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DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE.

ROBERT P. PORTER,
Superintendent.
Appointed April 20, 1889; resigned July 31, 1893.

CARROLL D. WRIGHT,
Commissioner of Labor in charge.
Appointed October 5, 1893.

REPORT
ON
VITAL AND SOCIAL STATISTICS

IN
THE UNITED STATES

AT THE
ELEVENTH CENSUS: 1890.

PART I.—ANALYSIS AND RATE TABLES.

JOHN S. BILLINGS, M. D.,
DEPUTY SURGEON-GENERAL, U. S. ARMY (RETIRED), EXPERT SPECIAL AGENT.



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BUREAU OF THE CENSUS
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DIPHTHERIA AND CROUP.

The majority of cases of death attributed to croup are due to diphtheria of the upper air passages, and in the statement of death rates for purposes of comparison it is not desirable to separate the one from the other. The tables appended to this report, however, contain the data with regard to each separately, as reported by enumerators and by physicians (registration records), so that either or both can be used as the student may prefer.

The total number of deaths reported as due to diphtheria in the United States during the census year was 27,815, of which 13,514 were of males and 14,301 of females. In the registration area the number of deaths reported as due to this disease was, males, 6,781; females, 7,005; total, 13,886; giving a death rate of 70.12 per 100,000 of population.

The total number of deaths reported as due to croup in the United States during the census year was 13,862, of which 7,519 were of males and 6,343 were of females. In the registration area the number of deaths reported as due to this disease was, males, 2,926; females, 2,506; total, 5,432; giving a death rate of 27.63, or for the two causes combined a death rate of 97.75 per 100,000 of population.

In 1890 the corresponding death rate from diphtheria and croup was, in England and Wales, 28.8; in Ireland, 21.3; in Scotland, 44.0; in Belgium, 56.5; in Prussia, 145.4; in Austria, 120.0, and in Italy, 50.0.

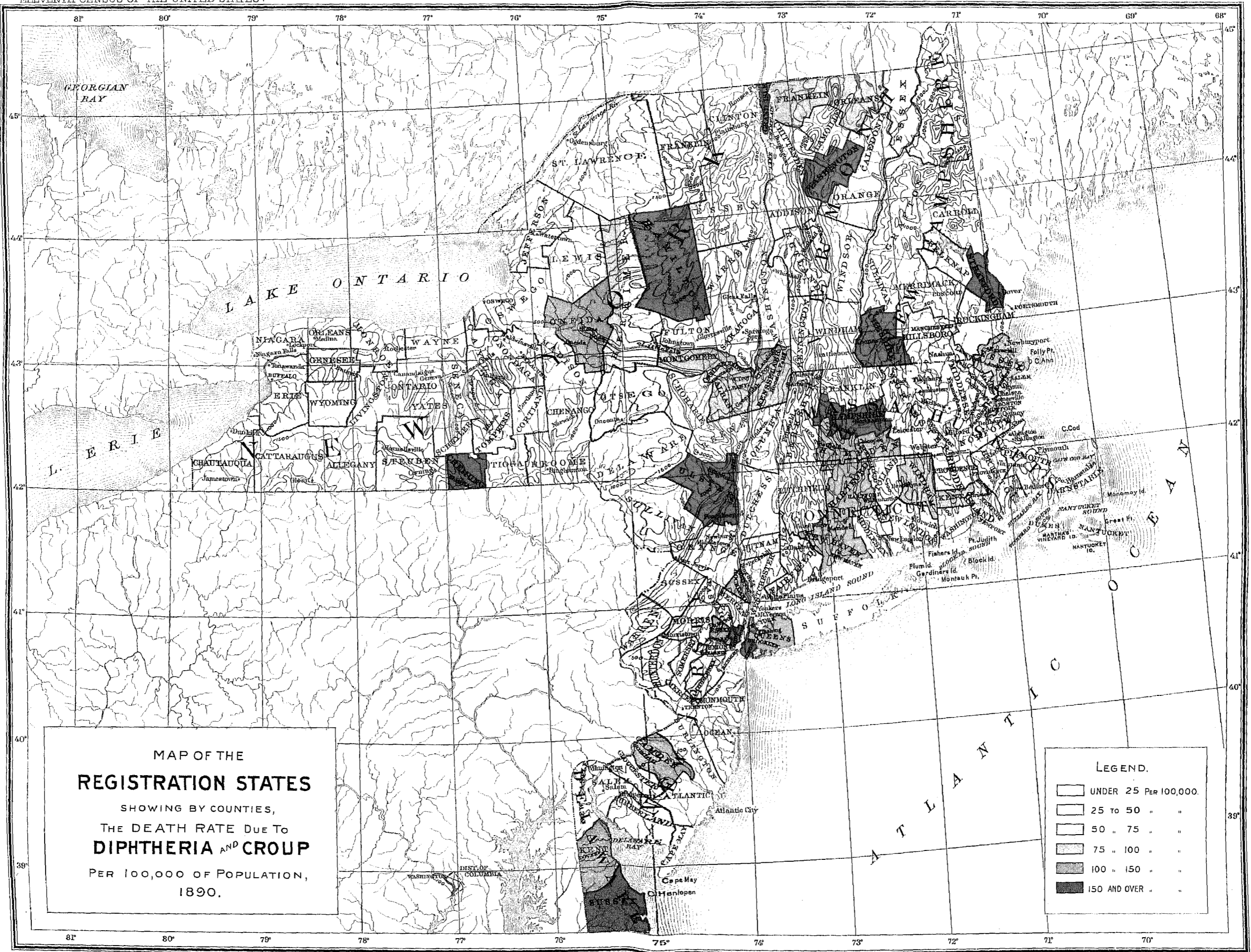
During the 10 years, 1880 to 1889, the death rates from diphtheria and croup, per 100,000 of population, were, in England and Wales, 29.5; in Ireland, 22.6; in Scotland, 42.5; in Sweden, 72.6; in Prussia, 163.2; in Austria, 165.1; in Saxony, 153.1; in Massachusetts, 92.2; in Connecticut, 79.4; in Rhode Island, 81.0, and in New Jersey, 97.6.

The following table shows, for the registration area and for some of its subdivisions, the death rates from diphtheria, from croup, and from diphtheria and croup combined, during the census year, per 100,000 of population, with distinction of color, sex, general nativity, and parental nativity:

AREA.	Aggre- gate.	WHITE.							COLORED.		
		Total.	Males.	Females.	Native born.			Foreign born.	Total.	Males.	Females.
					Total.	Both parents native.	One or both parents foreign.				
Registration area.....	97.75	100.35	101.73	98.98	130.07	89.37	193.04	18.57	46.91	45.54	48.24
Diphtheria.....	70.12	72.16	71.29	73.02	99.90	68.05	187.00	13.74	30.26	27.24	33.19
Croup.....	27.63	28.19	30.43	25.96	30.68	21.33	56.03	4.83	16.65	18.30	15.05
Registration cities.....	111.21	115.18	117.37	113.01	156.82	123.97	215.90	19.92	47.21	45.03	48.71
Diphtheria.....	79.23	82.27	81.53	83.00	111.77	93.83	153.17	14.37	30.25	27.38	33.60
Croup.....	31.98	32.91	35.84	30.01	45.05	30.13	62.81	4.95	16.90	18.25	15.71
Registration states.....	95.44	96.03	99.19	92.04	122.45	85.67	183.43	19.67	70.19	69.56	70.70
Diphtheria.....	70.14	70.62	71.23	69.98	90.08	65.83	130.78	14.41	49.25	44.61	53.63
Croup.....	25.30	25.40	27.96	22.06	32.37	19.79	52.65	5.26	20.95	24.95	17.16
Registration cities in registration states.....	121.95	123.04	129.55	116.84	171.74	131.45	212.79	21.42	81.60	81.37	81.60
Diphtheria.....	89.12	89.98	92.28	87.79	125.52	100.78	151.67	15.81	57.38	53.50	60.85
Croup.....	32.83	33.06	37.26	29.05	46.21	30.66	61.12	5.61	24.22	27.87	20.05
Rural part of registration states.....	54.94	55.14	54.67	55.62	62.71	50.70	104.05	14.17	43.82	44.66	42.02
Diphtheria.....	41.14	41.33	40.50	42.17	47.11	39.23	74.31	10.00	30.43	25.86	35.35
Croup.....	13.81	13.81	14.17	13.45	15.59	11.48	29.75	4.17	13.39	18.81	7.57
Cities in nonregistration states.....	101.30	107.42	105.79	109.09	142.98	107.81	223.34	10.91	37.04	36.14	39.11
Diphtheria.....	70.11	74.67	71.81	78.11	99.01	78.82	156.03	12.74	22.70	20.44	24.91
Croup.....	31.19	32.75	34.48	30.98	43.98	28.99	66.71	4.20	14.04	15.70	14.19
Cities of 100,000 population and over.....	110.55	119.76	.....	.....	169.94	155.74	223.05	17.92	53.18	.....	.....
Diphtheria.....	83.49	85.71	.....	.....	121.31	120.22	162.55	13.46	39.73	.....	.....
Croup.....	33.06	34.05	.....	.....	48.63	35.52	63.51	4.46	13.46	.....	.....
Metropolitan district, 6 years.....	165.58	167.53	172.65	162.52	254.10	227.49	271.40	22.32	56.73	57.53	55.06
Diphtheria.....	112.59	114.18	114.80	113.53	173.01	160.99	180.83	15.50	40.88	38.70	42.00
Croup.....	52.99	53.35	57.85	48.99	81.09	66.49	90.58	6.82	15.85	18.75	13.06

