife	C											1						
	D											1						
Las Palmas	C	3	3	1	1	4												
	D	1	1	1	1													
Teneriffe	C				10													
	D				4													
Ceylon: Colombo	C	6	7	3	11	7				1	1	2		1	2			
	D	6	6	2	6	5				1	1	1			2			
Plague-infected rats			2	5	6													
China:																		
Amoy	C										1	1	2	1				
Hong Kong	C									2							1	
Dutch East Indies:																		
Balik-Papan	C		1															
	D		1															
Celebes—Makassar	C	2	6	5	1													
	D	2	5	5	1													
Java	D	1,017	754	737	454													
Batavia and West Java	C	154	128	137	103	80	13	10	14	10	25	17						
	D	152	128	135	103	80	13	10	14	10	25	17						
Cheribon	C	1																
	D	1																
Plague-infected rats						3	1	3	2	1	1	4	2	2	2	1		
East Java and Madura	C	8	7	7		4	1	2		1								
	D	8	7	7		4	1	2		1								
Kedoe Residency	C						P											
Pasoeroean Residency	C	P																
Surabaya Residency	C	P				1				1								
	D					1				1								
Surakarta Residency	C	P																
Ecuador (see also table below):																		
Alausi	C										1							
Egypt:																		
Alexandria [2]	C	12	5	2	1								1					
	D	7	2	2	1								2					

Beni-Souef	C								4	8	4	14	34	17	14	3	4	4
	D								1	2	4	6	8	5	7		2	
Cairo	C		2															
	D		2															
Maghagha District	C							1										
	D							1										
Menufia	C												6	5				
	D													2				
Minieh Province	C							32	9	7	13	15	36	12	22	23	21	10
	D							5	4		5	2	9	1	9	5	7	3
Suez	C		1	4	13	14		3	2			1	2					
	D		1	2	9		9	2	2			1						
Plague-infected rats						2												
Tanta	C											1						
	D											1						
Greece:																		
Athens and Piræus	C		3															
	D		1															
Corfu	C															1	14	
	D																3	
Mitylene	C	3													1			
Hawaii Territory: Hawaii	D				1													
Hamakua—Plague-infected rats															1			
Honokaa—Plague-infected rats		1													1			
Paauhau—Plague-infected rats			2															
India	C	5,518	7,697	12,652	23,174	26,079	6,690	5,080	4,143	2,565	1,582							
	D	3,269	4,925	8,521	16,998	20,907	5,911	4,719	3,796	2,648	1,504							
Bassein	D	4	17	8	12	22	4	5	1	3	2			1	12	1	1	
Bombay	C		3	14	33	69	17											
	D		3	9	33	61	15	14	19	21	17	14		6	5	1	13	
Calcutta	C		2															
	D			1		2												
Madras Presidency	C	791	550	452	271	62	14	6		1			1					
	D	359	206	256	212	48	7	5										
Rangoon	C	15	17	35	48	30	5	2	5	4	3	3						
	D	15	16	30	43	26	5	1	3	5	3	3		4	3	8	10	
Indo-China (see also table below):																		
Saigon	C															5		
	D															1		
Plague-infected rats																2		
Iraq:																		
Baghdad	C			4	2	5	1	4	4	2	4	3	4	2	3	2	3	1
	D			2	2	5	1		4	1		1	1	1	1	1	1	1
Plague-infected rats									4		3							
Dulaim Liwa	C			1			1											
Kwangchow-Wan (see table below).																		
Madagascar (see table below).																		
Nigeria (see also table below):																		
Lagos	C	18	10	10	8	7	2	6	7	2	4	8	6	10	11	10	14	
	D	13	8	11	8	6	2	7	7	2	4	8	6	10	10	10	14	

[1] 1 case of bubonic plague and 4 suspected cases were reported at Alexandria, Egypt, July 4, 1928.

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

PLAGUE—Continued.

