PUBLIC HEALTH REPORTS

VOL. 44 APRIL 12, 1929 NO. 15

ENDEMIC GOITER IN TENNESSEE

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Introduction

As comparatively few systematic or comprehensive thyroid surveys have been made in the Southern States, there is little accurate information concerning the incidence of endemic goiter in that section of the United States. However, there is a general impression that simple thyroid enlargement is relatively infrequent in the southern portion of the United States. This assumption has been supported by the thyroid findings among 2,510,701 men who were examined in the United States for military service during the World War.[1] According to these statistics there was but little endemic goiter among the men examined in the South. From the State of Tennessee 120 instances of simple goiter were reported, a rate of 1.96 per 1,000 men examined. In the table from which this information is obtained, Tennessee stands twenty-sixth in goiter incidence in the list of 48 States.

The impression that simple goiter is infrequent in the South has been further heightened by the reiteration of the theory that there is an inverse relation between goiter incidence and the amount of iodine in the drinking water of a given community. Even before the epoch-making investigations of Chatin [2] in 1852, water was known to be a major natural source of iodine. Chatin, however, was probably the first to gain a clear conception of the relationship between endemic goiter and iodine in the air, water, and soil. The relation between goiter incidence and the amount of iodine in water has recently been reaffirmed by McClendon and Hathaway.[3] According to these investigators, determinations of the amounts of iodine in samples of drinking water obtained from many places in the United States showed larger quantities of the element in drinking waters of the Southern States than in waters from the Central Northern States and the Pacific Northwest. A sample of water from Nashville, Tenn., was found to

[1] Defects Found in Drafted Men, Table 18, p. 111. By A. G. Love and C. B. Davenport, prepared under the direction of the Surgeon General, M. H. Ireland, War Department, Washington, D. C., 1920.

[2] Chatin: Compt. Rend. Acad., 1852, vol. 34, pp. 14-51. Gaz. Hopiteaux, 1852, vol. 25, p. 95.

[3] McClendon, J. F., and Hathaway, J. C.: Inverse Relation Between Iodine in Food and Water and Goiter, Simple and Exophthalmic. Jour. Am. Med. Assoc., vol. 88, No. 21, p. 1668. May 24, 1924.

contain 22 parts of iodine per 100 billion parts of water and was arbitrarily classed by McClendon as being iodine-poor. Apparently this was the only sample of water thus tested in Tennessee.

Thyroid surveys in Tennessee.—Despite the prevailing impression that endemic goiter is infrequent in the South, it has been known for several years that in certain parts of Tennessee, at least, this malady prevails to a sufficient extent to have attracted the attention of laymen as well as practicing physicians and public health workers. Indications of such endemic foci are given in Table 1, which records the thyroid findings of several independent investigators.

TABLE 1.—*Incidence of endemic goiter in several localities in Tennessee as reported by independent observers*

Place	Boys and girls		Reported by—	Remarks
	Number examined	Percentage with goiter		
Anderson County:				
Briceville		20-30	F. B. Robinson	Women.
Do		5.0	do	Men.
Gibson County		3.0	F. L. Roberts	Practically no goiter.
Obion County	10,000	.1	J. W. Dennis	
Rutherford County [1]	2,625	7.3	Mustard and Waring	White children.
Do	1,409	13.0	do	Colored children.
Anderson County:				
Buffalo	51	11.8	W. J. Breeding	School examinations, Sept. 8, 1926, to Apr. 15, 1928.
Hopewell	45	35.5	do	Do.
Marco	126	27.8	do	Do.
Rosedale	53	18.9	do	Do.
Stainville	99	29.3	do	Do.
Bledsoe County:				
Pikeville	193	5.6	do	Do.
Cumberland County:				
Crossville	240	9.2	do	Do.
Cumberland Mt	134	22.4	do	Do.
Cannon County:				
Woodbury	255	3.5	do	Do.
Franklin County:				
Cowan	340	5.6	do	Do.
Hardeman County:				
Whiteville	317	6.6	do	Do.
Lawrence County:				
Lawrenceburg	629	9.1	do	Do.
Morgan County:				
Burrville	115	5.2	do	Do.
Petros	169	8.3	do	Do.
Sunbright	182	11.5	do	Do.
Wartburg	297	4.7	do	Do.
Marion County:				
South Pittsburg	517	7.2	do	Do.
Macon County:				
Lafayette	164	1.2	do	Do.
Overton County:				
Alpine	174	9.2	do	Do.
Livingston	338	4.1	do	Do.
Putnam County:				
Baxter	223	7.6	do	Do.
Cookeville	129	5.4	do	Do.
Cookeville City	165	10.3	do	Do.
Rhea County:				
Garrison	42		do	Do.
Graysville	244	2.0	do	Do.
Robbins	231	15.6	do	Do.
Washington	77	1.3	do	Do.
Sumner County:				
Bledsoe Academy	35	11.4	do	Do.
Mitchell	112	.9	do	Do.
Oak Grove	18	5.6	do	Do.

[1] The percentages of thyroid enlargement among white boys, white girls, colored boys, and colored girls in Rutherford County were 3.8, 11.7, 8.9, and 17.0, respectively.

TABLE 1.—*Incidence of endemic goiter in several localities in Tennessee as reported by independent observers*—Continued

Place	Boys and girls		Reported by—	Remarks
	Number examined	Percentage with goiter		
Sequatchie County:				
Dunlap High and Grammar	276	9.4	W. J. Breeding	School examinations, Sept. 8, 1926, to Apr. 15, 1928.
Trousdale County:				
Hartsville	139	14.4	do	Do.
Warren County:				
Campaign	157	5.1	do	Do.
McMinnville Grammar	452	1.5	do	Do.
Viola	142	2.8	do	Do.
White County:				
Bon Air	42	9.5	do	Do.
Old Zion	37	5.4	do	Do.
Sparta City	217	4.1	do	Do.
Sparta High	235	8.9	do	Do.

In two of the counties, Gibson and Obion, shown in Table 1, but little endemic thyroid enlargement was reported by the observers. However, Mustard and Waring, working in Rutherford County, which is near the center of the State, found simple goiter among 3.6 per cent of the white boys and 8.9 per cent of the colored boys. Among the white girls 11.7 per cent had simple goiter while 17 per cent of the colored girls also had this condition. Mustard and Waring found endemic goiter slightly more frequent among children attending schools in towns than among those in the rural sections. From Briceville, in Anderson County, Dr. F. B. Robinson has reported simple goiter to the extent of 20 to 30 per cent among adult women and 5 per cent among men.

One of the most extensive independent thyroid surveys was that undertaken by the workers attached to the division of child hygiene of the State department of health. Under the direction of Dr. W. J. Breeding a total of 7,411 thyroid examinations were made in 18 counties during the course of routine inspections of school children. A considerable amount of simple goiter was encountered in Anderson and Cumberland Counties during the course of these examinations. In other localities the incidence of the affection was less.

Purpose of the state-wide survey.—The results of the thyroid surveys listed in Table 1 made it apparent that simple goiter prevailed to a greater extent than had hitherto been suspected. Consequently the State commissioner of public health requested the United States Public Health Service to undertake a comprehensive state-wide thyroid survey.[4] This survey had for its objective the determination

[4] The writer desires to express his gratitude to Dr. E. L. Bishop, commissioner of public health, and to the members of his staff, for many courtesies and practical assistance in arranging for thyroid surveys in different sections of the State. The fine cooperation afforded by school authorities, nurses, physicians, and public health authorities aided greatly in securing the desired information.

of how much and where simple goiter was present in representative portions of the population. If it was found that simple thyroid enlargement prevailed to an extent sufficient to warrant special action, it was the desire of the State health authorities to have an appropriate remedy indicated.

Scope of the investigation.—Thyroid examinations were made in 40 communities in Tennessee, the aim being to include the larger places and insure adequate geographical distribution. In all, 9,073 white boys and 11,120 white girls were inspected for evidence of thyroid enlargement. A total of 1,759 colored boys, and 3,196 colored girls, living in 33 of the same communities, were also examined. For the most part those included in the study attended the senior and junior high schools. Occasionally children in the upper grades of the grammar schools were also included in the examinations.

Most of the surveys were confined to the larger cities and towns. Many of the places visited, however, have county high schools, which are attended by children living in the rural districts. Hence the city surveys are usually indicative of rural as well as urban conditions. In Shelby County, in which Memphis is located, in Davidson County, in which Nashville is located, and in Grundy County, a considerable number of children were examined in the rural schools. All of the examinations were made and the results recorded by a single observer, the writer. It was not practicable, except incidentally, to consider the epidemiological phases of goiter during the surveys for thyroid incidence.

Methods.—When the goiter studies of the Public Health Service were begun in 1923, a system of classifying simple thyroid enlargements was devised which differed from those customarily employed at that time. This classification, suggested by Senior Surg. Taliaferro Clark, attempted to recognize and record the finer gradations of size so that at subsequent examinations fluctuations in thyroid size could be noted. Beginning in Cincinnati, this classification was extensively used. Subsequently, identical methods were utilized in Colorado, Massachusetts, Connecticut, Oregon, and Tennessee. As the same methods were used by the same observers in all of these surveys, the data which have been forthcoming possess comparable values. The classification standards, which were used during the Tennessee as well as in previous surveys, have been set forth in several publications.[5] [6]

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[5] Olesen, Robert: Thyroid Survey of 47,493 Elementary School Children in Cincinnati. Pub. Health Rep., vol. 39, No. 30, pp. 1777-1802 (July 23, 1924). (Reprint No. 941.)

[6] Olesen, Robert: Endemic Goiter in Colorado. Pub. Health Rep., vol. 40, No. 1, pp. 1-20 (Jan. 1, 1925). (Reprint No. 983.)

Results

Separate consideration of races.—Early in the survey it became apparent that simple goiter in Tennessee is more frequent among the colored than among the white children. This discrepancy, occurring as it does among white and colored children living in the same communities, has given rise to much speculation. Obviously it is desirable that the records of thyroid enlargement among white and colored children be considered separately in order that reasons for the variation may, if possible, be discovered. Therefore, in the discussion that follows the incidence of thyroid enlargement will be considered as it occurs in each race.

WHITE CHILDREN

Degrees of thyroid enlargement among white children.—The numbers, degrees, and percentages of thyroid enlargements among 9,073 white boys and 11,120 white girls examined in 40 localities in Tennessee are shown in Table 2. Very slight enlargements, constituting a considerable majority of all degrees, were found among 7.7 per cent of the boys and 15.1 per cent of the girls. Slight enlargements were found among 1.5 per cent of the boys and 7.2 per cent of the girls. Moderate enlargements, while not prevailing to any considerable extent in either sex, were more frequently encountered among the girls. Four boys and 63 girls had enlargements of moderate size, the percentages being 0.04 and 0.56, respectively. No marked or very marked involvements were noted among the white boys or girls, indicating a generally light incidence of simple goiter in the State.

Adenomatous goiter appears to be less frequent among the school children examined in Tennessee than in those of other States in which surveys have been made by the Public Health Service. Thus, 16 adenomatous thyroids were noted among the white boys and 71 among the white girls, percentages of 0.2 and 0.64, respectively.

Low goiter rates among white children.—The lowest incidence rates among the white boys were recorded in Lexington, Savannah, Humboldt, Dickson, Lebanon, Bolivar, Fayetteville, and Jackson, in the order named. With the exception of Fayetteville and Lebanon, which are in central Tennessee, all of the places mentioned are in the western half of the State.

Among the white girls, the lowest incidence rates are found in Paris, Springfield, Bolivar, Lebanon, Pelham, Savannah, Fayetteville, and Dickson. Again there is a tendency for the lowest rates to be grouped in the western portion of the State, the exceptions being Pelham, Fayetteville, and Lebanon, which are located centrally.