It will be seen from this table that the death rate from diphtheria and croup was more than twice as high among the whites (100.35) as among the colored (46.91), the difference being greater for the cases reported under the head of diphtheria (white, 72.16; colored, 30.26) than for those reported under the head of croup (white, 28.19; colored, 16.65). The death rate from diphtheria and croup in the whites was slightly higher among males (101.73) than among females (98.98), but for diphtheria alone there was a slight excess of death rate for females (73.02; males, 71.29). Among the colored the death rate from diphtheria and croup was slightly higher among the females (48.24) than among the males (45.54), this excess occurring entirely in the cases reported as due to diphtheria (females, 33.19; males, 27.24).

The death rate among the native born whites (130.07) was much higher than among the foreign born whites (18.57), owing mainly to the much larger proportion of young children in the former class. Among the native born whites having one or both parents foreign born the death rate from these causes (193.04) was much higher than among those of whom both parents were native (89.37).



In the registration states the death rates from diphtheria and croup were more than twice as high in the cities (121.95) as in the rural districts (54.94), and this applies also to the diseases taken separately (diphtheria in the cities, 89.12; in the rural districts, 41.14; croup in the cities, 32.83; in the rural districts, 13.81); and for each of these diseases the death rate was highest of all in the metropolitan district for the 6-year period, being for diphtheria and croup taken together 165.58; and for these diseases among the native children having one or both parents foreign born, 271.40.

The following table shows, for each of the registration states and for their sum, the death rates from diphtheria and croup during the census year, per 100,000 of population, with distinction of sex, and the cities and rural districts:

REGISTRATION STATES.	AGGREGATE.			MALES.			FEMALES.		
	Total.	Cities.	Rural.	Total.	Cities.	Rural.	Total.	Cities.	Rural.
Total	95.44	121.95	54.94	98.52	128.31	54.50	92.42	115.88	55.40
Connecticut	96.08	127.00	73.64	96.07	131.34	71.34	96.09	124.01	75.92
Delaware	96.74	66.74	113.95	100.50	77.89	113.22	92.86	55.52	114.72
District of Columbia.....	83.34	83.34	.....	83.95	83.95	.....	82.78	82.78	.....
Massachusetts.....	98.80	110.97	58.95	102.23	114.90	61.74	95.55	107.51	56.23
New Hampshire.....	80.58	142.98	63.15	86.44	143.89	66.94	81.75	142.17	59.28
New Jersey.....	104.92	144.84	52.71	101.83	141.39	51.02	107.99	148.22	54.42
New York.....	94.25	126.68	41.83	99.84	136.03	42.35	88.75	117.12	41.30
Rhode Island.....	81.91	85.97	76.32	80.94	93.87	63.76	82.83	78.70	88.69
Vermont.....	83.33	49.48	86.48	79.73	66.44	80.88	87.07	33.90	92.35

It will be seen from this table that the death rate from these diseases was highest in New Jersey (104.92) and in Massachusetts (98.80), and was lowest in Rhode Island (81.91). In the rural districts it was highest in Delaware (113.95), and lowest in New York (41.83). It was generally higher among males than among females, but in the rural districts it was slightly higher among females than among males. It was higher among the white than among the colored in the aggregate, but was much higher among the colored than the white in certain limited localities, the very small number of deaths among the colored making the death rates derived therefrom of little scientific value.

The following table shows for each of the registration states, and for their sum, the death rates from croup during the census year, per 100,000 of population, with distinctions of sex, and of cities and rural districts:

REGISTRATION STATES.	AGGREGATE.			MALES.			FEMALES.		
	Total.	Cities.	Rural.	Total.	Cities.	Rural.	Total.	Cities.	Rural.
Total	25.80	32.83	13.80	27.83	37.02	14.20	22.82	28.83	13.95
Connecticut	19.18	22.50	10.75	23.00	28.80	18.87	15.40	16.45	14.63
Delaware	47.48	53.72	43.90	61.42	68.15	42.00	43.42	39.19	45.89
District of Columbia.....	20.40	20.40	.....	24.04	24.64	.....	16.56	16.56	.....
Massachusetts.....	21.89	23.97	15.07	23.08	24.80	17.36	20.76	23.13	12.83
New Hampshire.....	25.50	38.01	19.02	24.12	34.53	20.08	26.85	42.82	19.76
New Jersey.....	31.07	43.84	14.87	32.32	45.40	15.53	29.83	42.32	13.20
New York.....	26.14	36.05	9.16	29.63	42.64	9.30	22.71	36.89	9.02
Rhode Island.....	23.15	16.99	31.63	24.40	21.99	27.72	21.97	12.48	35.48
Vermont.....	15.04	7.07	16.77	15.05	14.76	16.05	15.94	.....	17.53

The comparative death rates due to diphtheria and croup combined, in the different counties of the registration states, per 100,000 of population, are shown in map No. 5.

Of 14,723 deaths from diphtheria and croup among whites in the registration area during the census year, 6,241 were of children of mothers born in the United States, 2,325 of children of mothers born in Germany, 1,940 of children of mothers born in Ireland, 753 of children of mothers born in Canada, 564 of children of mothers born in Scandinavia, 208 of children of mothers born in Italy, 135 of children of mothers born in Scotland, 90 of children of mothers born in Bohemia, 50 of children of mothers born in France, and 45 of children of mothers born in Hungary.

The following table shows, for the registration area and some of its subdivisions, the death rates of the whites from diphtheria, from croup, and from diphtheria and croup combined, during the census year, per 100,000 of population, with distinction of birthplaces of mothers:

AREAS.	United States.	England and Wales.	Ireland.	Scotland.	France.	Germany.	Canada.	Scandinavia.	Hungary.	Bohemia.	Italy.	Other foreign countries.
Registration area.....	89.99	80.76	72.93	66.23	60.99	109.39	111.92	124.70	140.61	221.08	148.51	124.42
Diphtheria.....	98.39	59.14	56.24	54.95	47.57	78.81	72.53	92.70	81.24	147.39	82.11	67.53
Croup.....	21.60	21.62	16.69	11.28	13.42	30.58	39.39	32.00	59.37	73.69	66.40	56.89
Registration cities.....	128.32	89.49	81.89	72.69	53.71	117.48	131.32	138.97	157.66	226.68	160.90	135.72
Diphtheria.....	97.40	65.61	63.24	59.18	39.90	84.53	88.75	102.78	89.58	152.82	87.54	73.32
Croup.....	30.92	23.88	18.65	13.51	13.81	32.95	42.57	36.19	68.08	73.86	73.36	62.40
Registration states.....	88.12	83.05	76.90	69.32	67.72	101.60	113.34	104.09	146.83	167.17	169.74	102.45
Diphtheria.....	67.01	61.31	59.65	57.87	53.83	72.16	71.44	73.19	87.30	96.44	89.39	55.68
Croup.....	21.11	21.74	17.25	11.45	13.89	29.44	41.90	30.90	59.52	70.73	71.35	46.77
Registration cities in registration states.....	141.83	96.07	88.94	79.12	58.85	113.45	137.51	129.61	170.57	177.23	177.75	114.82
Diphtheria.....	107.70	71.19	69.15	64.66	44.11	80.27	90.22	89.11	99.50	106.34	97.22	61.91
Croup.....	34.13	24.88	19.79	14.46	14.71	33.18	47.29	40.50	71.07	70.89	80.53	52.91
Rural part of registration states.....	43.70	56.22	39.21	45.48	89.18	50.38	74.86	43.77	24.41	69.11	74.61	33.49
Diphtheria.....	33.36	40.94	29.90	41.35	77.29	37.10	41.54	35.56	24.41	.....	49.74	20.93
Croup.....	10.34	15.28	9.31	4.13	11.89	13.28	33.32	8.21	.....	69.11	24.87	12.56
Registration cities in nonregistration states.....	98.94	71.38	47.01	52.74	45.10	123.32	100.39	145.68	117.58	254.41	66.22	182.86
Diphtheria.....	75.69	50.26	33.93	42.10	32.80	90.60	81.40	112.57	58.79	178.88	33.11	99.05
Croup.....	23.24	21.12	13.08	10.64	12.30	32.63	18.99	33.11	58.79	75.53	33.11	83.81
Cities of 100,000 population and over.....	166.72	84.65	89.24	84.21	60.48	117.05	168.46	134.64	143.11	237.05	166.41	151.41
Diphtheria.....	137.44	63.66	69.95	71.16	47.04	83.73	141.68	103.20	81.78	169.76	91.67	81.58
Croup.....	29.27	20.99	19.29	13.05	13.44	33.32	26.78	31.44	61.33	76.29	74.73	69.83