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

Place		Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Week ended— April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16	23	30
Paraguay: Asuncion.[3]																		
Peru (see table below).																		
Senegal (see also table below):																		
Baol	C	P																
Thies and vicinity	C					8												
	D					4												
Siam	C	3	16	20	42	33	6	11	8	2	3	6						
	D	2	11	12	36	30	4		6	3	2	5						
Ayudhaya	C													2				
	D													1				
Bangkok	C		1	2	1	1		3	1									
	D		1	2	1	1		2										
Nagara	C													1				
Straits Settlements: Singapore	C			1	3	1												
	D			1	2	1												
Syria (see table below).																		
Tunisia.[4]																		
Turkey: Constantinople	C	2																
	D	1																
Union of South Africa:																		
Cape Province	C	2		1														
	D	1		1														
Orange Free State	C	8		5	5	5												
	D	6		4	1	5												
Union of Soviet Socialist Republics:																		
Astrakhan—Axary District	C															3		
	D															2		
Venezuela: State of Miranda—Tacata and Cua	C				P													
On vessel:																		
S. S. Cadwallen, at La Plata, from Rosario, Argentina	C		1															
S. S. Tymeric, at Barbados, from New Orleans	C												1					

Place		October–December, 1927	January, 1928	February, 1928	March, 1928	April, 1928	May, 1928	June, 1928
Algeria (see also table above):								
Algiers	C	2					1	
Angola	C	3						
British East Africa (see also table above):								
Kenya	C	62	26	24	19	17	11	
	D					5		
Ecuador: Guayaquil	C	18	4	6	10		1	
	D	5	4	3	1			
Plague-infected rats		31	23	31	21		1	
Indo-China (see also table above)	C	10	7		5	9	16	
Kwangchow-Wan	C				18	17	10	
Madagascar	C	692	427	342	171			
	D	605	388	317	159			
Ambositra Province	C	25	105	67	30			
	D	17	96	66	29			
Antisirabe Province	C	109	117	108	56			
	D	108	117	108	54			
Itasy Province	C	104	33	19	3			
	D	94	29	17	3			
Madagascar—Continued.								
Moramanga Province	C	95	19	25	12			
	D	83	19	24	12			
Tananarive Province	C	408	155	123	70			
	D	354	129	102	61			
Nigeria (see also table above)	C	63	16	16				
	D	61	16	16				
Peru	C	34		41	52			
	D	11		14	9			
Callao	D	3						
Lima	C	7	6					
	D	3						
Senegal (see also table above)	C		5	17	8	81	216	
	D			13	4	40	115	
Rufisque	C						17	15
	D						9	11
Thies	C					30	72	52
	D					23	40	40
Tivaouane	C					51	105	98
	D					28	57	51
Syria: Beirut	C	2						1

[3] 5 cases of plague, with 2 deaths, were reported at Asuncion, Paraguay, July 12, 1928

[4] 8 cases of plague with 6 deaths were reported in Bengardane region, Tunisia, Mar. 17 to 27, 1928.

PLAGUE RATS ON VESSELS

S. S. *Modemi* at Goteborg, Sweden, from Bahia and Buenos Aires via Cape Verde Islands, December 22, 1927.
S. S. *Gydevore* at Landskrona, Sweden, from Rosario via Canary Islands, January 22, 1928.
S. S. *Dryden* at Liverpool from La Plata River ports, January 20, 1928.
S. S. *Sicily* at Liverpool from Buenos Aires and Rosario, June 8, 1928, 7 plague-infected rats.

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

SMALLPOX

as cases; D, deaths; P, present]