TABLE 2a.—*Numbers, degrees, and percentages of thyroid enlargements among 9,073 white boys in each of 40 localities in Tennessee*

WHITE BOYS

Place	With thyroid enlargement						Normal	Total
	Degree of enlargement				Total	Per cent		
	Very slight	Slight	Moderate	Adenomatous				
Bolivar	6				6	5.3	108	114
Bristol	22	7		1	30	10.6	252	282
Chattanooga	26	1		1	28	7.5	348	376
Clarksville	30	6			36	11.9	267	303
Cleveland	18	1		1	20	6.6	281	301
Clinton	15	9		1	25	18.9	107	132
Columbia	12	3		1	16	6.2	243	259
Cookeville	13	2			15	7.4	189	204
Covington	15			1	16	10.0	144	160
Dickson	6	1			7	3.5	193	200
Dyersburg	12	2		1	15	8.0	173	188
Erwin	29	8		1	38	16.3	195	233
Fayetteville	8	2		1	11	5.4	194	205
Greeneville	19	3			22	9.8	203	225
Humboldt	2				2	2.9	66	68
Jacksboro	12	2			14	17.3	67	81
Jackson	24	2		2	28	5.6	469	497
Johnson City	43	6	1	1	51	16.3	262	313
Kingsport	43	17			60	16.1	312	372
Knoxville	39	6			45	8.9	461	506
Lafollette	18	8			26	19.0	111	137
Lebanon	9				9	4.3	200	209
Lexington	1				1	.8	122	123
McMinnville	22	6			28	13.8	175	203
Maryville	22	3			25	9.0	252	277
Memphis	18				18	6.1	279	297
Shelby County	25	6		1	32	9.8	296	328
Morristown	17	5	1		23	8.5	246	269
Nashville	25	1		1	27	11.0	219	246
Davidson County	14	2			16	9.9	145	161
Newport	24	7	2		33	15.5	180	213
Paris	14	2			16	6.5	231	247
Pelham	10	3			13	6.6	185	198
Pulaski	10	7			17	10.1	151	168
Rockwood	28	6		1	35	16.3	179	214
Savannah	1				1	1.7	57	58
Shelbyville	13	2			15	7.7	180	195
Springfield	9	2			11	6.6	155	166
Trenton	8			1	9	7.1	117	126
Union City	20				20	9.1	199	219
Total	702	138	4	16	860		8,213	9,073
Per cent	7.7	1.5.	.04	.2		9.5		

High goiter rates among white children.—The highest prevalence rates were recorded among the boys attending school in Lafollette, Clinton, Jacksboro, Rockwood, Erwin, Johnson City, and Newport, all of which places are located in the eastern section of the State.

When the percentages of thyroid incidence among the white girls are examined, it is seen that the highest rates are found in Newport, Nashville, Clinton, Jacksboro, Bristol, Kingsport, Erwin, and Clarksville. Here again the eastern part of the State is represented to a greater extent in higher rates of goiter incidence. Nashville and Clarksville are located in the central third of Tennessee. Generally speaking, it may be noted that the highest incidence rates among white children are in eastern Tennessee, while the lowest rates are present in localities in the western portion of the State.

TABLE 2b.—*Numbers, degrees, and percentages of thyroid enlargements among 11,120 white girls in each of 40 localities in Tennessee*

WHITE GIRLS

Place	With thyroid enlargement						Normal	Total
	Degree of enlargement				Total	Per cent		
	Very slight	Slight	Moderate	Adenomatous				
Bolivar	13	3		2	18	14.2	109	127
Bristol	49	28	1	2	80	29.2	194	274
Chattanooga	48	13	2	3	66	19.9	266	332
Clarksville	79	36	3		118	28.4	297	415
Cleveland	51	20		2	73	20.1	290	363
Clinton	34	25	1		60	30.9	134	194
Columbia	49	9		1	59	19.3	247	306
Cookeville	28	15	1		44	19.5	182	226
Covington	32	14		1	47	22.9	158	205
Dickson	34	7	1	3	45	17.0	219	264
Dyersburg	33	12		2	47	18.5	207	254
Erwin	38	26		6	70	28.5	176	246
Fayetteville	24	11	2		37	16.7	185	222
Greeneville	42	23	3	4	72	22.3	250	322
Humboldt	19	3			22	25.3	65	87
Jacksboro	8	12	3		23	31.1	51	74
Jackson	73	34	2	3	112	18.5	493	605
Johnson City	81	30	3	5	119	31.9	254	373
Kingsport	77	42	5	6	130	28.8	321	451
Knoxville	84	64	4	3	155	25.5	453	608
Lafollette	25	26	5		56	27.5	148	204
Lebanon	27	13	1		41	14.3	246	287
Lexington	22	9	1	2	34	18.6	149	183
McMinnville	31	18			49	22.2	172	221
Maryville	54	14	3	2	73	23.0	244	317
Memphis	64	19	1	1	85	21.1	318	403
Shelby County	75	21	1	1	98	24.5	301	399
Morristown	45	25		2	72	22.2	252	324
Nashville	99	71	4	3	177	36.3	309	486
Davidson County	46	23	2	4	75	29.4	180	255
Newport	46	30	5	2	83	36.7	143	226
Paris	25	13		2	40	13.8	249	289
Pelham	21	7		2	30	15.3	166	196
Pulaski	25	23	3	1	52	26.1	147	199
Rockwood	48	17	2	2	69	26.4	192	261
Savannah	14	5			19	15.8	101	120
Shelbyville	29	13	1		43	19.9	173	216
Springfield	21	7			28	13.9	173	201
Trenton	23	8	1	1	33	23.6	107	140
Union City	38	13	2	3	56	22.8	189	245
Total	1,674	802	63	71	2,610		8,510	11,120
Per cent	15.1	7.2	.57	.64		23.5		

COLORED CHILDREN

Degrees of thyroid enlargement among colored children.—In Table 3 are shown the numbers, degrees, and percentages of simple thyroid enlargements among 1,759 colored boys and 3,196 colored girls examined in 33 of the same communities in which white children were surveyed. Very slight thyroid enlargements were recorded among 12.2 per cent of the boys and 19.5 per cent of the girls, constituting, as was the case among the white children, the greater number of involvements noted. The next larger degree of enlargement, the slight, was present among 2.6 per cent of the boys and 13.7 per cent of the girls. Moderate enlargements were found in 3 of the boys and 55 of the girls, the percentages being 0.17 and 1.7,

respectively. One very marked enlargement was noted in a colored girl.

Eight of the colored boys were found to have adenomatous goiters the percentage having this condition, 0.45, being higher than among the white boys. Only 16, or 0.5 per cent, of the colored girls had adenomatous thyroids, the percentage of this form being less than among the white girls. However, the numbers involved are too small to be significant.

TABLE 3a.—*Numbers, degrees, and percentages of thyroid enlargements among 1,759 colored boys in each of 33 localities in Tennessee*

COLORED BOYS

Place	With thyroid enlargement						Normal	Total
	Degree of enlargement				Total	Per cent		
	Very slight	Slight	Moderate	Adenomatous				
Bolivar	2				2	25.0	6	8
Bristol	7	4		1	12	23.5	39	51
Chattanooga	7	4		1	12	8.8	124	136
Clarksville	3				3	37.5	5	8
Cleveland	4	3			7	12.7	48	55
Clinton		1			1	14.3	6	7
Columbia	6	1			7	20.6	27	34
Covington							21	21
Dickson	1				1	3.0	32	33
Dyersburg	7	3			10	16.4	51	61
Fayetteville	4	1			5	38.4	8	13
Greeneville	6	1			7	22.6	24	31
Humboldt		1			1	12.5	7	8
Jackson	14				14	11.5	108	122
Johnson City	13	2		1	16	36.3	28	44
Kingsport	3	1			4	22.2	14	18
Knoxville	16	1	1		18	16.8	89	107
Lafollette	5				5	38.5	8	13
Lebanon	3	1			4	11.1	32	36
McMinnville	5	2			7	24.1	22	29
Maryville	6				6	14.6	35	41
Memphis	22	2		3	27	17.5	127	154
Shelby County	24	6		1	31	17.2	149	180
Morristown	5	2			7	18.4	31	38
Nashville	37	4			41	14.2	247	288
Newport		2	1		3	42.9	4	7
Paris	5				5	10.2	44	49
Pulaski	1				1	3.3	29	30
Rockwood	3	1	1	1	6	20.7	23	29
Shelbyville		1			1	2.5	39	40
Springfield	3				3	12.0	22	25
Trenton							6	6
Union City	2	2			4	10.8	33	37
Total	214	46	3	8	271		1,488	1,759
Per cent	12.2	2.6	.17	.45		15.4		

Low incidence rates among colored children.—Because of the comparatively few colored boys available for examination, the incidence rates in this group are of doubtful significance. However, the lowest rates were noted among the colored boys attending schools in Trenton, Shelbyville, Dickson, Pulaski, Chattanooga, Paris, Union City, and Lebanon. These localities are about evenly distributed between the western and central portions of the State.

Low rates among colored girls were recorded in Dickson, Maryville, Pulaski, Covington, Nashville, Dyersburg, Union City, and Paris. Of these places, Maryville is in the eastern portion of the State and, therefore, is an exception to the general findings. The remaining places are in the central and western portions of the State.

TABLE 3b.—*Numbers, degrees, and percentages of thyroid enlargements among 3,196 colored girls in each of 33 localities in Tennessee*

COLORED GIRLS

Place	With thyroid enlargement							Normal	Total
	Degree of enlargement					Total	Per cent		
	Very slight	Slight	Moderate	Marked	Adenomatous				
Bolivar	2	3	2			7	33.3	14	21
Bristol	9	11	1			21	33.3	42	63
Chattanooga	44	26	2			72	30.1	167	239
Clarksville	3	2	1			6	42.8	8	14
Cleveland	18	14	2		1	35	50.0	35	70
Clinton	1	2	1			4	50.0	4	8
Columbia	14	15	1			30	57.7	22	52
Covington	4	9			1	14	26.9	38	52
Dickson	7	2	1			10	22.7	34	44
Dyersburg	17	13	1		1	32	29.3	77	109
Fayetteville	2	3				5	41.6	7	12
Greeneville	8	5				13	43.3	17	30
Humboldt	3	3	1			7	33.3	14	21
Jackson	46	29	2			77	30.9	172	249
Johnson City	12	15	3		2	32	48.5	34	66
Kingsport	12	9	1			22	71.0	9	31
Knoxville	40	36	5		1	82	35.6	148	230
Lafollette	6	3				9	64.3	5	14
Lebanon	16	11	1			28	40.0	42	70
McMinnville	9	14	4			27	45.7	32	59
Maryville	8	2				10	23.2	33	43
Memphis	87	52	3		4	146	41.1	209	355
Shelby County	83	44	5		1	133	33.7	262	395
Morristown	11	7	4	1	2	25	62.5	15	40
Nashville	84	53	3		1	141	28.1	361	502
Newport	8	6	2			16	59.2	11	27
Paris	14	9	1			24	30.7	54	78
Pulaski	11	5				16	26.2	45	61
Rockwood	3	8	3		1	15	51.7	14	29
Shelbyville	14	12	2			28	37.8	46	74
Springfield	11	11	2		1	25	39.7	38	63
Trenton	3		1			4	30.8	9	13
Union City	14	5				19	30.6	43	62
Total	624	439	55	1	16	1,135		2,061	3,196
Per cent	19.5	13.7	1.7	.031	.5		35.5		

High incidence rates among colored children.—In interpreting the high incidence rates among the colored boys, it should again be recalled that the numbers in this group were small. The following localities are listed in order of greatest incidence: Newport, Lafollette, Fayetteville, Clarksville, Johnson City, Bolivar, McMinnville, and Bristol. Even with inadequate numbers the rates tend to be higher in the central and eastern sections.

Among the colored girls the highest incidence rates are in Kingsport, Lafollette, Morristown, Newport, Columbia, Rockwood, Cleveland, and Clinton. This fact, taken into consideration with the findings for both sexes and races, points to the eastern portion of the State as having a higher incidence of simple goiter.