It will be seen from this table that in the registration area, among the whites, the death rate from diphtheria and croup combined was highest among the children of mothers born in Bohemia (221.08), in Italy (148.51), and in Hungary (140.61), and was lowest among the children of mothers born in France (60.99), in Scotland (66.23), and in Ireland (72.93). It was above the average among the children of mothers born in Canada (111.92) and in Germany (109.39), and below it among the children of mothers born in England and Wales (80.76), and in the United States (89.99). Among the children of mothers born in the United States it was more than three times as high in the cities of the registration states (141.83) as in the rural districts of the same states (43.70), and was highest of all in the cities of 100,000 population and upward (166.72).

The following table shows, for the registration area and some of its subdivisions, the death rates from diphtheria and croup during the census year, in each of the four age groups, per 100,000 population of corresponding ages, with distinction of sex:

AREAS.	UNDER 1 YEAR.			UNDER 5 YEARS.			5 TO 15 YEARS.			15 YEARS AND OVER.		
	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.
Registration area.....	337.40	384.19	389.35	607.30	632.83	581.17	166.48	156.44	176.59	5.79	5.18	6.40
Cities.....	362.29	407.56	315.86	693.63	724.10	662.59	180.49	169.38	191.55	5.09	4.55	5.62
States.....	341.05	404.79	281.65	613.67	649.73	576.99	165.70	156.37	175.15	6.58	5.89	7.24
Cities.....	400.94	466.03	334.91	803.68	857.24	749.55	195.27	181.12	206.37	5.66	5.07	6.21
Rural.....	238.62	291.21	183.03	287.78	296.93	278.36	121.55	115.60	127.53	7.97	7.08	8.86
Cities in nonregistration states.....	328.48	356.50	299.69	598.50	609.80	586.92	167.63	156.54	178.66	4.56	4.08	5.04
Cities of 100,000 population and upward..	357.09	412.68	300.12	731.57	767.02	695.47	175.01	163.19	186.79	4.66	4.12	5.19
Metropolitan district.....	440.57	509.45	369.74	915.60	986.39	844.35	180.73	169.19	192.33	4.73	3.88	5.53

It will be seen from the preceding table that the greatest mortality from these diseases occurred in children under 5 years of age (607.26); that for the age group from 5 to 15 being 166.48; and that for the age group 15 years of age and over only 5.79.

In the age group under 5 years in the registration states the death rate from these diseases was much higher in the cities (803.68) than in the rural districts (287.78), and was highest of all among males in the metropolitan district (986.39). In the age group from 5 to 15 years of age the death rate from these diseases was higher among females (176.59) than among males (156.44), and this excess is found both in the cities and in the rural districts, and also occurs in the age group 15 years of age and over.

The following table shows, for the registration area and some of its subdivisions, the death rates from diphtheria and from croup separately, during the census year, in each of two age groups, per 100,000 population of corresponding ages, with distinction of sex:

AREAS.	UNDER 5 YEARS.						5 TO 15 YEARS.					
	Diphtheria.			Croup.			Diphtheria.			Croup.		
	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.
Registration area	391.47	400.41	382.34	215.80	232.42	198.89	139.40	128.31	150.55	27.00	28.13	20.04
Cities	440.80	461.20	428.10	243.82	262.00	224.40	150.16	137.08	163.18	30.33	32.30	28.38
States	405.40	421.73	388.78	208.27	227.09	188.20	141.34	131.50	151.31	24.36	24.80	23.84
Cities	539.34	565.87	512.53	264.34	291.37	237.02	195.76	152.52	178.00	29.50	31.59	27.42
Rural	175.67	170.68	174.63	112.11	120.25	103.73	104.88	100.77	109.15	10.67	15.03	18.38
Cities in nonregistration states	372.41	371.34	373.49	226.00	238.45	213.43	136.57	123.63	149.46	31.06	32.01	29.21
Cities of 100,000 population and over	484.51	498.44	470.32	247.07	268.58	225.16	145.02	133.12	158.10	29.38	30.08	28.70
Metropolitan district	640.69	676.40	604.68	274.97	303.09	239.66	151.86	139.13	164.07	28.87	30.06	27.66

It will be seen from this table that in children under 5 years of age the death rates from both diphtheria and croup were higher in males than in females, while in the age group from 5 to 15 the death rate from diphtheria was higher in females (150.55) than in males (128.31), and for croup the death rate was slightly higher for males (28.13) than for females (26.04).

In the registration states the death rate from diphtheria in the cities (539.34) was more than three times as high as it was in the rural districts (175.67), while for croup the proportion of difference was less (cities, 264.34; rural districts, 112.11).

The combined relations of age and race to the death rates from diphtheria and croup are indicated in the following table, showing the number of deaths in each of three age groups, and the death rates per 100,000 population of corresponding ages, with distinction of color and, for the whites, of birthplaces of mothers, the data being derived from a combination of the returns from Boston, Brooklyn, Cincinnati, New York city, the District of Columbia, and the state of New Jersey, for the census year:

COLOR AND BIRTHPLACES OF MOTHERS.	UNDER 1 YEAR.		UNDER 5 YEARS.		5 TO 15 YEARS.	
	Deaths.	Rate.	Deaths.	Rate.	Deaths.	Rate.
White	400	390.58	4,188	803.59	1,501	184.34
Colored	13	362.62	62	395.38	64	197.48
Birthplaces of mothers (white):						
United States	160	303.94	1,869	750.64	782	101.23
England and Wales	13	357.34	142	832.01	64	184.57
Ireland	63	441.63	710	1,075.35	294	195.12
Scotland	3	261.78	39	717.44	16	150.11
France			11	550.83	9	205.29
Germany	69	412.43	784	977.26	303	183.21
Canada	0	304.30	77	1,030.48	38	282.97
Scandinavia	7	447.57	57	858.69	22	285.34
Hungary	6	721.15	33	1,015.07	2	52.37
Bohemia	3	656.46	21	1,066.53	3	101.39
Italy	22	695.24	143	951.11	13	77.33

The preceding table indicates that for children under 5 years of age the death rate due to diphtheria and croup, per 100,000 of population was much higher among the whites (363.59) than among the colored (395.38), but that in the age group from 5 to 15 the death rate for the colored from these diseases (197.48) was slightly in excess of that for the whites (184.34). Among white children under 5 years of age the death rate from these diseases was highest among the children of mothers born in Ireland (1,075.35), in Bohemia (1,066.53), and in Canada (1,636.48), and was lowest among the children of mothers born in France (550.83), in Scotland (717.44), and in the United States (756.64). For further details with regard to death rates from these diseases in large cities, see Part II of this report, page 87.

Out of each 100,000 deaths from all causes, excluding stillbirths, in the United States during the census year, 3,446 were reported as due to diphtheria and 1,717 as due to croup, giving a total of 5,164, the corresponding figure in 1880 having been 7,413, and in 1870, 3,452.

In England and Wales the corresponding proportion in 1890 was 1,475, and in 1880, 532. In 1890, it was, in Prussia, 6,060; in Austria, 4,080; in Belgium, 2,710; in Scotland, 2,230; in Italy, 1,880; and in Ireland, 1,140.

The number of deaths due to diphtheria and croup in children under 15 years of age per 1,000 of all deaths from known causes occurring under 15 years of age in the United States was, for the whites, 124.44; for the colored, 43.42; for the Chinese, 30.77; and for the Indians, 122.93. In the registration area the corresponding figure was 104.94.