Place		Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Week ended— April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16	23
Algeria (see also table below)	C	661	170	129	71	72	3	12										
Algiers	C		3	9	15	10	5		2		2	1	1	3		1	7	
Oran	C	20	39	29	11	5	12	3	1	2	11	4	1				4	
Angola (see table below).																		
Arabia: Aden	C	1	3	1		1												
Brazil (see also table below):																		
Rio de Janeiro	C	1					1											
	D	1					1											
British East Africa (see also table below):																		
Kenya—Mombasa	C						2				1							
Tanganyiki	D	P	P	8	5													
British South Africa:																		
Northern Rhodesia	C	185	252	236	233	297	67	26	7	4	591	5						
	D	64	62	31	23	42	9	1	1	1	48	1						
Southern Rhodesia	C	3	2	1	3	7	7	21	3			13					13	
	D					1		10										
Canada:																		
Alberta	C	10	10	11	27	10	47	4	2	3	3	13	10	18	1	4	1	
Calgary	C						1											
Edmonton	C	1	8	5	3	13	20	2			1	12	10				1	
British Columbia—Vancouver	C		4	8	26	10	17	11	6	1	6	4	2	5		1		
Manitoba	C	19	7	11	1						7		1	3		10		
Winnipeg	C	2	2	2	2													
New Brunswick	C			1		1							1				7	
Ontario	C	264	347	212	243	147	83	6	18	18	8	15	12	6	8	5	8	14
Hamilton	C		2															
Kingston	C	1		1	1			2		1								
Ottawa	C	134	63	60	68	22	26		3	1		4	2			1		
Toronto	C	34	39	28	20	14	9	2	4	4	1	2	7		3		3	
Quebec	C	25	16	44	26	54	112	21	25	4	33	13	31	15	19	21	14	14
Montreal	C	1		8	8	9	9		6	2	1			1	2	3	2	3
Quebec	C		4	10	16	13	10	3	7	5	8	7	17	9	14	17	11	10
Riviere du Loup	C	3																
Sherbrooke	C						3										4	

Saskatchewan	C	34	58	52	97	22	33	2	23	15	12	12	13	3			4	3
Moose Jaw	C		1	4	11	13	7	3					1					
Regina	C	1	1				3	3	2		3	1						
Saskatoon	C		2	4	15	2												
Ceylon: Colombo	C	1	2		4	6	1											
	D		1		1		1											
China:																		
Amoy	C					1	6	3	2	1	3	1		1	1			
Antung	C			1					1		2							
Canton	C					2	7	1	1			1		1				
Chefoo	C		P				P											
	D					1												
Foochow	C	P	P	P	P	P	P	P	P	P	P							
Hong Kong	C			1	2	7	32	4	4	9	8	8	10	3	9	9	2	2
	D			1	2	4	19	7	2	10	7	11	5	4	3	12	3	
Manchuria—																		
Changchun	C		1		4			2		1	1	3			3			
Dairen	C	2	1	5	15	13	15	7	3	6		12	10	13		14	11	12
	D				8	7	8									7	4	2
Fushun	C	1														4	2	
Harbin	C		2	1	5	7	7	2	3	2	3	14		11				
Mukden	C	1			4	21	1		3	1					3	1	3	1
Penshu	C															1		
	D															1		
Shanghai—																		
Foreigners only	C				5	6	7		1	1	1	2	1	3		4		
Including natives	D				11	19	9	3	1	3	2	1	7	5	6	2	6	3
Tientsin	C	8	9	8	48	20	13	9	1	3	4	5	1	1				
Chosen (see table below).																		
Curacao (alastrim)	C				2	3												
Dominican Republic: Santo Domingo	C						2				1							
Dutch East Indies:																		
Belawan Deli	C																	9
	D																	3
Borneo—																		
Pontianak	C					1												
Samarinda district	C	P																
Java—																		
Batavia and West Java	C	25			4	2	5	1				2						
	D	15																
East Java and Madura	C	9	9	5	2	9		1			1							
	D					1		2										
Sumatra—Medan	C		3	9	23	14	7				2		1	5				
	D		2	3	11	2	5	2			1		1	2				
Ecuador (see table below).																		
Egypt	C		4	4	1	2	52	11		1		1						
	D		1				33	6		1				1				
Cairo	C		2		1													
France (see table below).																		
Gold Coast (see table below).																		