RACIAL INCIDENCE OF SIMPLE GOITER

Simple goiter is much more frequently encountered among colored than among white school children. Thus, some degree of simple thyroid enlargement was found in 9.5 per cent of the 9,073 white boys and 15.4 per cent of the 1,759 colored boys. Among the girls, some degree of thyroid enlargement was found in 23.5 per cent of

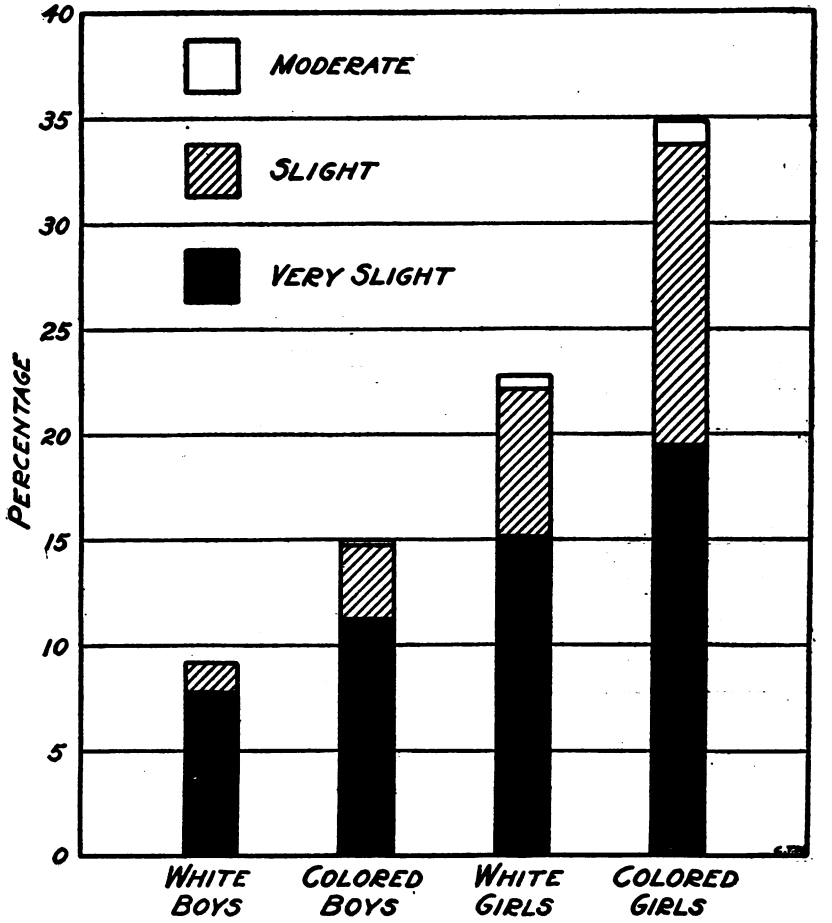


CHART 1.—Comparison of percentages of very slight, slight, and moderate-sized thyroid enlargements among 9,073 white boys and 11,120 white girls in 40 localities, and 1,759 colored boys and 3,196 colored girls in 33 localities, in Tennessee

the 11,120 white girls and 35.5 per cent of the 3,196 colored girls examined. The differences are so clearly marked that some consideration may well be given to the determination of the reasons for the discrepancy.

The percentages of very slight, slight, and moderate thyroid enlargements, according to sex and race, are shown graphically in

Chart 1. The differences in total goiter incidence and in the amounts of each degree of enlargement are clearly indicated in this chart.

Incidence by age, sex, and race in Tennessee.—The age incidence of simple thyroid enlargement among the white and colored children examined is shown graphically in Chart 2. It will be noted that, except at the 11-year age period, the colored boys have consistently more endemic thyroid enlargement than do the white boys. There is, however, more thyroid involvement among the white girls than among either the colored or white boys. The greatest amount of simple goiter is present among the colored girls.

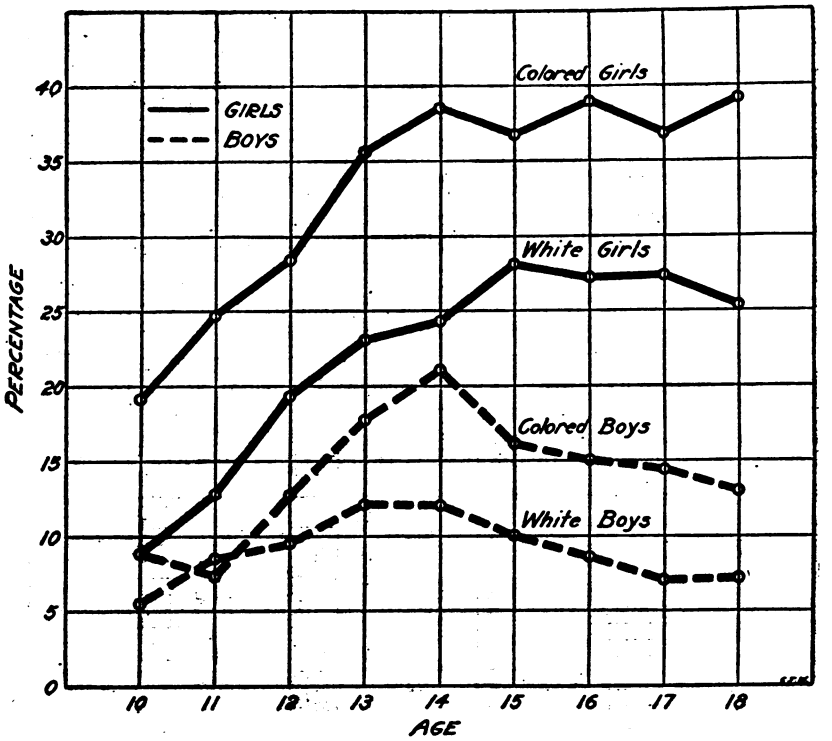


CHART 2.—Percentages of all grades of thyroid enlargement among 9,073 white boys and 11,120 white girls, by ages, in 40 localities, and 1,759 colored boys and 3,196 colored girls, by ages, in 33 localities, in Tennessee

Another point clearly brought out in Chart 2 is the age distribution of simple goiter in each sex and race. After the age of 14 there is a rather rapid decline in incidence rates among both white and colored boys. Among the white girls, however, the decrease of incidence after the age of 15 is very gradual. Among the colored girls there is no decrease in the incidence, the curve maintaining a rise to the age of 18.

TABLE 4a.—*Numbers and degrees of thyroid enlargements among 9,073 white boys (by ages) in 40 places in Tennessee*

WHITE BOYS

Age	With enlarged thyroids						Normal	Total
	Degree of enlargement				Total	Per cent		
	Very slight	Slight	Moderate	Adenomatous				
10 and under	17	2	-------	1	20	5.5	345	365
11	46	7	-------	-------	53	8.3	584	637
12	75	18	1	2	96	9.5	917	1,013
13	125	28	-------	4	157	12.1	1,141	1,298
14	143	26	-------	1	170	12.0	1,249	1,419
15	107	22	1	2	132	10.0	1,192	1,324
16	86	14	1	1	102	8.6	1,083	1,185
17	46	13	1	1	61	7.0	814	875
18 and over	57	8	-------	4	69	7.2	888	957
Total	702	138	4	16	860	-------	8,213	9,073
Per cent	7.7	1.5	.04	.2	-------	9.5	90.5	100.0

TABLE 4b.—*Numbers and degrees of thyroid enlargements among 11,120 white girls (by ages) in 40 places in Tennessee*

WHITE GIRLS

Age	With enlarged thyroids						Normal	Total
	Degree of enlargement				Total	Per cent		
	Very slight	Slight	Moderate	Adenomatous				
10 and under	35	6	-------	-------	41	8.1	466	507
11	72	25	2	4	103	12.8	701	804
12	161	59	4	6	230	19.4	954	1,184
13	221	86	3	14	324	23.0	1,081	1,405
14	256	126	10	10	402	24.2	1,258	1,660
15	307	152	12	6	477	28.2	1,216	1,693
16	278	137	10	7	432	27.1	1,162	1,594
17	182	123	12	13	330	27.4	874	1,204
18 and over	162	88	10	11	271	25.3	798	1,069
Total	1,674	802	63	71	2,610	-------	8,510	11,120
Per cent	15.1	7.2	.56	.64	-------	23.5	76.5	100.0

Race incidence of goiter in the United States.—Apparently there are variations in the comparative incidence of simple goiter among white and colored children in different sections of the United States. So far, however, there is a difference of opinion on this point, some observers asserting that simple goiter is less frequent among colored than among white children while others hold the opposite viewpoint.

Crotti,[7] for instance, believes that "the large amount of goiter in the mountain regions is a striking contrast with the small amount near the eastern seashore, and this is only in a small degree to be accounted for by the fact that the negro population is greater at the seashore,

[7] Crotti, A.: Thyroid and Thymus. 1922. P. 247.

and has something less than half the incidence of simple goiter than the white population has." "Furthermore," continues Crotti, "the rural (goiter) rate is depressed by the low rate in the agricultural districts of the South, especially those occupied by negroes."

Basing his statement upon a wide experience with simple goiter in India, McCarrison [8] states that "all races of mankind suffer from goiter; there appears to be no such thing as racial immunity to the disease."

Bram [9] asserts: "Though simple goiter is most common among negroes, hyperthyroidism is rarely ever seen in this race."

TABLE 5a.—*Numbers and degrees of thyroid enlargements among 1,759 colored boys (by ages) in 25 places in Tennessee*

COLORED BOYS

Age	With enlarged thyroids						Normal	Total
	Degree of enlargement				Total	Per cent		
	Very slight	Slight	Moderate	Adenomatous				
10 and under	4	1			5	8.8	52	57
11	7				7	7.4	87	94
12	15	3	1	1	20	12.7	138	158
13	27	13	1		41	17.7	190	231
14	42	12		1	55	21.0	206	261
15	42	3	1	1	47	16.1	232	279
16	27	6		2	35	15.0	199	234
17	24	5			29	14.4	172	201
18 and over	26	3		3	32	13.1	212	244
Total	214	46	3	8	271		1,488	1,759
Per cent	12.2	2.6	.17	.45		15.4	84.6	100.0

TABLE 5b.—*Numbers and degrees of thyroid enlargements among 3,196 colored girls (by ages) in 33 places in Tennessee*

COLORED GIRLS

Age	With enlarged thyroids							Normal	Total
	Degree of enlargement					Total	Per cent		
	Very slight	Slight	Moderate	Marked	Adenomatous				
10 and under	19	4				23	19.2	97	120
11	24	13	1			38	24.7	116	154
12	52	28	3			83	28.4	209	292
13	73	49	4		1	127	35.6	229	356
14	95	76	8		3	182	38.5	290	472
15	98	85	10	1	3	197	36.7	340	537
16	116	85	6		6	213	39.0	334	547
17	78	51	13		1	143	36.7	246	389
18 and over	69	48	10		2	129	39.2	200	329
Total	624	439	55	1	16	1,135		2,061	3,196
Per cent	19.5	13.7	1.7	.031	.5		35.5	64.5	100.0

[8] McCarrison R.: The Thyroid Gland in Health and Disease. 1917. P. 87.
[9] Bram I.: Exophthalmic Goiter and Its Nonsurgical Treatment. 1920. P. 87.

A greater incidence of simple goiter among colored children was found in the thyroid survey made in Cincinnati by Olesen.[10] Thus, 26.4 per cent of the 21,314 white boys and 28.2 per cent of the 2,396 colored boys examined had some degree of thyroid enlargement. Among the girls, 39 per cent of the 21,018 white girls and 45.1 per cent of the 2,765 colored girls had some degree of thyroid involvement.

A thyroid survey in Rutherford County, Tenn., by Mustard and Waring,[11] confirms the Cincinnati findings with regard to the greater incidence of simple goiter among colored children. These writers say: "Olesen found in Cincinnati and again in Colorado that there was no evidence of racial immunity to simple goiter in the colored race. Goldberger and Aldinger,[12] in reporting a thyroid survey made outside the goiter belt (New York City), remark that enlarged thyroids are less frequently observed in negro girls, to the extent of 6.7 per cent. Cohen [13] also finds that, in New York City, this figure for negro girls is slightly lower than that for white girls. Our results rather bear out the observations of Olesen for our figures indicate that the incidence of thyroid enlargements is not only higher for colored girls than for white girls, but also higher for colored boys than for white boys. We have indications of a racial susceptibility rather than a racial immunity."