The following table shows, for the United States and for the registration area and some of its subdivisions, the proportion of deaths from diphtheria and croup, during the census year, per 1,000 deaths from known causes, excluding stillbirths, with distinction of color, sex, general nativity, and parental nativity:

AREAS.	Aggre- gato.	WHITE.							COLORED.		
		Total.	Males.	Females.	Native born.			Foreign born.	Total.	Males.	Females.
					Total.	Both parents native.	One or both parents foreign.				
The United States.....	51.64	56.04	53.32	59.13	67.20	54.63	99.27	11.56	21.14	20.70	21.60
Registration area.....	50.39	53.04	50.83	55.51	69.11	52.40	90.75	0.68	16.29	15.62	17.60
Cities.....	53.55	57.01	54.40	59.96	70.81	65.87	93.13	9.80	15.80	14.45	17.20
States.....	49.55	50.34	49.51	51.24	61.80	49.92	84.60	10.00	25.89	24.95	27.51
Cities.....	55.39	56.53	55.73	57.42	77.26	66.11	86.54	10.30	26.08	24.10	28.69
Rural.....	36.51	36.75	35.69	37.87	42.37	33.61	75.29	8.79	25.17	25.33	25.90
Cities in nonregistration states.....	51.04	57.55	52.94	63.00	76.32	65.25	111.82	9.16	12.77	11.65	13.98
Cities of 100,000 population and upward.....	54.15	56.83	54.15	56.83	78.89	71.72	94.49	8.93	17.33	17.33	17.33
Metropolitan district, 6 years.....	66.41	67.29	64.72	70.19	94.69	83.52	102.13	10.31	21.03	19.72	22.50

This table indicates that the proportion of deaths from diphtheria and croup to the total deaths from known causes was nearly the same in the United States as a whole (51.64) as it was in the registration area (50.39), and that in both areas it was much greater among the whites than among the colored; greater among females than among males, and greater among native born white children having one or both parents foreign born than among native born white children of whom both parents were native born.

The following table shows, for the United States and for the registration area and some of its subdivisions, the proportion of deaths from diphtheria and croup among the whites, during the census year, per 1,000 deaths from known causes, excluding stillbirths, with distinction of birthplaces of mothers:

AREAS.	United States.	England and Wales.	Ireland.	Scotland.	France.	Germany.	Canada.	Scandinavia.	Hungary.	Bohemia.	Italy.	Other foreign countries.
The United States.....	66.63	47.11	34.29	41.84	33.89	63.81	71.79	95.04	62.01	124.05	55.90	75.94
Registration area.....	65.96	49.09	34.65	40.98	37.51	61.22	69.46	79.96	62.94	82.19	58.51	63.89
Cities.....	82.25	51.58	35.81	42.74	31.65	66.50	71.98	86.05	65.67	82.48	57.36	65.93
States.....	61.05	49.26	35.43	40.65	40.12	56.71	69.12	60.87	65.72	55.67	60.48	59.41
Cities.....	77.70	52.50	36.91	42.68	32.21	59.12	71.85	67.96	69.50	55.43	59.32	62.39
Rural.....	38.75	40.34	27.60	33.85	66.68	49.62	62.19	35.16	22.22	62.50	78.95	31.07
Cities in nonregistration states.....	100.59	48.28	28.01	43.01	30.47	79.76	72.83	103.59	52.63	101.91	38.22	71.69
Cities of 100,000 population and upward.....	88.45	47.20	34.70	44.40	33.13	62.88	80.41	76.79	62.39	82.54	59.74	69.72

CAUSES OF DEATH.

251

The preceding table indicates that in the United States as a whole, as well as in the registration area, the greatest proportion of deaths from diphtheria and croup among the whites occurred in the children of mothers born in Bohemia, and the least in the children of mothers born in France and in Ireland. It should be borne in mind, however, that, as is shown above, the highest death rate from these causes in children under 5 years of age occurred in the children of mothers born in Ireland.

The following table shows the proportion of deaths from diphtheria and croup, at certain ages and groups of ages, per 1,000 deaths at all ages from these causes, in 1880 and in 1890, with distinction of sex:

AGES.	1880		1890		AGES.	1880		1890	
	Males.	Females.	Males.	Females.		Males.	Females.	Males.	Females.
Total under 5 years..	602.92	601.09	649.40	583.96	35 to 40 years.....	1.02	2.72	2.10	2.82
Under 1 year.....	185.19	151.22	148.44	129.79	40 to 45 years.....	1.09	1.59	1.96	1.41
1 year.....	139.73	118.40	135.31	129.01	45 to 50 years.....	1.02	1.12	0.95	1.31
2 years.....	135.41	125.97	129.04	129.05	50 to 55 years.....	0.81	0.98	0.86	1.31
3 years.....	113.79	109.23	123.52	116.22	55 to 60 years.....	0.77	0.94	1.00	0.53
4 years.....	97.81	97.17	102.18	102.89	60 to 65 years.....	0.53	0.72	0.72	1.51
5 to 10 years.....	235.40	261.65	248.42	280.67	65 to 70 years.....	0.49	0.43	0.67	0.63
10 to 15 years.....	65.59	91.59	58.16	76.10	70 to 75 years.....	0.63	0.58	0.81	0.58
15 to 20 years.....	15.88	20.90	19.19	23.49	75 to 80 years.....	0.35	0.25	0.07	0.88
20 to 25 years.....	6.80	7.03	8.98	9.92	80 to 85 years.....	0.14	0.33	0.33	0.39
25 to 30 years.....	3.42	4.13	3.01	5.15	85 to 90 years.....	0.07	0.11	0.24	0.24
30 to 35 years.....	2.36	2.79	2.44	3.69	90 to 95 years.....	0.11	0.07	0.10	.....
					95 years and over.....	.....	0.07	.....	0.05

It appears from this table that in the census of 1890 about 60 per cent of the deaths from diphtheria and croup occurred in children under 5 years of age, and that about 95 per cent occurred in children under 15 years of age.

The following table indicates the differences in the proportions of deaths at each of certain ages or groups of ages per 1,000 of all deaths reported as due to diphtheria and to croup, during the census years 1880 and 1890, with distinction of sex:

AGES.	1880				1890			
	Diphtheria.		Croup.		Diphtheria.		Croup.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Total under 5 years.....	552.51	491.47	874.82	863.61	544.48	486.26	838.33	821.35
Under 1 year.....	83.23	65.40	380.68	354.40	59.50	49.36	308.50	282.40
1 year.....	108.23	96.03	173.90	171.28	110.50	94.52	179.99	177.69
2 years.....	132.65	114.25	140.70	153.71	132.04	114.57	154.19	161.83
3 years.....	119.10	110.49	103.60	106.29	128.69	116.67	114.20	115.18
4 years.....	100.20	105.28	75.95	77.96	113.69	111.13	81.44	84.25
5 to 10 years.....	300.06	322.13	111.81	118.46	300.37	337.75	138.67	151.51
10 to 15 years.....	95.38	126.31	8.43	9.39	84.43	104.75	10.83	11.26
15 to 20 years.....	23.62	28.81	1.03	2.20	28.44	31.80	2.54	4.43
20 to 25 years.....	9.96	9.69	0.73	0.73	12.48	13.46	2.67	1.90
25 to 30 years.....	4.93	5.46	0.51	0.98	4.03	6.80	1.07	1.43
30 to 35 years.....	3.43	3.81	0.31	0.37	3.27	5.05	0.94	1.59
35 to 40 years.....	2.29	3.66	0.51	0.49	2.00	3.65	0.67	0.95
40 to 45 years.....	1.39	2.61	0.51	0.61	2.67	1.96	0.67	0.16
45 to 50 years.....	1.29	1.39	0.51	0.49	1.41	1.75	0.13	0.32
50 to 55 years.....	1.07	1.29	0.31	0.24	1.19	1.61	0.27	0.63
55 to 60 years.....	1.07	1.19	0.21	0.37	1.34	0.77	0.40	0.16
60 to 65 years.....	0.75	0.82	0.10	0.49	0.74	1.75	0.67	0.95
65 to 70 years.....	0.75	0.52	.....	0.24	0.82	0.63	0.40	0.63
70 to 75 years.....	0.80	0.46	0.31	0.85	0.97	0.50	0.53	0.63
75 to 80 years.....	0.43	0.26	0.21	0.24	0.74	0.63	0.63	1.43
80 to 85 years.....	0.21	0.36	.....	0.24	0.30	0.28	0.40	0.63
85 to 90 years.....	0.05	0.15	0.10	.....	0.22	0.35	0.27	.....
90 to 95 years.....	0.11	0.10	0.10	.....	0.15	.....	.....	.....
95 years and over.....	.....	0.10	.....	.....	.....	0.07	.....	.....