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

SMALLPOX—Continued

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

Place		Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 15, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Week ended— April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16	23
Great Britain:																		
England and Wales	C	902	1,041	1,175	1,530	1,473	1,341	321	326	376	321	319	336	258	286	365	282	230
Birmingham	C				44	3	1	1									2	
Bradford	C	11	19	32	24	12	19	3	2	7	2	2	7	2	8	6		
Bristol	C	4	8		3	4	12	1	10	1	5	4	1	4	1	1		
Cardiff	C	1		1			5			1	2		1		1			
Castleford	C					4	36	27	11	20	11	11	6	4	3	5	4	
Leeds	C	5	16	11	3	9	14	2	2	1	1					3	4	
Liverpool	C			1		1												
London	C				4	14	17	7	5	3	27	5	10	5	5	49	24	
Manchester	C	6	25	5	25	8	14	2	4	2		1	1	2	1	1		
Newcastle on Tyne	C	9	55	22	27	12	9			4		1	6	3	2	3	2	
Nottingham	C			13	27	11	13	4	4	6	3	5	10		5	2	1	
Sheffield	C	6	9	14	8	6	1		10	2	2	2			2		1	
Stoke on Trent	C			4	1	15	12	4	10	5	13	9	8	6	1	4	2	
Greece (see table below).																		
Hedjaz	C														6	3		
	D														2			
India	C	4,052	6,731	10,676	17,777	18,850	28,084	8,789	8,038	7,308	6,220	6,558	5,978					
	D	927	1,650	2,429	3,709	3,826	5,540	1,988	1,739	1,601	1,341	1,334	1,358					
Bassein	C				1						1							
Bombay	C	4	9	14	61	149	218	56	57	54	33	46	37	26	27	19	15	20
	D	3	2		24	73	120	32	34	27	25	25	23	18	13	15	8	12
Calcutta	C	5	25	36	58	71	134	49	51	31	40	41	29	31	29		22	23
	D	2	11	27	34	50	104	32	42	21	35	30	26	23	22		16	20
Karachi	C					1	1				2			3				
	D					1					1			1				
Madras	C	7	11	21	74	100	183	49	36	60	24	17	22	11	9	6	9	7
	D	2	3	6	8	19	29	16	8	7	7	5	5	3	5	3	1	2
Negapatam	C			5	8	3		1		5	1	3	4	1			9	4
	D			3	3			1		2			1			2	2	2
Rangoon	C	6	14	136	275	377	320	62	45	37	23	15	8	6	7	5	3	5
	D	1	4	31	64	104	102	24	17	12	16	4	2	2	5	2	1	1
Tuticorin	C											3						
Vizagapatam	C			3	10	2	3		2			2		1		4	4	
	D				8									1				3

India (French):																		
Chandernagor	C						5				5							
	D						1				1							
Pondicherry	C	42	41	65	47	9	18	12		15	9	16		7	9	6	3	2
	D	42	41	50	47	9	18	12		15	9	16		6	1	6	3	2
Indo-China (see also table below):																		
Saigon	C		1	3		3												
Iraq:																		
Baghdad	C	5	25	23	19	7	5	1	3		1	6		3	7	3	3	7
	D	4	14	12	11	4	4	1	1		1	1		2	3	1	1	7
Basra	C	3	4	2	1	7	5		1	1	2		1	2				1
	D	1	3	1			2		1	1			1	2				1
Italy:																		
Leghorn	C					1	1											
Palermo	C						5	1	3	3	3	2		4		4	6	
Rome and vicinity	C				3													
Ivory Coast (see table below).																		
Jamaica (outside Kingston) (alastrim)	C	7	3	2	5	10	13		1	2	1		1	1		1		2
Japan:																		
Kobe	C												6	3	2			
Nagoya	C									1	5	2						
Osaka	C																	2
Tokyo	C				4	4	15	8										
	D				1	2	1	1										
Tokyo prefecture	C						24	1										
	D						1	1	1									
Yokohama	C									1	1	1	1	1				
	D												1					
Latvia (see table below).																		
Mauretania	C					P												
Mexico (see also table below):																		
Acapulco	C	1										2						
	D	1										2						
Chihuahua	D			1														
Jalisco (State)	C					P	P	P	P	P								
Guadalajara	D		2			1	2	2	1	4	5	7	4		2	4	2	2
Manzanillo	D			1			1											
Mazatlan	D												2		1	1	1	
Mexico City and surrounding territory	C		4		2	1				1		1		1				
Saltillo	D											1	1			1		1
Tampico	C					1												
Morocco (see table below).																		
Nigeria (see also table below):																		
Lagos	C						1											
Southern Provinces	C					7	93											
	D						35											
Palestine: Jerusalem	C		1		1													
	D				1													
Persia (see table below).																		
Poland	C		1	6	3	1	1		5	2	2				1			
	D								1									