Variations in goiter incidence among colored children.—When the several references are examined, it appears likely that all may contain elements of approximate correctness, but only for the specific localities in which the observations were made. Thus it may be true that the incidence of simple goiter is actually less among the colored children in New York City than among the white children in the same community. In Cincinnati, however, the affection is more frequent among the colored children. In Tennessee the difference is even more striking, goiter being considerably more frequent in the colored race. These differences immediately suggest that the conditions responsible for endemic goiter do not prevail with the same intensity among the colored children of New York City as they do in Cincinnati, which occupies an intermediate position in this respect, or in Tennessee where the incidence of simple goiter among colored children is still greater. Just what are the conditions involved in these variations of racial incidence is a matter for further study.

Probable causes for racial variations in goiter incidence.—The causes of endemic goiter have been stated in a previous communication.[14]

[10] See reference in footnote 5, p. 868.

[11] Mustard, H. S., and Waring, J. L.: Thyroid Enlargement; Occurrence in school Children in Rutherford County, Tennessee. Jour. Amer. Med. Assoc., Vol. 88, No. 10, p. 714 (March 5, 1927).

[12] Goldberger, I. H., and Aldinger, A. K.: Goiter Incidence in School Girls of New York City. Am. Jour. Dis. Child., vol. 29, p. 780 (June, 1925).

[13] Cohen, F.: Goiter in Children in New York City: Thyroid Survey of 11,084 School Girls and 783 School Boys. Am Jour. Dis. Child., vol. 31, p. 476 (May, 1926).

[14] Olesen, Robert: The Thyroid Gland and Communicable diseases. Pub. Health Rep., vol. 43, No. 46, pp. 3009-3020 (Nov. 16, 1928). (Reprint No. 1256.)

It may be recalled that, in general, this disease is due either to a relative or absolute deficiency of iodine. At present there are indications that the deficiency is both relative and absolute, though the significance of each factor remains to be determined. During the survey in Tennessee, no precise epidemiological studies were made for the purpose of determining the underlying causes of the simple goiter encountered. However, numerous inquiries were made and much thought was given to the question in an effort to evolve a reasonable explanation. It may be suggested that the colored people, by reason of smaller income and less knowledge of nutritional problems, are not able to select as wisely and prepare as skillfully the food which they are able to purchase. Then, too, their tastes may be different. When there are constant variations in goiter incidence among white and colored children residing in the same community and using the same drinking water, one of the remaining factors entitled to consideration as a possible cause of thyroid enlargement is the diet. In searching for a suitable explanation it may be recalled that, as explained by Marine,[15] one of the causes of simple goiter is a relative deficiency of iodine occasioned by partaking of a diet containing an excess of fat. With such a diet it is probable that there is an interference with the intake and utilization of iodine which may be available in normal quantities. Consequently, the thyroid, in an effort to supply the required iodine, undergoes compensatory hypertrophy.

Experimental production of simple goiter.—Hyperplastic goiter has been produced experimentally by McCarrison in pigeons, rats, and goats by feeding an excess of fats or of fatty acids in an otherwise well-balanced diet.[16]

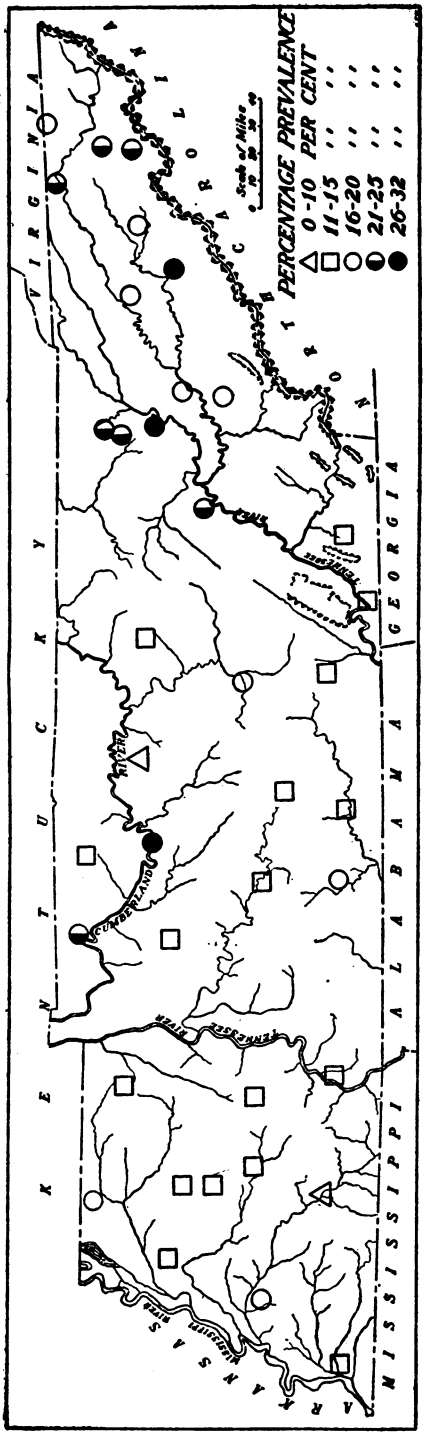
More recently McCarrison[17] has produced thyroid hypertrophy in pigeons by using a diet containing more than 60 per cent of white flour or of vitamin-poor carbohydrates, 20 per cent or less of protein, with fats and inorganic salts (including iodine) in adequate amounts, but no green vegetables or fruit.

Diet as probable cause of goiter.—The greater incidence of simple goiter among colored children in Tennessee may, to some extent, be explained by the inclusion in the dietary of excessive quantities of salt pork, fried foods, wheat flour, corn meal, grits, sirup, and similar foodstuffs. Even though iodine be available in adequate amount, the preponderance of these foods may interfere with the intake and utilization of the element.

[15] Marine, David: The Importance of our Knowledge of Thyroid Physiology in the Control of Thyroid Diseases. Arch. of Int. Med., vol. 32, No. 6, p. 811 (December, 1923).

[16] McCarrison, R.: Ind. Jour. Med. Res., vol. 7, p. 633 (1919).

[17] McCarrison, R.: The Experimental Production of a New Type of Goiter Unrelated in Its Origin to Iodine. The Lancet, April 30, 1927, p. 916.



Map showing the percentage distribution of endemic thyroid enlargement in Tennessee as disclosed by a survey of 9,073 white boys and 11,120 white girls

In explanation of the racial variations of simple goiter in New York City, Cincinnati, and Tennessee, it may be suggested that somewhat better economic conditions may prevail in the first-named city. It is well known that economic conditions among the colored people of Cincinnati are highly unsatisfactory, because of the large and unexpected influx of these people from the South. It is conceivable that the economic status and, consequently, the food habits of the colored people are even less satisfactory in Tennessee than in New York City or Cincinnati.

Distribution of simple goiter in Tennessee.—The total numbers and percentages of all degrees of simple thyroid enlargement among the children examined in Tennessee are shown in Table 6. These tabulations are of interest because the enlargements are given for each locality and also for each sex and race. The information presented in Table 6 pertaining to white children has been utilized in a spot map showing percentage of distribution. By means of symbols the percentage incidence of endemic goiter in each of the places surveyed has been indicated. An examination of the spot map indicates that, with the exception of Nashville and Clarksville, which are located in the northern and central sections of the State, endemic goiter is much more frequently encountered in the eastern section. The somewhat higher incidence in Nashville may probably be explained by the

restriction of the examinations to senior high school students. In other communities, on the other hand, pupils of lower ages were also examined.

Had the percentage incidence of simple goiter among colored children been similarly displayed on a spot map, the same tendency toward grouping of the higher rates in the eastern portion of the State would become apparent. In view of this greater occurrence of simple thyroid enlargement in the eastern part of the State, it may properly be concluded that the application of prophylactic measures is more especially indicated in this section.

TABLE 6.—*Total numbers and percentages of thyroid enlargement among 9,073 white boys and 11,120 white girls and both sexes combined, in each of 40 places, and among 1,759 colored boys and 3,196 colored girls in each of 33 places in Tennessee*

Locality	White						Colored					
	Number			Per cent			Number			Per cent		
	Both sexes	Boys	Girls	Both sexes	Boys	Girls	Both sexes	Boys	Girls	Both sexes	Boys	Girls
All localities	3,470	860	2,610	17.2	9.5	23.5	1,406	271	1,135	28.4	15.4	35.5
Bolivar	24	6	18	9.9	5.3	14.2	9	2	7	31.0	25.0	33.3
Bristol	110	30	80	19.8	10.6	29.2	33	12	21	28.9	23.5	33.3
Chattanooga	94	28	66	13.3	7.5	19.9	84	12	72	22.4	8.8	30.1
Clarksville	154	36	118	21.5	11.9	28.4	9	3	6	40.9	37.5	42.8
Cleveland	93	20	73	14.0	6.6	20.1	42	7	35	33.6	12.7	50.0
Clinton	85	25	60	26.0	18.9	30.9	5	1	4	33.3	14.3	50.0
Columbia	75	16	59	13.3	6.2	19.3	37	7	30	43.0	20.6	57.7
Cookeville	59	15	44	13.7	7.4	19.5						
Covington	63	16	47	17.3	10.0	22.9	14		14	19.2		26.9
Dickson	52	7	45	11.2	3.5	17.0	11	1	10	14.3	3.0	22.7
Dyersburg	62	15	47	14.0	8.0	18.5	42	10	32	24.7	16.4	29.3
Erwin	108	38	70	22.5	16.3	28.5						
Fayetteville	48	11	37	11.2	5.4	16.7	10	5	5	40.0	38.4	41.6
Greeneville	94	22	72	17.2	9.8	22.3	20	7	13	32.8	22.6	43.3
Humboldt	24	2	22	15.5	2.9	25.3	8	1	7	27.6	12.5	33.3
Jacksboro	37	14	23	23.9	17.3	31.1						
Jackson	140	28	112	12.7	5.6	18.5	91	14	77	24.5	11.5	30.9
Johnson City	170	51	119	24.8	16.3	31.9	48	16	32	43.6	36.3	48.5
Kingsport	190	60	130	23.1	16.1	28.8	26	4	22	53.0	22.2	71.0
Knoxville	200	45	155	18.0	8.9	25.5	100	18	82	29.7	16.8	35.6
Lafollette	82	26	56	24.0	19.0	27.5	14	5	9	51.9	38.5	64.3
Lebanon	50	9	41	10.1	4.3	14.3	32	4	28	30.2	11.1	40.0
Lexington	35	1	34	11.4	.8	18.6						
McMinnville	77	28	49	18.1	13.8	22.2	34	7	27	38.6	24.1	45.7
Maryville	98	25	73	16.5	9.0	23.0	16	6	10	19.0	14.6	23.2
Memphis	103	18	85	14.7	6.1	21.1	173	27	146	34.0	17.5	41.1
Shelby County	130	32	98	17.9	9.8	24.5	164	31	133	28.5	17.2	33.7
Morristown	95	23	72	16.0	8.5	22.2	32	7	25	41.0	18.4	62.5
Nashville	204	27	177	27.9	11.0	36.3	182	41	141	23.0	14.2	28.1
Davidson County	91	16	75	21.9	9.9	29.4						
Newport	116	33	83	26.4	15.5	36.7	19	3	16	55.9	42.9	59.2
Paris	56	16	40	10.4	6.5	13.8	29	5	24	22.8	10.2	30.7
Pelham	43	13	30	10.9	6.6	15.3						
Pulaski	69	17	52	18.8	10.1	26.1	17	1	16	18.7	3.3	26.2
Rockwood	104	35	69	21.9	16.3	26.4	21	6	15	36.2	20.7	51.7
Savannah	20	1	19	11.2	1.7	15.8						
Shelbyville	58	15	43	14.1	7.7	19.9	29	1	28	25.4	2.5	37.8
Springfield	39	11	28	10.6	6.6	13.9	28	3	25	31.8	12.0	39.7
Trenton	42	9	33	15.8	7.1	23.6	4		4	21.0		30.8
Union City	76	20	56	16.4	9.1	22.8	23	4	19	23.3	10.8	30.6

Water supplies in Tennessee.—The source, treatment, and relative safety of the water supplies of the places surveyed in Tennessee are shown in Table 7. This information was furnished by the division of sanitary engineering of the State department of public health, which has general supervision over the public water supplies. It is evident from this table that all but three of the supplies listed, even those used without special treatment, are ordinarily safe for human consumption. Because of the maintained interest in the possible rôle of drinking water in the causation of simple goiter, it is desirable that the subject be considered briefly.