The comparative proportions of deaths of males in each age group from diphtheria and croup combined, in 1880 and 1890, are shown in the following diagram:

AGE.	MALES, 1890.						MALES, 1880.					
	RATE.						RATE.					
	300	250	200	150	100	50	50	100	150	200	250	300
45+												
25-45												
15-25												
10-15												
5-10												
4-5												
3-4												
2-3												
1-2												
0-1												

The preceding tables and diagrams indicate that about one-half of the deaths reported as due to diphtheria occurred in children under 5 years of age, and that over one-half of the remaining deaths occurred in those from 5 to 10 years of age. A greater proportion of males than of females died under 5 years of age from this disease.

Of those reported as dying from croup, a much greater proportion were reported as being under 5 years of age, the average being about 87 per cent in 1880, and 83 per cent in 1890.

This indicates that fatal cases of this disease were more frequently called croup when they occurred in infants, and diphtheria when they occurred in children 5 years of age and over. Now that the diagnosis of diphtheria is made mainly on the presence of the specific bacillus, it is probable that fatal cases of croup will be much more rarely reported in future:

The average age at death of those dying in the United States in 1890 from diphtheria was 6.87 years; from croup, 3.34 years; from both diseases taken together, 5.81 years. In 1880, the average age at death of those reported as dying from diphtheria was 6 years; and from croup, 2 years.

The following table shows, for each grand group, the proportion of deaths from diphtheria during the census year, per 1,000 deaths from known causes, with distinction of sex and color, of rural districts and cities, and of children of mothers born in Ireland and in Germany:

GRAND GROUPS.	Total.	RURAL.		CITIES.		White.	Colored.	MOTHERS BORN IN—	
		Males.	Females.	Males.	Females.			Ireland.	Germany.
1. North Atlantic Coast region.....	36.00	24.71	23.97	41.21	42.83	30.17	26.06	32.52	68.20
2. Middle Atlantic Coast region.....	33.00	24.20	30.47	32.76	36.34	35.26	12.80	25.09	37.76
3. South Atlantic Coast region.....	7.90	7.29	13.52	1.08	2.25	13.00	4.72		
4. Gulf Coast region.....	10.27	5.93	7.79	11.37	17.50	12.85	0.42	10.00	15.63
5. Northeastern hills and plateaus.....	35.39	29.91	33.98	41.75	42.75	35.40	34.00	27.58	47.62
6. Central Appalachian region.....	48.08	45.82	54.87	34.64	47.24	43.84	14.55	30.86	53.77
7. Region of the Great Northern Lakes.....	40.05	41.34	51.16	30.98	53.39	46.49	11.29	19.20	52.51
8. Interior plateau.....	29.51	27.59	29.47	28.27	32.97	32.26	9.53	23.66	42.94
9. Southern Central Appalachian region.....	20.34	19.20	25.60	3.12	4.71	24.89	4.57		5.08
10. Ohio River belt.....	35.79	28.67	30.38	43.48	52.15	37.74	14.56	23.33	43.39
11. Southern Interior plateau.....	8.49	7.87	9.34	4.65	5.40	12.78	5.09		
12. South Mississippi River belt.....	7.14	5.51	6.57	12.26	17.49	6.76	7.39		
13. North Mississippi River belt.....	45.98	51.09	54.02	34.31	44.37	47.91	13.16	33.00	56.87
14. Southwest Central region.....	7.04	5.88	3.61	3.60	7.60	7.64	4.45	5.83	7.23
15. Central region, plains and prairies.....	19.55	17.28	20.63	25.00	22.87	21.03	8.15	7.92	19.54
16. Prairie region.....	52.78	45.56	60.34	59.84	63.21	53.77	4.58	30.27	69.51
17. Missouri River belt.....	52.51	46.25	62.01	42.72	57.31	50.01	3.39	38.02	67.68
18. Region of the Western plains.....	81.62	77.84	106.70	49.87	60.10	84.71	25.84	32.79	50.31
19. Heavily timbered region of the Northwest.....	44.07	42.92	45.38			45.00	5.35	13.39	50.90
20. Cordilleran region.....	69.26	59.70	96.35	13.12	11.58	65.70	112.24	23.05	18.06
21. Pacific Coast region.....	27.56	30.93	49.57	15.91	25.07	23.98	8.54	6.62	27.35

The geographical distribution of deaths from diphtheria in the several grand groups is shown in map No. 6.

CAUSES OF DEATH.

255

The following table shows, for each grand group, the proportion of deaths from croup during the census year, per 1,000 deaths from known causes, with distinction of sex and color, of rural districts and cities, and of children of mothers born in Ireland and in Germany:

GRAND GROUPS.	Total.	RURAL.		CITIES.		White.	Colored.	MOTHERS BORN IN—	
		Males.	Females.	Males.	Females.			Ireland.	Germany.
1. North Atlantic Coast region.....	10.05	9.85	9.73	9.88	10.50	10.20	0.97	8.00	9.64
2. Middle Atlantic Coast region.....	13.72	12.90	11.69	14.65	13.35	14.39	7.55	7.29	15.68
3. South Atlantic Coast region.....	5.99	7.06	7.82	1.02	2.81	8.13	4.59	.....	8.47
4. Gulf Coast region.....	10.98	12.63	20.08	6.22	4.31	11.75	9.83	.....	.....
5. Northeastern hills and plateaus.....	12.43	10.07	10.96	19.93	12.42	12.48	5.68	10.72	14.65
6. Central Appalachian region.....	19.57	18.77	19.14	21.00	23.16	19.87	6.61	12.00	17.18
7. Region of the Great Northern Lakes.....	17.87	11.69	12.39	19.83	21.63	18.03	1.13	6.87	20.42
8. Interior plateau.....	14.46	13.10	11.41	17.34	15.53	15.20	8.35	7.20	20.35
9. Southern Central Appalachian region.....	36.35	42.29	36.17	11.60	12.57	41.77	17.57	4.55	15.23
10. Ohio River belt.....	14.48	15.54	15.85	11.85	12.70	15.16	7.12	5.83	8.80
11. Southern Interior plateau.....	18.26	20.71	16.91	.....	2.73	20.20	16.62	.....	.....
12. South Mississippi River belt.....	13.02	11.77	16.65	6.69	7.95	16.93	11.08	.....	.....
13. North Mississippi River belt.....	15.28	20.17	18.40	10.06	11.43	15.54	10.87	6.46	15.64
14. Southwest Central region.....	25.13	26.18	25.67	9.37	13.03	26.72	18.23	.....	8.13
15. Central region, plains and prairies.....	14.80	16.58	14.25	10.84	8.87	15.24	11.41	3.05	8.99
16. Prairie region.....	18.38	19.37	17.42	17.71	14.51	18.56	9.93	6.70	13.35
17. Missouri River belt.....	24.31	27.18	23.15	24.73	19.28	26.99	4.07	11.41	13.13
18. Region of the Western plains.....	18.10	16.75	20.40	10.95	14.16	18.84	5.96	5.46	18.87
19. Heavily timbered region of the Northwest.....	9.92	10.85	8.86	.....	.....	10.09	2.67	5.35	11.88
20. Cordilleran region.....	17.39	15.59	20.66	13.12	15.44	17.98	10.20	5.12	6.57
21. Pacific Coast region.....	15.00	18.33	23.22	8.97	14.29	15.86	3.42	4.42	12.87

The geographical distribution of deaths from croup in the several grand groups is shown in map No. 7.

The following table shows, for each grand group, the proportion of deaths from diphtheria and croup combined, during the census year, per 1,000 deaths from known causes, with distinction of sex and color, of rural districts and cities, and of children of mothers born in Ireland and in Germany:

GRAND GROUPS.	Total.	RURAL.		CITIES.		White.	Colored.	MOTHERS BORN IN—	
		Males.	Females.	Males.	Females.			Ireland.	Germany.
1. North Atlantic Coast region.....	46.05	34.56	33.70	51.09	53.33	46.38	27.03	40.52	77.84
2. Middle Atlantic Coast region.....	46.78	37.10	42.16	47.41	49.69	49.05	20.35	32.38	53.45
3. South Atlantic Coast region.....	13.95	14.32	21.34	2.70	5.06	21.24	9.31	.....	8.47
4. Gulf Coast region.....	21.25	18.56	27.84	17.59	21.81	24.60	16.25	10.99	15.63
5. Northeastern hills and plateaus.....	47.82	39.98	44.94	61.73	55.17	47.87	39.77	38.30	62.27
6. Central Appalachian region.....	67.65	64.59	74.01	55.64	70.40	68.71	21.16	42.87	70.95
7. Region of the Great Northern Lakes.....	63.92	53.03	63.55	59.80	75.02	64.57	12.42	26.07	72.93
8. Interior plateau.....	43.97	40.69	40.88	45.61	48.50	47.57	17.88	30.86	63.30
9. Southern Central Appalachian region.....	56.60	61.49	61.86	14.72	17.28	66.66	22.13	4.55	20.30
10. Ohio River belt.....	50.27	44.21	46.23	55.33	64.85	52.90	21.68	29.16	52.28
11. Southern Interior plateau.....	26.75	28.58	26.25	4.65	8.19	33.07	21.64	.....	.....
12. South Mississippi River belt.....	20.16	17.28	23.22	18.95	25.44	22.84	18.47	.....	.....
13. North Mississippi River belt.....	61.26	71.26	72.51	44.37	55.80	63.45	24.03	39.45	72.51
14. Southwest Central region.....	32.17	32.06	34.28	12.97	20.63	34.36	22.73	5.83	15.36
15. Central region, plains and prairies.....	34.35	33.86	34.88	36.44	31.74	36.26	19.56	10.97	28.53
16. Prairie region.....	71.16	64.93	77.76	77.05	77.72	72.33	14.51	42.97	82.50
17. Missouri River belt.....	76.82	73.43	86.06	67.45	76.59	86.00	7.45	49.43	80.81
18. Region of the Western plains.....	99.78	94.59	127.16	69.82	80.26	103.56	31.81	38.25	69.13
19. Heavily timbered region of the Northwest.....	53.99	53.77	54.24	.....	.....	55.09	8.02	18.74	62.73
20. Cordilleran region.....	86.65	73.29	117.01	26.24	27.02	83.69	122.45	28.17	24.63
21. Pacific Coast region.....	42.50	49.26	72.70	24.88	39.36	44.84	11.96	11.04	40.23

The geographical distribution of deaths from diphtheria and croup combined, in the several grand groups, is shown in map No. 8.

VITAL AND SOCIAL STATISTICS.

The following table shows, for each grand group, the aggregate proportion of deaths from diphtheria, from croup, and from diphtheria and croup combined, during the census year, per 1,000 deaths from known causes, in each grand group:

GRAND GROUPS.	Diphtheria.	Croup.	Diphtheria and croup.
1. North Atlantic Coast region.....	86.00	10.05	46.05
2. Middle Atlantic Coast region.....	33.06	13.72	46.78
3. South Atlantic Coast region.....	7.96	5.99	13.95
4. Gulf Coast region.....	10.27	10.98	21.25
5. Northeastern hills and plateaus.....	35.39	12.43	47.82
6. Central Appalachian region.....	48.08	19.57	67.65
7. Region of the Great Northern Lakes.....	46.05	17.87	63.92
8. Interior plateau.....	29.51	14.46	43.97
9. Southern Central Appalachian region.....	20.34	36.35	56.69
10. Ohio River belt.....	35.79	14.48	50.27
11. Southern Interior plateau.....	8.49	18.26	26.75
12. South Mississippi River belt.....	7.14	13.02	20.16
13. North Mississippi River belt.....	45.98	15.28	61.26
14. Southwest Central region.....	7.04	25.13	32.17
15. Central region, plains and prairies.....	19.55	14.80	34.35
16. Prairie region.....	52.78	18.38	71.16
17. Missouri River belt.....	52.51	24.31	76.82
18. Region of the Western plains.....	81.62	18.16	99.78
19. Heavily timbered region of the Northwest.....	44.07	9.92	53.99
20. Cordilleran region.....	69.26	17.30	86.56
21. Pacific Coast region.....	27.56	15.00	42.56

It will be seen from these tables and maps that diphtheria caused the greatest proportion of all deaths from known causes in the region of the Western plains (81.62), in the Cordilleran region (69.26), and in the Prairie region (52.78).

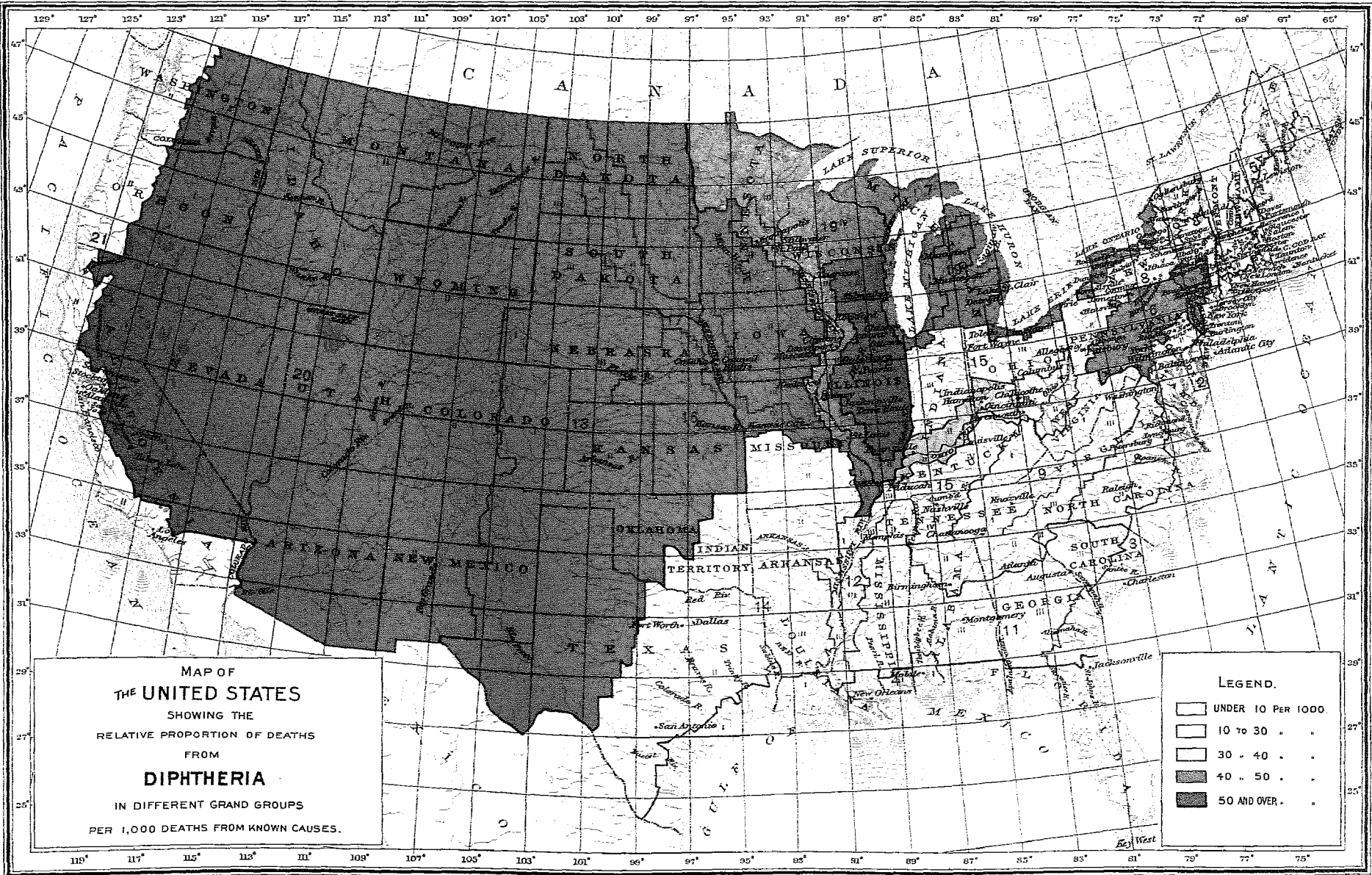
The greatest proportion of deaths from croup occurred in the Southern Central Appalachian region (36.35), in the Southwest Central region (25.13), and in the Missouri River belt (24.31).