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

SMALLPOX—Continued

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

Place		Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Week ended— April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16	23
Portugal (see also table below):																		
Lisbon	C	4	10	12	12	20	8		3	2	1	3		3	1	2		
	D		1			1												
Oporto	C									1								
Senegal (see also table below):																		
Dakar	C					34	29	5	11			12	7	5				
	D						20		8			4	3					
Siam	C	1	9	23	35	12	28	1		3	6	1	7					
	D		1	2	4	3	4	1		1	1							
Bangkok	C	1	1	3						1								
	D			1														
Spain (see also table below):																		
Malaga	D	1	1															
Seville	C			1														
Valencia	C			2		1	2											
Straits Settlements—Singapore	C	1			1	1	1	2	1							1		
Sudan (Anglo-Egyptian)	C			4	85	109	332	29	18	78	35	39	7	75	47	22		
	D			4	48	27	109	6	8	4	14	4	1	6	9	7		
Sudan (French) (see table below).																		
Switzerland	C			2														
Syria (see table below).																		
Taiwan: Keelung	C																	1
Tunisia: Tunis	C			4	3	14	4		4		2		1		2	1		
Union of South Africa:																		
Cape Province	C				P													
Natal	C				P	P	P											
Orange Free State	C	P	P	P	P		P					P						
Transvaal	C	1								P	P							
Union of Soviet Socialist Republics (see table below).																		
Upper Volta	C					5	2	P		4	5							
Venezuela:																		
Maracaibo	C				1													
	D				1	1												

On vessel:																		
S. S. Arendskerk at Singapore, from Amoy, China	C						P											
S. S. Kashgar at Kobe, from Shanghai	C										P							
S. S. Rohna at Penang from Negapatam	C													P				
S. S. Tilleboct at Hong Kong, from Shanghai	C										P							
S. S. Yarmouth at Kingston, Jamaica, from Habana, Cuba	C						1											

Place		July–September, 1927	October–December, 1927	January, 1928	February, 1928	March, 1928			April, 1928			May, 1928			June 1–10, 1928
						1–10	11–20	21–31	1–10	11–20	21–30	1–10	11–20	21–31	
Algeria (see also table above)	C	1,217	682												
Oran	C	51	11												
Indo-China (French) (see also table above)	C	68	97	58	171	57	71	69		35		36	6	37	47
Ivory Coast	C												7		
Senegal (see also table above)	C									51				20	3
	D									7				9	
Dakar	C									11		12	7	5	4
	D									8		4	3		
Sudan (French)	C			4	6	P	5			4		30	P	P	20
	D											6			
Syria:															
Aleppo	C		1	1											
Beirut	C		2	15	57	12	7	4	3	5	1	2	3	2	
	D							2	1						
Damascus	C		47	13			1								