Drinking water as cause of goiter.—From the earliest times a definite relationship has been reputed to exist between simple goiter and drinking water. So firmly fixed has been this conviction that various expedients have been employed to relieve water of its goitrigenous properties. Thus, the processes of decantation, filtration, boiling, distillation, and chemical disinfection have each had their enthusiastic advocates. Many relationships between goiter and drinking water have been suggested. The theories advanced are many, usually ingenious, but frequently untenable. From the maze of conjecture and investigation several of the more plausible conceptions may be singled out for brief appraisal.

The more logical contentions attribute simple goiter to one or more of the following conditions:

1. Chemical ingredients of water.
2. Geological peculiarities of the soil, by means of which a specific colloidal poison is imparted to the water.
3. Faulty nutrition.
4. Living organisms in water.

In all probability endemic goiter is due, in part at least, to the absence from, rather than the presence in, water of a specific substance which normally aids in maintaining thyroid equilibrium. However, in this connection, foodstuffs as well as water should be considered as sources of the substance required. According to the best possible information on the subject at the present time, a relative or absolute deficiency of iodine is the cause of simple thyroid enlargement.

Attempts to establish a relationship between certain geological formations and endemic goiter have almost invariably failed. The same observation apparently applies to theories which hold that lime, magnesium, chalk, or metalliferous rocks are associated with the causation of goiter. Contrary to these contentions, goiter is found in localities in which these conditions are absent as well as in those in which they are present.

TABLE 7.—*Source, treatment, and safety of certain public water supplies in Tennessee*

Place	Source of water supply	Treatment	Safe?[1]
Bolivar	Deep wells	Chlorination in emergencies	Doubtful.
Bristol	Spring	Coagulation, sedimentation, filtration, and chlorination.	Yes.
Chattanooga	Tennessee River	do	Yes.
Clarksville	Cumberland River	do	Yes.
Cleveland	Spring	Chlorination	Yes.
Clinton	do	Filtration and chlorination	Yes.
Columbia	Duck River	Coagulation, sedimentation, filtration, and chlorination.	Yes.
Cookeville	Springs	Coagulation, sedimentation, and chlorination.	Yes.
Covington	Wells	Aeration	Yes.
Dickson	Springs	Chlorination	Yes.
Dyersburg	Wells	Sedimentation and filtration for iron removal.	Yes.
Erwin	Springs	None	No.
Fayetteville	do	Chlorination	Yes.
Greeneville	do	Sedimentation, coagulation, filtration, and chlorination.	Yes.
Humboldt	Wells	None	Yes.
Jacksboro	Springs	do	No.
Jackson	Wells	do	Yes.
Johnson City	Springs	Chlorination	Yes.
Kingsport	Impounding reservoir	Sedimentation, filtration, and chlorination	Yes.
Knoxville	Tennessee River	Coagulation, sedimentation, filtration, and chlorination.	Yes.
La Follette	Impounding reservoir	Chlorination	Yes.
Lebanon	Wells	do	Yes.
Lexington	do	None	Yes.
McMinnville	Barren Fork	Coagulation, sedimentation, filtration, and chlorination.	Yes.
Maryville	Wells	Chlorination	Yes.
Memphis	do	Iron removal	Yes.
Morristown	Spring, Holston River, well	Coagulation, sedimentation, filtration, and chlorination.	Yes.
Nashville	Cumberland River	Coagulation, sedimentation, and chlorination.	Yes.
Newport	Spring and wells	Chlorination	Yes.
Paris	Wells	Iron removal	Yes.
Pulaski	Richland Creek	Coagulation, sedimentation, filtration, and chlorination.	Yes.
Rockwood	Springs	Chlorination	Yes.
Savannah	No supply		
Shelbyville	Duck River	Coagulation, sedimentation, filtration, and chlorination.	Yes.
Springfield	Sulphur Fork Creek	do	Yes.
Trenton	Wells	None	Yes.
Union City	do	do	Yes.

[1] According to the division of sanitary engineering of the Tennessee State Department of Public Health, the judgment as to safety is based upon Treasury Department standards, as applied to monthly analysis records. Information as to adequacy and reliability of equipment and operation is also utilized in reaching a decision on this point.

Goiter and polluted water.—McCarrison,[18] celebrated English investigator, has repeatedly expressed the belief that endemic goiter is due to the consumption of contaminated water. Quite recently he has reported the practical disappearance of simple goiter from a community in India following the substitution of a *pure* water supply for a polluted supply.

There are relatively few public water supplies in the United States that can be classed as chemically and bacteriologically *pure*. However, many supplies, including those listed in Table 8, can be termed *safe*.

[18] McCarrison, Robert: An Experiment in Goiter Prevention. British Med. Jour., Jan. 15, 1927, p. 94. Abstract in Public Health Reports, vol. 42, No. 12, Mar. 24, 1927.

Furthermore, many of the public water supplies conform to the Treasury Department standards,[19] thereby insuring freedom from the usual water-borne diseases. Only three of the supplies of drinking water listed in Table 7, those of Boliver, Erwin, and Jacksboro, are regarded as unsafe when they reach the consumer. Yet, in a number of communities having safe water, a considerable amount of endemic goiter is encountered. McCarrison's contention is further weakened by the fact that endemic goiter has increased in certain places since a safe water has replaced a manifestly polluted supply.[20]

Relationship between goiter and iodine in water.—Very little information is available as to the iodine content of drinking water in the State of Tennessee. McClendon has examined a sample of water from Nashville and has reported an iodine content of 22 parts per 100 billion parts of water. This water, taken from the Cumberland River, is classed as iodine-poor, which estimate corresponds with the general incidence of simple goiter in Nashville. However, a single iodine determination is insufficient for a state-wide estimate of goiter incidence. It is now known that the inverse relation between goiter incidence and iodine content of drinking water is not as definite as was formerly supposed.

Endemic goiter and chlorinated water.—It has been intimated that a notable increase in the amount of goiter has followed the greater consumption of chlorinated water. This conception presupposes the formation of a nonassimilable chemical compound as the result of a reaction between iodine naturally present in the water and chlorine added for disinfecting purposes. So far, convincing evidence of such a reaction has not been forthcoming.

In order to determine the possible relationship between chlorinated and unchlorinated drinking water and endemic goiter, a study has been made of the available data from Tennessee. The data are shown in Table 8. It will be noted that the incidence of simple thyroid enlargement is slightly greater among the children residing in localities in which chlorination is practiced. However, the difference is not sufficiently great to warrant the assumption that the chlorination is responsible for the larger incidence of goiter. Furthermore, even if it were proved that chlorinated water is responsible for a slightly higher goiter rate, it is doubtful whether any one would be willing to forego the protection afforded by the measure against water-borne diseases.

Chlorinated water and goiter in Tennessee, Oregon, and Connecticut.—During the state-wide thyroid surveys made by the Public Health

[19] Drinking Water Standards. Adopted by the Treasury Department June 20, 1925, for drinking and culinary water supplied by common carriers in interstate commerce. Pub. Health Rep., vol. 40, No. 15, pp. 693-721 (April 10, 1925). (Reprint No. 1029.)

[20] Marine, David and Kimball, O. P.: The Prevention of Simple Goiter in Man. Jour. Am. Med. Assoc., vol. 77, No. 14, pp. 1963-1970 (Oct. 1, 1921).

Service it has been possible to gather information concerning the treatment of water supplies in three widely separated States—Oregon, Tennessee, and Connecticut. The findings regarding chlorinated supplies and goiter incidence are presented in Table 9. It will be seen that goiter incidence is slightly higher among children using chlorinated water, in Tennessee and Connecticut, than among those consuming unchlorinated water. In Oregon, however, the situation is reversed, the slightly higher goiter incidence occurring among children living in communities in which unchlorinated water is provided.

In view of these conflicting findings and the slight differences in incidence, it can not be said at the present time that the chlorination of water is responsible for an increase in the amount of goiter. The fact that chlorination is widely practiced in the southern States, where goiter is relatively infrequent, must also militate against the belief that this process is directly involved in goiter production.

TABLE 8.—*Comparison of percentages of endemic thyroid enlargement among white boys and girls in 40 localities and colored boys and girls in 33 of the same localities in Tennessee, according to presence of chlorinated and unchlorinated public water supplies.*

Water supply status	Sex and color	Number of examinations	Number of thyroid enlargements	Per cent of thyroid enlargements
Water supplies chlorinated	White boys	6,662	676	10.1
	Colored boys	1,293	208	16.1
	White girls	8,142	2,004	24.6
	Colored girls	2,236	805	36.0
Water supplies not chlorinated	White boys	2,411	184	7.6
	Colored boys	466	63	13.5
	White girls	2,987	606	20.3
	Colored girls	960	330	34.4

TABLE 9.—*Comparison of percentages of endemic thyroid enlargement among boys and girls residing in localities in Oregon, Tennessee, and Connecticut, having and not having chlorinated public water supplies*

Water supply status	Sex	Number of examinations			Number of enlargements			Percentage of enlargements		
		Oregon	Tennessee	Connecticut	Oregon	Tennessee	Connecticut	Oregon	Tennessee	Connecticut
Water supplies chlorinated	Boys	5,454	7,953	4,057	1,132	884	311	20.8	11.1	7.7
	Girls	6,064	10,375	4,690	2,279	2,809	1,446	37.6	27.1	30.8
Water supplies not chlorinated	Boys	2,727	2,875	1,740	693	247	91	25.4	8.6	5.2
	Girls	3,363	3,945	1,918	1,338	936	499	39.8	23.7	26.0

Comparison of goiter incidence in six States and one city.—Inasmuch as thyroid surveys have been made in six States and one city by similar methods, it is now possible to compare the incidence of simple

thyroid enlargement among white and colored children in Tennessee with the incidence of the same affection in Minnesota, Oregon, Massachusetts, Connecticut, and the city of Cincinnati. Prior to the Tennessee survey this subject was discussed in a separate bulletin.[21] At that time it was apparent that simple goiter was most frequently encountered in Minnesota and to a lesser extent in Cincinnati, Oregon, Massachusetts, and Connecticut, in the order named.

The comparative total incidence of simple goiter and the percentages of slight and moderate sized enlargements in the six States and one city in which similar methods were applied are shown graphically in Chart 3. In this chart it will be noted that Tennessee occupies an intermediate position between Oregon and Massachusetts, as regards goiter incidence. The incidence of simple thyroid enlargement among the colored girls of Tennessee is almost as great as among the white girls

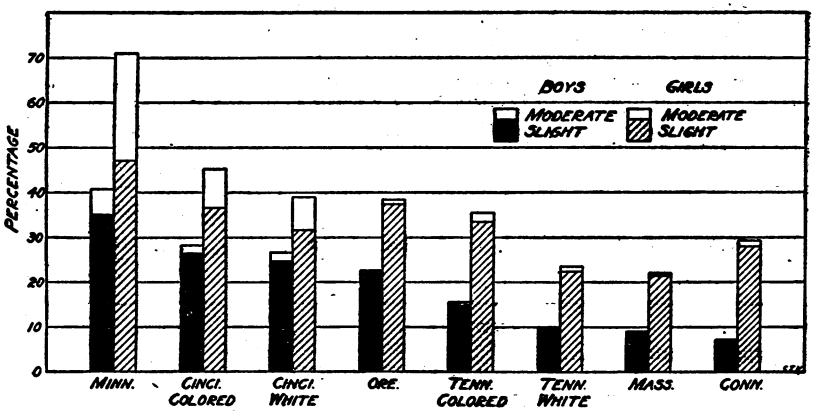


CHART 3.—Comparison of slight and moderate endemic thyroid enlargement among 66,011 boys and 84,623 girls in 232 localities in 7 States and 1 city surveyed by representatives of the United States Public Health Service

of Oregon, and considerably more than among the white girls of Tennessee, Massachusetts, and Connecticut. In this chart the percentage incidence of slight and moderate enlargements is shown for each sex in each of the geographical sections represented. It will also be seen that the percentages of moderate enlargements among the colored boys and girls in Tennessee exceed the percentages for the same sized involvements in Oregon, Massachusetts, Connecticut, and among the white children of Tennessee.