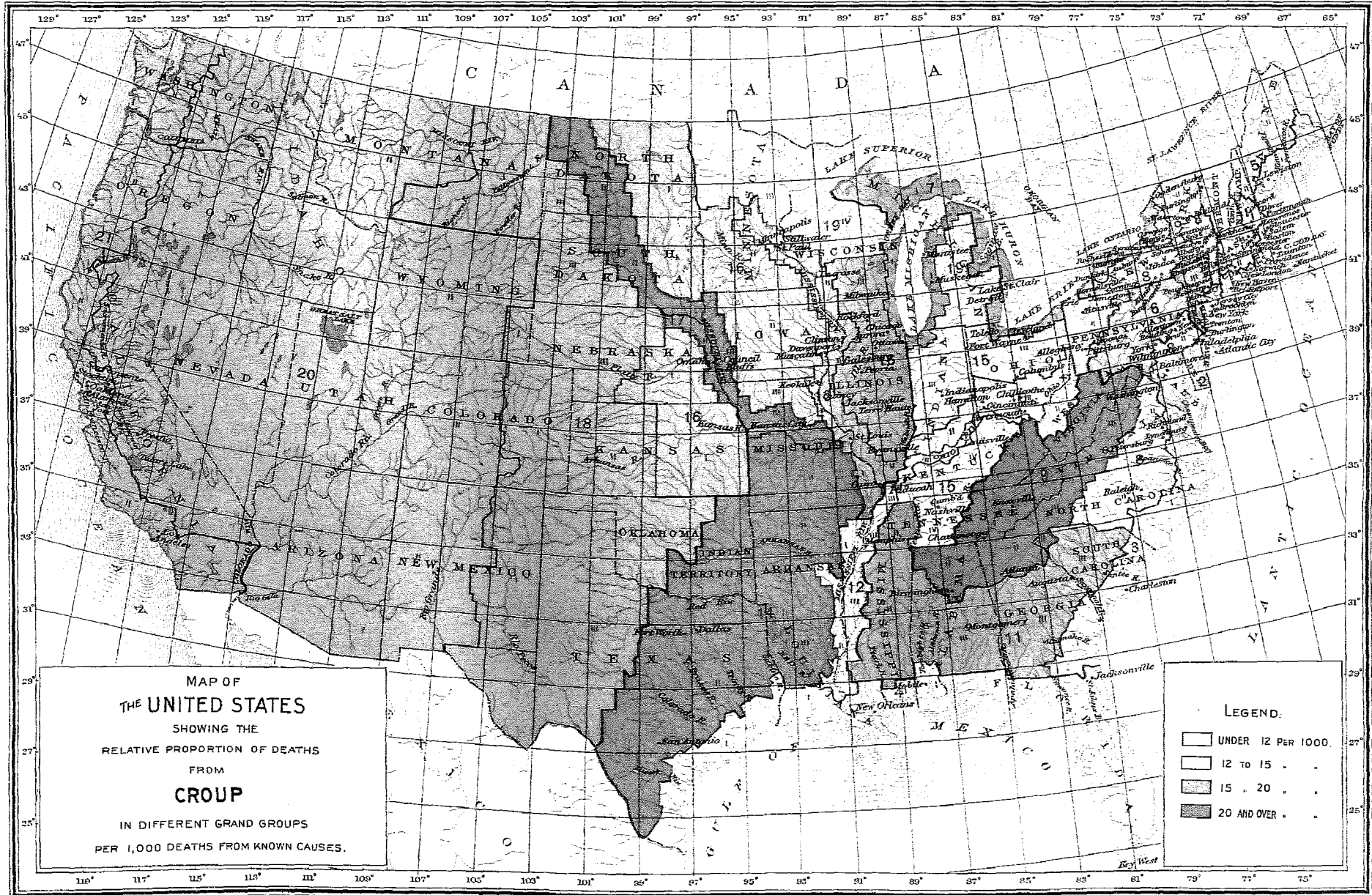
Taking the two together, the greatest proportion of deaths from diphtheria and croup occurred in the region of the Western plains (99.78), the Cordilleran region (86.56), and the Missouri River belt (76.82).

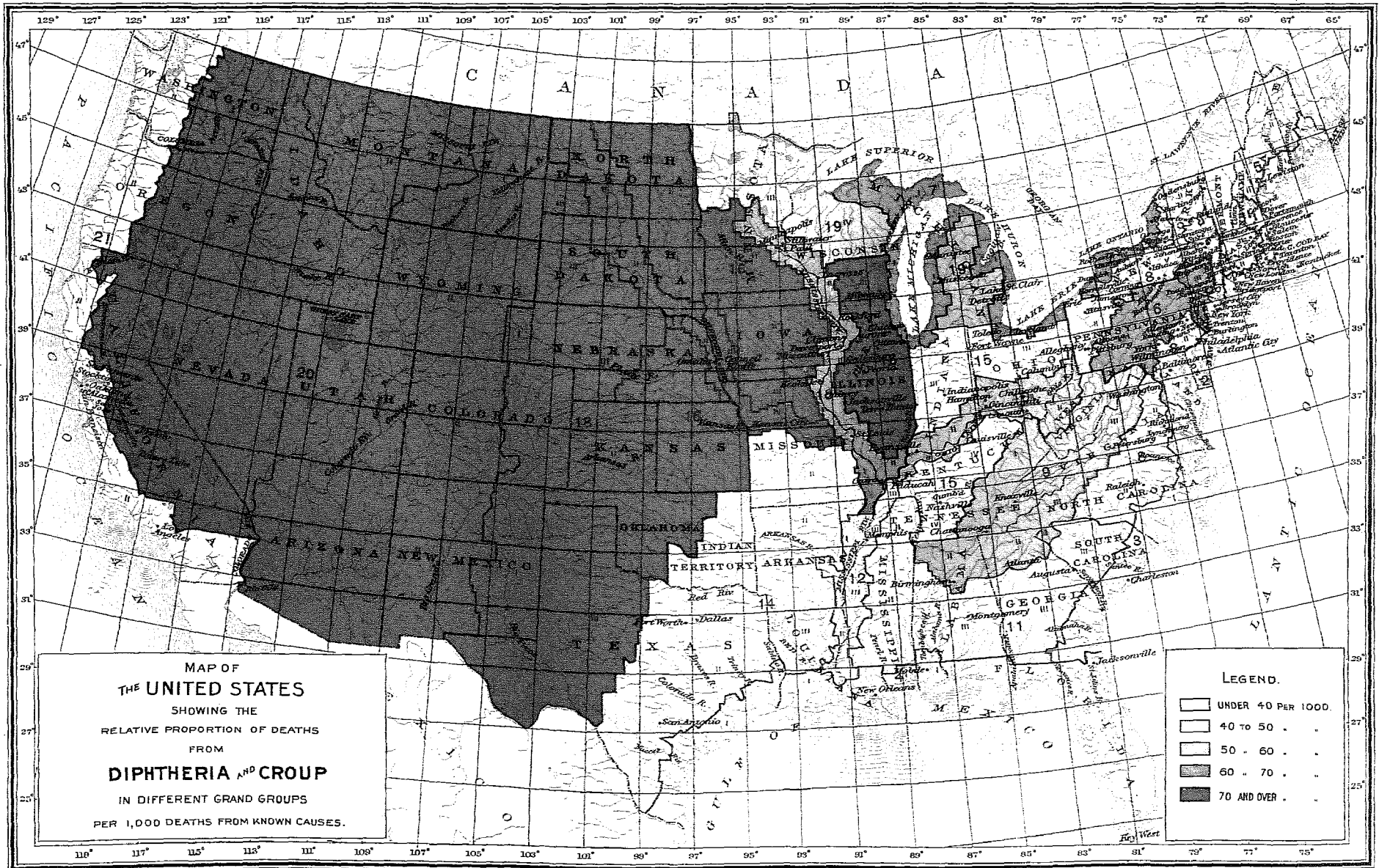
The geographical distribution of deaths from diphtheria and croup by state groups, per 1,000 deaths from known causes in each group, is shown in map No. 9.

The following table shows, for the sum of Grand Groups 1, 2, and 5, which were mainly registration areas, the number of deaths from diphtheria in each month during the census year, and the death rates per 100,000 of population, with distinction of cities and of rural districts:

MONTHS.	DEATHS.			RATE.		
	Total.	Cities.	Rural.	Total.	Cities.	Rural.
June.....	618	502	116	5.90	8.02	2.75
July.....	400	308	92	4.39	5.88	2.19
August.....	504	412	92	4.81	6.58	2.18
September.....	666	420	146	5.40	6.71	3.46
October.....	722	532	190	6.89	8.50	4.50
November.....	653	479	174	6.23	7.65	4.12
December.....	703	603	160	7.28	9.63	3.79
January.....	702	516	186	6.70	8.24	4.41
February.....	638	464	174	6.09	7.41	4.12
March.....	601	464	137	5.73	7.41	3.25
April.....	558	422	136	5.32	6.74	3.22
May.....	573	421	152	5.47	6.73	3.00