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

SMALLPOX—Continued

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

Place		July-September, 1927	October-December, 1927	January, 1928	February, 1928	March, 1928	April, 1928	May, 1928
Angola	C	51	151	10	36	1	.....	.....
	D	.....	2	.....	.....	.....	.....	.....
Congo	C	5	77	.....	36	.....	.....	.....
Cuanza-Norte	C	1	.....	.....	.....	1	.....	.....
Cuanza-Sul	C	.....	9	10	.....	.....	.....	.....
Loanda	C	1	.....	.....	.....	.....	.....	.....
Zaire	C	3	5	.....	.....	.....	.....	.....
Brazil (see also table above):								
Porto Alegre	C	11	5	.....	1	.....	.....	.....
British East Africa (see also table above):								
Zanzibar	C	.....	2	.....	.....	.....	.....	.....
	D	.....	1	.....	.....	.....	.....	.....
Chosen	C	21	4	4	21	23	.....	.....
	D	6	1	2	8	6	.....	.....
Seoul	C	.....	.....	.....	.....	1	.....	.....
Ecuador: Guayaquil	C	4	6	2	9	24	19	31
	D	.....	.....	.....	.....	1	.....	.....
France	C	37	25	11	10	13	6	15
Gold Coast	C	7	4	.....	1	3	.....	.....
Greece	C	10	9	6	11	19	1	22
	D	.....	.....	.....	2	2	.....	1
Latvia	C	.....	2	.....	1	.....	.....	.....
Mexico (see also table above)	D	221	346	256	.....	.....	.....	.....
Morocco	C	180	622	55	47	30	19	25
Nigeria (see also table above)	C	820	316	275	317	.....	.....	.....
	D	173	81	39	45	.....	.....	.....
Perisa	D	.....	2	7	.....	.....	.....	.....
Portugal (see also table above)	C	.....	.....	143	115	.....	.....	98
	D	.....	.....	22	8	.....	.....	9
Spain (see also table above):								
Madrid	D	.....	1	.....	.....	.....	.....	.....
Union of Soviet Socialist Republics:								
Railways, etc	C	26	33	18	20	.....	.....	.....
Other territories in Europe	C	366	1,256	.....	998	.....	.....	.....
Transcaucasus, Siberia, and Central Asia	C	80	81	.....	.....	.....	.....	.....
Ukraine	C	27	48	6	11	.....	.....	.....

TYPHUS FEVER

Place		Sept. 25–Oct. 22, 1927	Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Week ended— Mar. 11–Apr. 7, 1928	April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16	23
Algeria (see also table below):																			
Algeria	C					1	3	9	1	3			1	1	2	9	28	1	
	D						1			2							6		
Oran	C				4	2	10	4	1	6	2	2	1		3		5		1
	D									1									1
Austria: Vienna	C					1													
Bulgaria (see also table below):																			
Sofia	C	17	6	1	6	1		20				1	1		9	10	8		
	D		1													1	2		
Chile:																			
Antofagasta	D	1																	
Talcahuano	D							1											
Valparaiso	C		1	2	1		1												
	D		2														2		
China (see also table below):																			
Manchuria—																			
Dairen	C								7		3								
Harbin	C		1							1	1								
Chosen (see table below).																			
Czechoslovakia (see table below).																			
Egypt	C	12	4	14	8	9	17	2	2	1				11					
	D	5		8	4	2	8	1						2					
Behera Province	C							29	23		2	7	5	15	8	15			
	D								4			3	1		2	4			
Cairo	C			3				2	3			1							
	D			3				1	3			1							
Gharbieh Province	C							23	5		5	4	1	2		2			
	D								3		2								
Keneh Province	C							5	29		9								
	D								1		6								
Menoufieh Province	C										5	23	5	1	1	2			
	D										1	2		1	1	1			
Port Said	C	1		1															
Suez	C														1				
	D														1				
Great Britain:																			
London County	C																1	1	
Greece (see table below).																			

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

TYPHUS FEVER—Continued

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

Place		Sept. 25–Oct. 22, 1927	Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Week ended— Mar. 11–Apr. 7, 1928	April, 1928 14	21	28	May, 1928 5	12	19	26	June, 1928 2	9	16	23
Ireland:																			
Belfast	C															2	1		
	D																1		
Irish Free State	C					1			1							4			
Cork County	C			3	1														
Donegal County, Letterkenny	C	4																	
Japan (see table below).																			
Latvia (see table below).																			
Lithuania (see table below).																			
Mexico (see also table below):																			
Guadalajara	D			1											1				
Mexico City, including municipalities in Federal District	C	18	28	17	15	5	8	12	4		4		7	4	4	4	4		
	D		2	1	5		4	3			1					2			
Monterey	D							1											
Morocco (see also table below)	C				32	1,051	316	748	186	167	136	102	62	63	72	83	40	44	
Palestine	C	5	3	9	8	5	10	7	3		1	2	2	1	1		2	1	3
Peru (see table below).																			
Poland	C	19	64	93	195	346	265	382	93		71	80	90	49	53	34	28		
	D	4	11	10	16	19	26	25	8		2	2	7	6	4				
Portugal (see also table below): Oporto	C		1			1													
Rumania	C	17	22	35	68	39	68	141	36	38	30	38	39	28		32			
	D	2			3	9	5	11		6	5	1	1	3		4			
Syria (see also table below): Aleppo	C				2														
Tunisia	C	3	1	1	6	4	1	18		2	16	1	3			4		4	3
Union of South Africa:																			
Cape Province	C	P	P	P	1	1	P		P	P	P	P	P	P					
Natal	C	P	P	2	3	1	2		P	P	P	P	1		2				
Orange Free State	C	P		P		P			P	P	P	P	P	P					
Transvaal	C	5	P	P											1				
Union of Soviet Socialist Republics (see table below).																			
Yugoslavia (see table below).																			
On vessel S. S. Gaika at Durban, Natal, from Mauritius	C						1												