Comparison of age incidence of goiter.—The comparison of goiter incidence in places in which examinations have been made by similar methods can be well presented by graphic means. Such a representation has been provided in Chart 4. In this chart the percentages of goiter incidence are displayed according to age, sex, and degree of

[21] Olesen, Robert: Endemic Goiter Among School Children. Pub. Health Rep., vol. 42, No. 52, pp. 3180-3189 (Dec. 30, 1927). (Reprint No. 1199.)

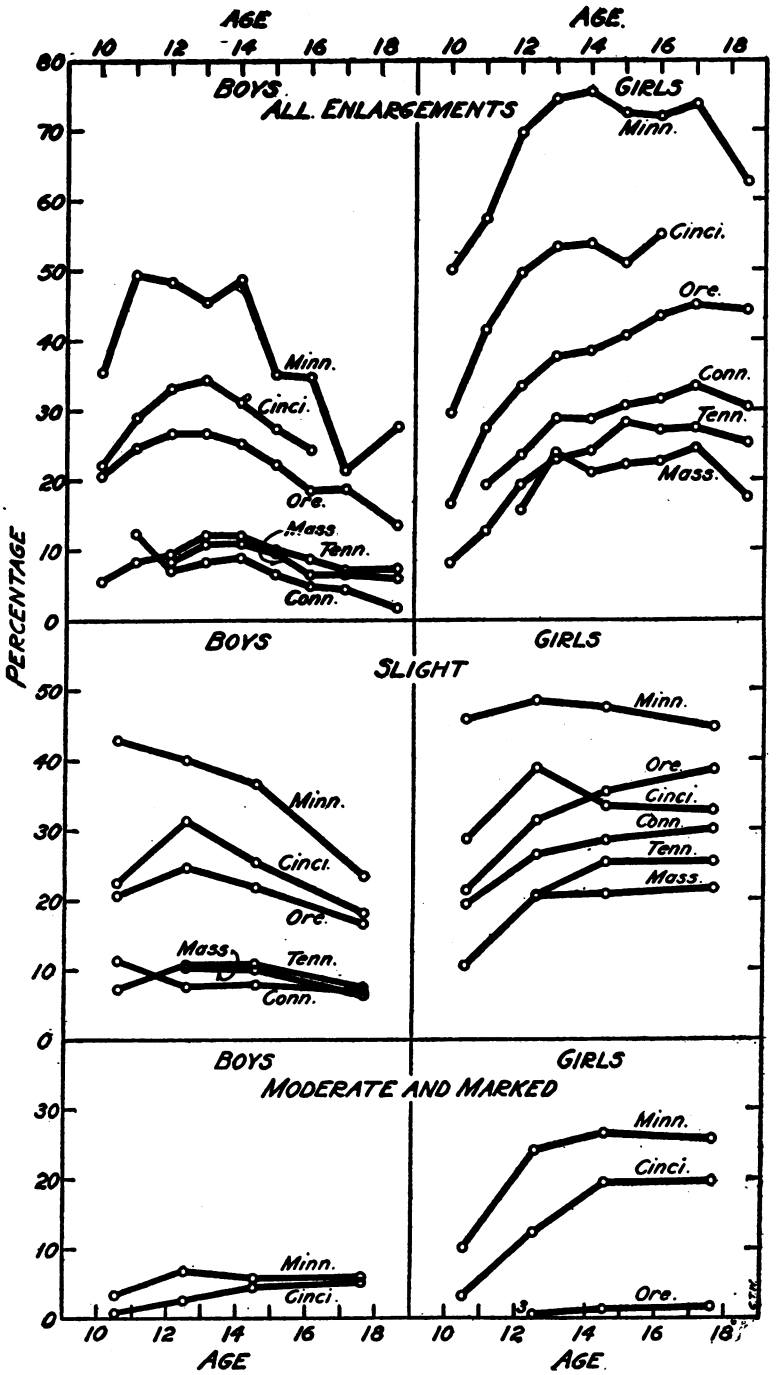


CHART 4.—Percentages of children, by age and sex, according to degrees of thyroid enlargement, in the States of Minnesota, Oregon, Tennessee, Massachusetts, and Connecticut, and in the city of Cincinnati

thyroid enlargement. Percentages are shown for the State of Minnesota, city of Cincinnati, and States of Oregon, Tennessee (white children only), Massachusetts, and Connecticut. The incidence curves shown in Chart 4 should be considered in connection with similar charts which appeared in earlier publications.[22] [23] [24] [25]

It is seen in Chart 4 that the incidence curves representing all enlargements and slight enlargements among the white boys and girls of Tennessee are slightly higher than the curves for Massachusetts and Connecticut, but, in general, correspond to them. If the curves for colored boys and girls in Tennessee had been included (but were not, because of the danger of unduly complicating the chart), they would have been slightly lower than those for Minnesota and would have been near and similar to the curve representing goiter incidence among the children of Cincinnati. The greater incidence of simple thyroid enlargement among girls, the similarity in age trends, the decrease in incidence among the boys of the higher ages, and the maintained increase among the girls, are clearly indicated in the chart.

Geology of Tennessee [26]

Main divisions.—The State falls naturally into three main divisions. Western Tennessee consists of a low Coastal Plain region, prevailingly less than 350 feet above sea level, bordered by alluvial bottom lands along the Mississippi River. It comprises a level or gently rolling stretch of country extending to the Tennessee River.

Middle Tennessee stretches from the vicinity of the Tennessee River eastward to the Cumberland Plateau. It consists of two main parts, the elevated Highland Rim and the centrally located Limestone Basin.

Eastern Tennessee comprises the Cumberland Plateau, which rises gently from the high altitudes of the Highland Rim and overlooks the great limestone valley of eastern Tennessee, which is a continuation southward of the Great Valley of Virginia. This is bounded on the east by the Appalachian Ranges along the extreme eastern line of the State.

Altitudes.—The Limestone Basin is undulating to hilly, and the altitudes range from 500 to 900 feet above sea level. The Cumberland Plateau rises to an altitude in excess of 2,000 feet. The limestone valley of eastern Tennessee is rolling to hilly in its immediate surface

[22] Olesen, Robert: Thyroid Enlargement Among Minnesota School Children. Pub. Health Rep., vol. 39, No. 41, p. 2561 (Oct. 10, 1924). (Reprint No. 963.)

[23] Olesen, Robert, and Taylor, Neil E.: Incidence of Endemic Thyroid Enlargement in Connecticut. Pub. Health Rep., vol. 41, No. 33, p. 1695 (Aug. 13, 1926). (Reprint No. 1102.)

[24] Olesen, Robert, and Taylor, Neil E.: Endemic Thyroid Enlargement in Massachusetts. Pub. Health Rep., vol. 42, No. 12, p. 804 (Mar. 25, 1927). (Reprint No. 1148.)

[25] Olesen, Robert: Endemic Goiter Among School Children. Pub. Health Rep., vol. 42, No. 52, pp. 3180-3189 (Dec. 30, 1927). (Reprint No. 1199.)

[26] Thirteenth Census of the United States. Agriculture: Report by States, 1910, vol. 7, p. 567.

features, although comprising altitudes less than those of the adjacent plateau and mountain system. The limestone valley ranges in altitude from 700 or 800 feet to altitudes in excess of 1,000 feet. There are numerous small included ranges and ridges within the valley. The extreme eastern Appalachian Mountain section rises from altitudes of 1,000 feet to altitudes above 3,000 feet in the higher mountains along the eastern border.

Soils.—The soils of western Tennessee consist of heavy loams and clays in the alluvial bottom lands along the Mississippi River. The loess covering of western Tennessee gives rise to large stretches of silty loams. The Coastal Plains soils along the Tennessee River are principally sandy and sandy loam soils. Within this section, cotton, tobacco, wheat, and oats constitute the principal crops grown upon the different soils. The soils of the Highland Rim consist of gray silty loams, stony loams, and heavy clay soils. The Limestone Basin region consists of brown loams, silty loams, and clay loams very similar to those of the blue-grass region of Kentucky, of the Great Valley of Virginia, and of the limestone valley of eastern Tennessee. The soils of the Cumberland Plateau are derived principally from sandstone or shale rock and consist of various loams. The soils of the limestone valley are principally heavy brown loams and clay loams. These soils are similar to those of the limestone basin of central Tennessee and to the blue-grass region of Kentucky. Within the Appalachian Mountain region the soils are chiefly derived from the sandstone and shale rocks and are similar to those of the Cumberland Plateau.

There is little in the geology of Tennessee to explain the greater incidence of endemic goiter in the eastern section of the State. The soils in this region are similar to those of the limestone basin of central Tennessee, where there is comparatively little goiter, at least among the white children. The chief differences between the central limestone basin and the eastern limestone valley appear to consist of the numerous small ridges and ranges within the latter, which are interspersed with dolomite, shale, and sandstone.

Altitude, likewise, appears to exert no considerable influence upon the amount of simple goiter; for there is relatively more of the malady in the central basin than in the somewhat higher western coastal plains. However, there is more goiter in the hilly and rocky section of the east than in the loamy and clayey western plains.

Toxic goiter among school teachers.—Quite aside from the occurrence of simple goiter among school children is the only too frequent presence of more serious thyroid disorders among school-teachers. Not only in Tennessee but also in other States in which goiter surveys have been made by the Public Health Service, evidences of thyroid disturbances among school teachers have been noted. In many

instances these patients have been acquainted with the nature of the malady from which they are suffering through consultation with physicians. Usually the results of treatment have been unsatisfactory, for the patients, often of necessity, have continued to pursue their vocations. Obviously the patient suffering from Graves's disease (exophthalmic goiter) should not be teaching.

After learning the thyroid histories of many ill school teachers, one is impressed with the need for skilled treatment. Many medical practitioners are not qualified to give the necessary specialized care. Nor are the results of surgical operation for exophthalmic goiter, taken as a whole, of an encouraging nature. In numerous instances the symptoms of exophthalmic goiter persist many years after surgical interference, the victim, in the meantime, being greatly handicapped while working in a condition of greatly reduced capacity. Instances in which several thyroid operations have been performed on the same individuals are by no means rare among school teachers. The absence of any postoperative advice, guidance, or observation constituted a glaring defect of the treatment afforded many of the teachers interviewed.

Under the circumstances it would appear highly desirable that teachers be acquainted with the fundamentals of goiter prophylaxis, particularly of the exophthalmic and adenomatous types. Even more important is the need for improving the standards of treatment, thereby insuring the best possible care of those suffering from thyroid disorders. The existence of a considerble amount of toxic goiter among the school teachers of this country presents a problem which is difficult of approach, but challenges study and appropriate action.

Summary

1. The thyroid survey in Tennessee included 9,073 white boys, 11,120 white girls, 1,739 colored boys and 3,196 colored girls, attending the senior and junior high schools and upper grades of the grammar schools in 40 localities.

2. A total of 4,876 thyroid enlargements of all degrees, representing a percentage of 19.4, was noted among the 25,148 children examined.

3. Thyroid enlargements of all degrees prevailed among the white boys to the extent of 9.5 per cent and among the white girls to the extent of 23.5 per cent.