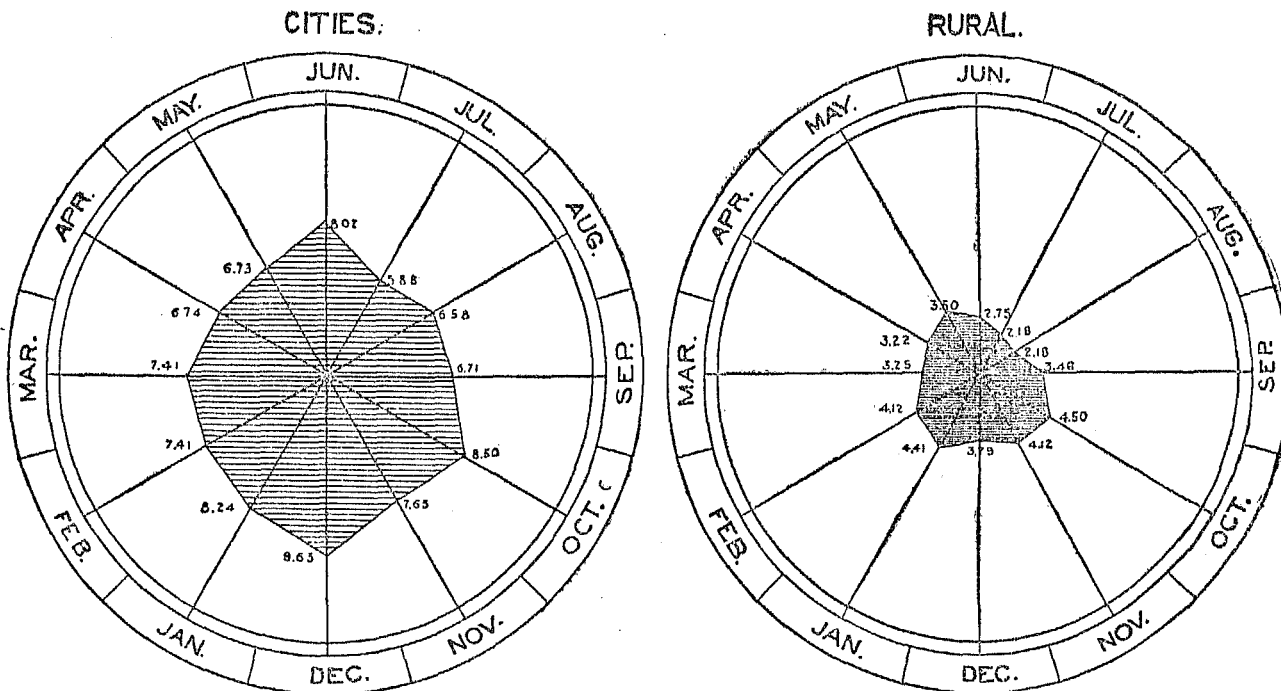






It will be seen from the preceding table that the highest death rate from diphtheria occurred in December (7.28), in October (6.89), and in January (6.70), and the lowest in July (4.39), in August (4.81), and in April (5.32).

The death rates in each month, as given in the preceding table, and the relative magnitude of the rates in the cities and the rural districts, are shown graphically in the following diagram:

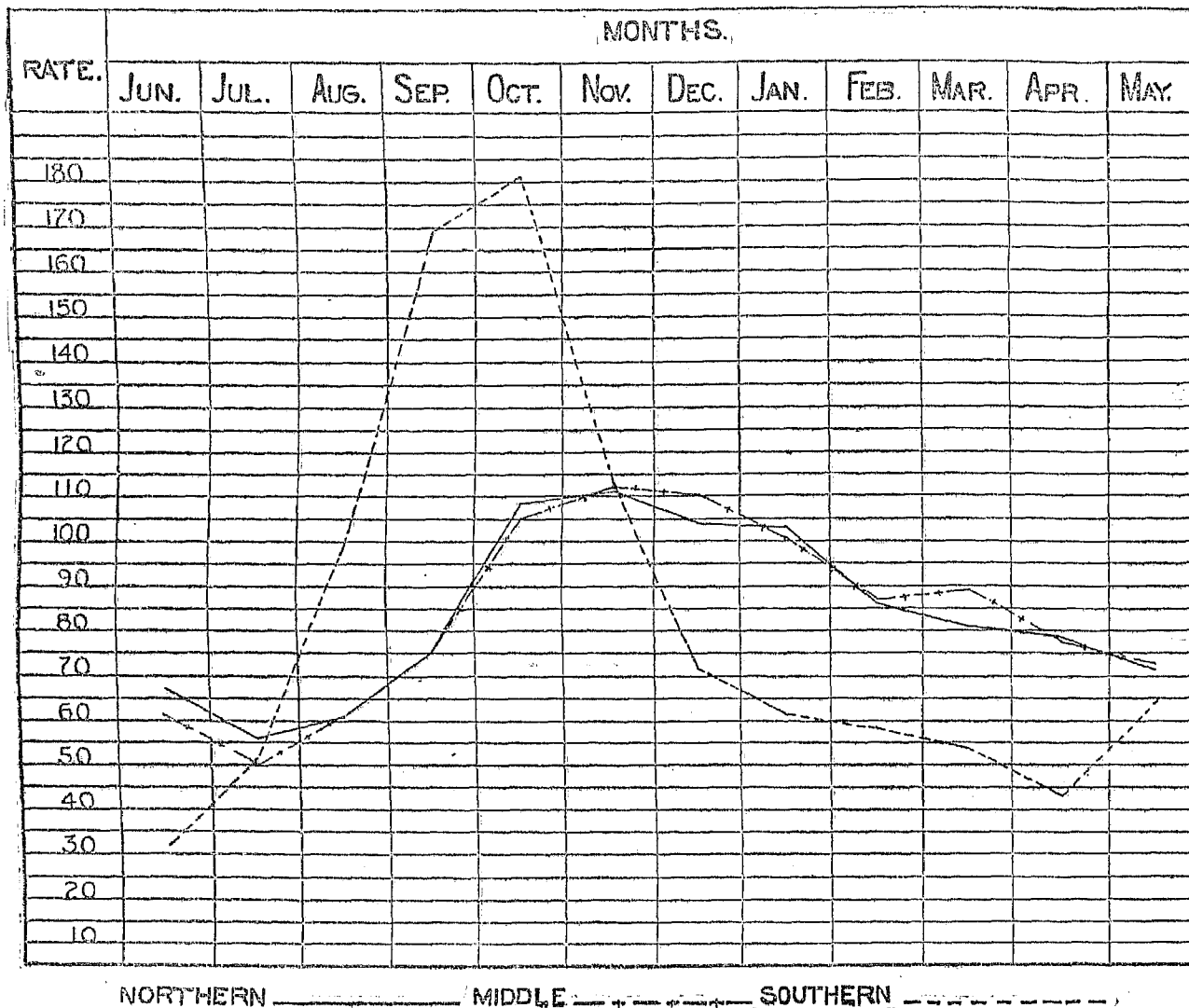


The following table shows, for three divisions of grand groups, namely: Northern, Middle, and Southern, the number of deaths from diphtheria, under 5 years of age, in each month of the census year, and the proportion in each month per 1,000 deaths from this disease in children under 5 years of age.

MONTHS.	NORTHERN REGION. GRAND GROUPS 1, 5, 7, 13, 17, AND 19.		MIDDLE REGION. GRAND GROUPS 2, 6, 8, 10, 15, 16, 18, 20, AND 21.		SOUTHERN REGION. GRAND GROUPS 3, 4, 9, 11, 12, AND 14.	
	Deaths.	Proportion.	Deaths.	Proportion.	Deaths.	Proportion.
June.....	309	66.61	515	60.89	32	31.71
July.....	258	55.62	424	50.13	52	51.54
August.....	282	60.79	519	61.36	99	98.12
September.....	349	75.23	636	75.20	171	100.47
October.....	499	107.57	884	104.52	183	181.37
November.....	514	110.80	944	111.61	114	112.08
December.....	489	104.12	929	100.84	73	72.35
January.....	479	103.26	851	100.61	63	62.44
February.....	398	85.79	737	87.14	59	58.47
March.....	376	80.84	756	89.38	54	53.52
April.....	361	77.82	647	76.50	43	42.62
May.....	332	71.67	616	72.83	66	65.41

VITAL AND SOCIAL STATISTICS.

The relative proportion of deaths in each month in the several divisions, indicated in the preceding table, is shown in the following diagram:



The preceding table and diagram indicate that in the Middle and Southern regions the greatest proportion of deaths of children under 5 years of age from diphtheria occurred during the month of October, and that in this month it was decidedly greater in the Southern region than it was in the Middle or Northern. In the Northern region it was highest in November. The least proportion of deaths from these causes occurred in July in the Northern and Middle regions, and in June in the southern belt.

While this table and diagram relate only to children who, as a rule, were not attending school, it must be remembered that they would be subjected to the influence of the contagion developed in aggregations of children in schools through their older brothers and sisters who were attending them. The rapid decrease in the proportion of deaths from October to January in the Southern region is in marked contrast to the gradual decrease in the proportions in the Northern and Middle regions.