Place		1927		January, 1928			February, 1928			March, 1928			April, 1928			May 1-10, 1928
		July-September	October-December	1-10	11-20	21-31	1-10	11-20	21-29	1-10	11-20	21-31	1-10	11-20	21-30	
Algeria (see also table above)	C	110	12													
	D	13	1													
Algiers	C	10	2													
Bulgaria (see also table above)	C	43	4	7	6		8	12	6							26
	D	3	2		1		1	2	2							
Morocco (see also table above)	C	231	123													

Place		July-September, 1927	October-December, 1927	January, 1928	February, 1928	March, 1928	April, 1928	May, 1928
China (see also table above):								
Shanghai	D		1					
Chosen	C	90	80	183	400	313		
	D	8	6	19	44	25		
Chemulpo	C	3		1		1		
Gensan	C	2		1				
	D			1				
Seoul	C	5	2			10	28	
	D	1	1			1	2	
Czechoslovakia	C	12	7			25		
Greece: Athens	C	3	1	2	2		13	11
	D						2	2
Japan	C	1	1					21
Latvia	C	6			1	26	4	
Lithuania	C	69	54	86	137			
	D	14	3	10	12			

Place		July-September, 1927	October-December, 1927	January, 1928	February, 1928	March, 1928	April, 1928	May, 1928
Mexico (see also table above)	D	64	98	46				
Peru:								
Arequipa	D	3	3	2			1	
La Oroya	C			P	P	P		
Lima	C	8						
Turkey	C				17			7
	D				1			1
Union of Soviet Socialist Republics:								
Railways, etc	C	77	102	41	107			
Transcaucasus, Siberia, and Central Asia	C	208	190	7				
Ukraine	C	295	631	533	459			
Other territories in Europe	C	1,839	1,924		1,853			
Yugoslavia	C	20	2	7	24	3	10	19
	D	5		3			1	3

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

YELLOW FEVER

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

Place		Aug. 28–Sept. 24, 1927	Sept. 25–Oct. 22, 1927	Oct. 23–Nov. 19, 1927	Nov. 20–Dec. 17, 1927	Dec. 18, 1927–Jan. 14, 1928	Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Week ended— April, 1928: 14	21	28	May, 1928: 5	12	19	26	June, 1928: 2	9	16	23
Belgian Congo:																				
Boma	C					3														
	D					2														
Matadi	C					29	14	1					2				2			
	D					16	13													
Brazil:																				
Aracaju	D																2			
Bahia	C																			3
Estancia	C							1												
Pernambuco	C																	1		
Rio de Janeiro	C																2	4	16	14
	D																2			
Dahomey:																				
Grand Popo	C				1													1	2	
	D				1													1	1	
Gold Coast (see table below).																				
Ivory Coast	C					1														1
	D					1														1
Abidjan	C																			1
Liberia: Monrovia	C	1																		
Nigeria	C	2																		
	D	2																		
Senegal	C	21	31	38																
	D	21	31	28																
Dakar	C		12	14	7	2														
	D		7	10	7	2														

Place		July	August	September	October	November	December	January	February	March	April	May
Gold Coast	C	15	2	6	1							1
	D	4	2	4	1							

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