4. Among the 9,073 white boys examined, 90.5 per cent of the thyroids were classified as normal, 7.7 per cent as very slightly enlarged, 1.5 per cent as slightly enlarged, and 0.2 per cent as adenomatous. There were but 4 moderate enlargements, a percentage of 0.04.

5. Among the 11,120 white girls examined, 76.5 per cent were regarded as normal, 15.1 per cent as very slightly enlarged, 7.2 per cent as slightly enlarged, and 0.56 per cent as moderately enlarged. Sixty-four hundredths of 1 per cent of the thyroids were adenomatous in character.

6. Among the 1,759 colored boys examined, 84.6 per cent of the thyroids were normal, 12.2 per cent were very slightly enlarged, and 2.6 per cent were slightly enlarged. Only three moderately sized enlargements, a percentage of 0.17, were noted. There were eight adenomatous thyroids, a percentage of 0.45.

7. Higher percentages of thyroid enlargements were recorded among the 3,196 colored girls examined in 33 localities. In this group 64.5 per cent of the thyroids were normal, 19.5 per cent were very slightly enlarged, 13.7 per cent were slightly enlarged, 1.7 per cent were moderately enlarged, and 0.5 per cent were adenomatous in character. The existence of one marked thyroid enlargement was also recorded.

8. Endemic goiter is more frequently encountered among the colored than among the white children in Tennessee.

9. Nutritional and economic factors may be responsible for the greater incidence of endemic goiter among the colored children.

10. The incidence of endemic goiter is greater in eastern Tennessee than in either the central or western portions of the State.

11. In Tennessee, as in other States surveyed, thyroid enlargements decrease in number among the boys after 14 years of age. Among the white girls in Tennessee there is a slight decline in goiter incidence after the age of 15. However, among the colored girls there is a maintained increase of incidence up to the age of 18 years.

12. There appears to be no relationship between the amount of endemic goiter and the sources, treatment, and ultimate safety of public water supplies in Tennessee.

13. There is a slightly larger incidence of endemic goiter among the users of chlorinated drinking water in Tennessee than among the consumers of unchlorinated water.

14. In Oregon the incidence of endemic goiter is slightly greater among the users of unchlorinated water.

15. The order of goiter incidence, from the highest to the lowest, in six States and one city surveyed by similar methods is as follows: Minnesota, Cincinnati (colored), Cincinnati (white), Oregon, Tennessee (colored), Tennessee (white), Massachusetts, and Connecticut.

16. There appears to be no relationship between geologic formations in Tennessee and the varying incidence of endemic goiter.

17. Toxic goiters prevail to a sufficient extent among school teachers to warrant prophylaxis and skilled treatment.

Comment

What shall be done about simple goiter in Tennessee? That is the question asked by the State Department of Public Health. The question can not be simply or easily answered, for there are certain complications which are not usually found in other sections of the country. In the first place the geographical distribution of simple thyroid enlargement in Tennessee is uneven, the greatest amount of the malady being in the eastern portion of the State. The second factor of concern is the greater incidence of simple goiter among colored children.

Methods of widespread goiter prophylaxis.—The ideal method of handling the goiter situation in Tennessee, or in the Nation as a whole, would be the utilization of an effective, harmless, and automatic prophylactic. Various natural and artificially iodized foodstuffs have been suggested for this purpose. Thus, the utilization of iodized table salt, iodized drinking water, artificially iodized foodstuffs of various kinds, and the consumption of foods naturally rich in iodine, such as deep sea fish, certain shellfish, and cranberries, have been proposed. Of these iodized table salt has achieved the greatest vogue, but not, however, without receiving a great deal of criticism. In fact, so many objections and reports of expected or actual untoward results following the use of artificially iodized products have been voiced that most public health authorities have hesitated to advocate their use as goiter prophylactics. So far no general prophylactic has received sufficient approval to warrant its universal application.

During the Tennessee survey it was found that iodized table salt was being rather generally used, though its consumption has not been encouraged by the State department of public health. Apparently the use of this commodity has done no harm, for reports of deleterious effects from physicians are lacking.

Reports of effects of iodized salt.—Because of its low cost, general availability, and ease of distribution, iodized salt has been much favored as a goiter prophylactic. However, severe condemnation of this measure has come from some observers, notably Hartsock,[27] who claims that quiescent goiters have been converted into toxic ones when iodized salt has been used by hypersusceptible persons. Offsetting this unfavorable comment are numerous testimonials by competent observers concerning the efficacy of iodized salt as a goiter prophylactic. Kimball,[28] for instance, found in a recent resurvey of thyroid conditions in Michigan that iodized salt was not only safe but efficient. "From my observations," says Kimball, "of all adults with

[27] Hartsock, C. L.: Iodized Salt in the Prevention of Goiter. Jour. Am. Med. Assoc., vol. 86, No. 18, p. 1334 (May 1, 1926).

[28] Kimball, O. P.: The Efficiency and Safety of the Prevention of Goiter. Jour. Am. Med. Assoc., vol. 91, pp. 454-459 (Aug. 10, 1928).

goiter who came for study in three different communities, I feel sure that there is no basis for the statements that iodized salt might induce hyperthyroidism in long-standing goiters. By study and comparison of the 27 cases of hyperthyroidism, or 4.1 per cent of those who had used iodized salt and later developed the disease, with a larger number, 233, or 55.5 per cent, of those who had not used iodine, yet had developed the same condition, I feel that the etiology of hyperthyroidism lies within the individual. I also feel that these etiological factors are increased and aggravated by endemic goiter, and by preventing endemic goiter we are thereby preventing, in the future, many cases of hyperthyroidism."

The decrease in endemic goiter among the children in some Michigan localities in which the disease was formerly quite frequent is ascribed to the use of iodized salt by prospective mothers.

Iodized salt in Switzerland.—Silberschmidt,[29] working in Switzerland, finds that instances of injury following the use of iodized salt were very few in number. The salt used contains less than one-third of the iodine present in the salt used in Bordeaux. In Zurich, the consumer may choose either iodized or plain salt. Some of the reports from Switzerland are not as favorable as the report of Silberschmidt.

Effects of prolonged use of iodine.—The results of some recent experiments by Hanzlik, Talbot, and Gibson[30] should do much toward allaying the suspicion that iodine in appropriately small quantities is dangerous when used for goiter prophylaxis. Hanzlik and his coworkers have made extended observations on rats and have found no reason to believe that the prolonged use of iodine in small quantities, under ordinary conditions, is detrimental. On the contrary, the results (generally) indicate that it is beneficial. However, this would not apply to the continued use of iodine in specific conditions of the thyroid or to large doses of the drug.

Iodized salt in Cincinnati.—It is now rather generally accepted that iodized salt is harmless when consumed by thyroid-normal individuals. There is also considerable evidence to show that no harm is done when iodized salt is used by persons with toxic goiters. However, the chief point to be considered in connection with iodized salt is whether this preparation is efficient as a prophylactic. Already there is an impression that the prophylactic properties of iodized salt are but slowly manifested. In Cincinnati,[31] for instance, there was only a very slight reduction in the total amount of simple goiter

[29] Silberschmidt, W.: Combating Goiter in Switzerland with Iodine. Schweiz. Med. Wochen., vol. 57, p. 845 (Aug. 27, 1927).

[30] Hanzlik, P. J., Talbot, E. P. and Gibson, E. E.: Continued Administration of Iodide and Other Salts. Arch. of Int. Med., vol. 42, p. 579 (Oct., 1928).

[31] Olesen, Robert: A Resurvey of Endemic Thyroid Enlargement in Cincinnati. Pub. Health Rep., vol. 43, No. 3, pp. 113-121 (Jan. 10, 1928). (Reprint No. 1204.)

after rather general use of iodized salt for a period of three years. However, goiters of considerable size were greatly reduced in number. This reduction, however, was probably due to efficient treatment of existing enlargements by physicians.

In view of the controversy incident to the use of iodized salt as a prophylactic, a neutral attitude may well be assumed by the Tennessee State Department of Public Health. The use of the commodity should neither be encouraged or discouraged. However, observations should be made for the purpose of detecting detrimental or beneficial effects. Obviously if iodized salt is harmful its use should be prohibited. On the other hand, if this preparation prevents endemic goiter, its wider use should be sanctioned.

Applying the index which will be suggested for determining the need of widespread prophylactic endeavor, it will be seen that the need for prophylaxis among the white girls is confined largely to the eastern portion of the State. Among the colored girls, however, the need for preventive measures is rather general.

Individual prophylaxis preferable.—It is believed that the immediate situation can best be met through individual oral prophylaxis. Each community should be encouraged to meet its own problem, preferably under the leadership of the local medical profession and the duly constituted health authorities. Goiter prevention, which, in Tennessee, will be largely confined to the colored population, should be undertaken as a cooperative community enterprise. As it matters very little which form of iodine is used for prophylaxis, provided the requisites of efficiency, harmlessness, minute dosage, palatability, low cost, and ease of administration are met, it should be a comparatively simple matter to provide the necessary preventive measures. The active assistance of local physicians is necessary to the success of an antigoiter campaign, not only as advocates of prophylaxis, but especially in the treatment of existing enlargements. They can also render valuable aid in reducing goiter incidence by administering iodine to prospective mothers after the manner recommended by Marine.[32]

WHEN IS PROPHYLAXIS INDICATED?

As simple goiter occurs sporadically as well as endemically, the ideal arrangement would be to institute general and widespread prophylaxis. However, from a practical standpoint, this universal effort would appear to be unjustified. Goiter prophylaxis is only one of many pressing public health problems. Hence, it is desirable to determine when the prevention of goiter assumes sufficient importance to warrant concerted effort. When major public health projects are already being slighted, when the personnel is inadequate in number

[32] See footnote 14, page 878.

and training, and when the incidence of simple goiter is slight, it would appear to be an unintelligent division of effort to inaugurate an extensive antigoiter campaign. On the other hand, when goiter is present to a considerable extent and adequate, trained assistance can apply the necessary measures without neglecting more important projects, prophylactic effort is warranted. Obviously it is a matter of practical interest to know when prophylaxis is indicated.

The test survey.—As a preliminary to the institution of preventive measures, there should be a test survey. Such an investigation, made among high school and college students in conjunction with routine physical examinations, will indicate the relative incidence of simple goiter. It is well to have the physicians who practice in the locality participate in the survey, as thyroid enlargements requiring treatment will come under their supervision. Furthermore, physicians should familiarize themselves with prophylactic measures so that parents who desire private medical service may obtain it. Standard methods of procedure, such as those suggested by the Public Health Service, may be utilized in making the examinations and recording the findings. It has been pointed out that the proportional incidence of goiter among the boys and girls of a given community may be used as an indicator in estimating the severity of the disease.[33] Thus, in districts in which goiter is most severe in its manifestations 100 per cent of both sexes have thyroid enlargement. From this peak the condition gradully decreases in severity until the proportion becomes 10 girls to 1 boy in districts with sporadic occurrence of simple goiter. In addition to producing this indicator of incidence, a goiter survey makes it possible to learn whether general prophylaxis is indicated.

Index for prophylactic effort.—Rates of goiter incidence among boys and girls may aid in determining whether or not general prophylaxis is indicated. There is, of course, no objection to individual prophylaxis at any time when circumstances are propitious. Marine advises that all prospective mothers receive small doses of iodine under medical supervision, regardless of their location. However, the institution of widespread preventive measures may well be guided by certain arbitrary indexes. Thus, when the percentages of all degrees of thyroid enlargement, as determined by Public Health Service standards, do not exceed 10 per cent among the boys and do not exceed 20 per cent among the girls of a given community, general prophylaxis is probably not an urgent matter. Percentages of simple goiter ranging between 10 and 20 per cent among the boys and between 20 and 30 per cent among the girls probably makes widespread prophylaxis an optional public health measure. However, when all degrees of thyroid enlargement among the boys exceed 20 per cent and among the girls exceed 30 per cent, general prophylaxis

[33] See footnote 23, page 888.

would appear to be justified. However, these tentative suggestions should not deter physicians and public health authorities from providing prophylaxis or treatment in specific instances, even when relatively few simple goiters are present in the general population.

Specific Recommendations

As state-wide goiter prophylaxis is not indicated, such measures as are undertaken will, in all probability, be supervised by county or city health officers in certain localities. A number of specific suggestions may be made for the guidance and assistance of the Tennessee State Department of Public Health in dealing with endemic thyroid enlargement:

1. The administration of iodine to prospective mothers, under medical supervision, should be approved. According to Marine,[34] the administration of 30 cubic centimeters of the sirup of hydriodic acid, or an equivalent amount of iodine in any other available form, for a period of one month during the first half of pregnancy, will protect the mother and the fetus. Desiccated thyroid is dangerous at this time.

2. Individual prophylaxis for all colored girls, by means of some form of iodine taken by mouth, should be advocated. The use of a well balanced dietary should also be advised.

3. Individual prophylaxis should be advocated for white girls in Nashville and those living in the eastern portion of the State.

4. Following a test survey, children with enlarged thyroids should be referred to competent physicians for appropriate treatment. Marine believes that perhaps the most satisfactory plan of medical treatment is to administer from 2 to 4 grams of desiccated thyroid in 0.2-gram doses daily (adult dosage) and, after allowing an interval of two weeks without treatment, to saturate the thyroid with iodine by giving 30 cubic centimeters of sirup of hydriodic acid or its equivalent in iodine in from 1 to 2 cubic centimeter doses daily. The treatment may be repeated every third or sixth month. The maximum reduction will occur in from 6 to 12 months. However, it should be remembered that the treatment of goiter is often unsatisfactory and should not be undertaken by the unskilled.

5. Having decided upon the desirability of goiter prophylaxis, preliminary educational measures should be undertaken. The request for prophylactic measures should come preferably from an enlightened citizenry. An agreement as to the method to be employed is essential. Thus the public health officials, medical society, school board, and representatives of the general public should be in accord as to the procedure.

[34] See footnote 15, page 879.

As previously explained, it matters very little which form of iodine is used in preventing simple goiter, provided certain essentials are observed. However, from a practical standpoint, the administration of 10 milligrams of organic iodine in palatable form each week is effective in maintaining the equilibrium of the normal thyroid gland. Various agreeable preparations of this kind are available and may be given, under nominal supervision, following a preliminary test survey.

6. Goiter prophylaxis and treatment for individuals living in any part of the State may be encouraged under medical supervision.

7. A neutral attitude regarding the use of iodized table salt, neither advocating nor condemning its use, should be assumed.

8. Indications of deleterious or beneficial results, following the prophylactic use of iodized salt or other preparations, should be sought.

9. An epidemiological study should be made to determine the reason for the greater incidence of endemic goiter among the colored children.

10. In conjunction with representatives from the State medical society and State department of education, the State department of public health should undertake a study and formulate suitable instructions for the prevention and treatment of exophthalmic goiter among school teachers.

RECENT STATE MORTALITY STATISTICS[1]

For the information of public health officials and others interested, the rates in the following tables have been computed from monthly mortality data furnished by the State health departments for the latest month for which records are available. For purposes of comparison, the mortality records for a few preceding years are given, the rates being those for the month corresponding to the latest month for which the 1928 or 1929 rate is available.

Monthly State mortality statistics

[All rates are on an annual basis, and, with the exception of mortality from all causes and infant mortality, are per 100,000]

	1928								1929	Corresponding month for—			
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	1928	1927	1926	1925
ALL CAUSES: ANNUAL RATE PER 1,000													
Alabama:													
White	9.5	9.6	9.3	8.7	8.7	8.7	9.3	11.1	17.3	10.4	7.9	9.6	------
Colored	17.8	16.4	16.3	17.1	15.7	14.8	16.6	17.5	26.9	14.6	12.6	15.4	------
California	13.6	12.9	12.8	12.2	12.5	13.2	16.6	21.2	------	------	------	------	------
Connecticut	13.0	10.5	9.8	9.3	9.4	10.1	10.2	11.4	------	------	10.9	12.1	11.9
Hawaii	------	------	------	12.0	11.0	12.4	11.0	12.9	------	------	11.9	------	------
Indiana	12.7	11.0	9.9	10.6	(2)	(2)	------	------	------	------	11.3	------	------

[1] From the Office of Statistical Investigations, United States Public Health Service.
[2] Not available.

Monthly State mortality statistics—Continued

ALL CAUSES: ANNUAL RATE PER 1,000—Continued

	1928								1929	Corresponding month for—			
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	1928	1927	1926	1925
Iowa	10.9	9.3	9.9										
Kansas	10.9	9.4	9.0	9.7	10.0	9.8	10.8						
Kentucky				11.0	11.5	10.5	10.4	11.7					
Louisiana	12.3	11.1	12.7	12.2	11.5	11.5	11.9						
Michigan			9.9	9.7	10.6	10.9	11.3	16.2	17.0				
Minnesota	10.7	8.3	8.1	8.0	8.1	8.6	8.8	12.5					
Mississippi			13.0	11.9	10.7	10.7	11.4						
Nebraska		8.2	7.9	8.2	8.0	8.3	8.8	14.8					
New Jersey	13.2	11.2	9.9	9.9	9.7	10.6	10.8	13.2	17.3	11.3	12.1	13.0	13.1
New York [1]	14.2	12.8	11.4	11.0	11.7	12.1	12.4	13.8			12.8	13.3	15.0
North Carolina	11.7	14.3	11.2	11.2	11.0	10.8	11.1	17.5	16.2	11.1			
Pennsylvania	13.5	11.2	10.3	10.1	10.4	10.9	11.5	15.8			11.8	12.8	12.9
South Dakota	9.6	8.0	7.6	8.2	7.1	(2)	8.1	14.1					
Tennessee	12.0	11.5	12.7	11.6	11.2	10.9	11.3	16.1	19.2	11.8	10.8		
Virginia								13.1	19.1				

INFANT MORTALITY: PER 1,000 LIVE BIRTHS

Alabama:													
White	59	64	65	54	57	62	61	57	100	80	57		
Colored	113	83	93	99	79	82	85	95	171	126	90		
California	64	60	59	53	55	58	69	76					
Connecticut	71	56	43	52	42	59	39	56			67	67	72
Hawaii					91	87	80	113					
Indiana	69	56	52	63	64	60	54	81			61	76	70
Iowa	54	54	48										
Kansas	53	44	(2)	65	58	55	56						
Louisiana	102	81	79	62	69	79	68						
Michigan			49	53	58	66	69	86	112				
Minnesota				44	38	50	41	56					
Nebraska		48	37	45	50	62	45	80					
New Jersey		52	56	(2)	56	56	67	68					
New York [1]	73	67	52	55	60	62	63	70			72	72	73
Pennsylvania	89	59	54	58	66	66	65	90			68	81	81
South Dakota	65	47	48	56	50	(2)	70	59					
Tennessee									145				
Virginia							56	72	140				
Wisconsin	75	60	53	47	51	55	59	72	101	80			

TYPHOID FEVER (1)

Alabama:													
White	0.7	3.6	10.5	12.6	12.3	10.5	8.7	4.2	0.7	3.8			
Colored	11.9	8.2	23.7	33.0	32.7	19.8	10.9	9.2	2.6	7.3			
California	1.8	4.0	3.6	2.8	4.8	3.1	1.1	1.0					
Connecticut				2.9							0.7	0.8	4.6
Hawaii				11.1	13.9	3.4	3.5						
Indiana				10.4	8.8	9.3	7.7	3.0					
Iowa	.5	2.0	3.4										
Kansas		2.7	5.1	5.8	6.6	3.8	2.0						
Kentucky			21.7	26.3	28.6	27.7	29.1	13.4					
Louisiana	12.1	15.6	22.9	12.1	25.0	14.5	12.5						
Michigan			2.6	1.3	2.4	2.8	1.6	1.3	1.5				
Minnesota		.4		.9	1.0	.4		.4					
Mississippi			21.7	27.6	15.6	12.5	10.9	7.9					
Nebraska		.9	2.5	1.7	3.5	.8	1.7	3.3					
New Jersey			2.5	3.7	2.5	2.5	2.9	.9	.6				
New York [1]	.8	1.1	2.1	2.3	2.4	4.9	3.1	1.7			1.7	4.4	
North Carolina	2.4	5.8	10.8	15.6	9.9	10.0	5.8	7.2	2.4	1.6			
Pennsylvania	1.3	1.5	2.0	3.3	4.0	3.9	2.1	1.3			2.3	4.1	
South Carolina	5.7	20.9	45.5	38.5	28.1	(2)	(2)	(2)	5.1	3.2			
South Dakota		1.7	1.7	3.3	8.6	(2)		6.7					
Tennessee		8.8	21.2	30.6	30.6	18.4	21.4	8.9	2.4	5.6			
Virginia					10.4	6.9	6.1	2.3	2.7				
Wisconsin	1.2	.8		.4	1.2	.8	1.2	.8	.4	.4			

[1] Exclusive of New York City.

[2] Not available.

Monthly State mortality statistics—Continued

MEASLES (7)

	1928								1929	Corresponding month for—			
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	1928	1927	1926	1925
Alabama:													
White	23.1	7.2	7.7	2.8	0.7	2.1	1.4	4.2	5.6	5.3	------	------	------
Colored	9.2	10.9	9.2	1.3	------	1.3	------	1.3	1.3	1.2	------	------	------
California	1.6	.3	.5	.3	------	.3	------	.3	------	------	------	------	------
Connecticut	9.5	8.3	6.6	.7	.8	------	.7	2.2	------	------	------	1.5	9.2
Hawaii	------	------	------	3.4	3.5	3.4	------	3.4	------	------	------	------	------
Indiana	------	------	------	------	------	------	.8	1.1	------	------	------	------	------
Iowa	.5	------	1.0	------	------	------	------	------	------	------	------	------	------
Kansas	2.6	3.3	1.3	.6	------	------	------	------	------	------	------	------	------
Kentucky	------	------	------	------	1.9	4.6	1.4	.9	------	------	------	------	------
Louisiana	15.7	7.5	7.2	3.6	------	------	.6	------	------	------	------	------	------
Michigan	------	------	3.6	.8	.3	.5	1.1	1.3	1.3	------	------	------	------
Minnesota	1.3	.4	.4	------	------	.4	------	1.3	------	------	------	------	------
Mississippi	------	------	4.6	4.6	1.4	2.6	4.8	4.6	------	------	------	------	------
Nebraska	------	1.7	------	------	------	------	------	.8	------	------	------	------	------
New Jersey	------	------	4.6	2.5	.3	.6	1.0	.9	.9	------	------	------	------
New York [1]	6.3	7.4	3.4	.6	.4	.6	1.3	1.5	------	------	.2	5.0	------
North Carolina	21.2	21.1	7.2	3.2	.8	.4	1.2	2.0	1.2	19.6	------	------	------
Pennsylvania	13.4	8.9	2.8	1.3	.4	.9	2.3	2.8	------	------	2.8	3.0	------
South Carolina	12.0	6.5	5.7	------	------	(2)	(2)	(2)	------	25.3	------	------	------
South Dakota	1.7	3.5	6.7	------	------	(2)	------	------	------	------	------	------	------
Tennessee	------	6.3	4.2	.5	1.0	------	.5	.5	------	9.9	------	------	------
Virginia	------	------	------	------	------	------	.9	2.7	2.7	------	------	------	------
Wisconsin	1.6	.4	.4	------	------	------	1.2	.4	2.0	.4	------	------	------

SCARLET FEVER (8)

Alabama:													
White	------	------	------	------	------	0.7	2.2	------	2.8	0.7	------	------	------
Colored	------	------	------	------	------	------	------	------	------	1.2	------	------	------
California	1.0	.8	.5	.3	.5	1.0	1.9	3.1	------	------	------	------	------
Connecticut	4.4	3.8	1.5	------	------	------	------	------	------	------	3.0	1.5	3.1
Hawaii	------	------	------	3.4	------	------	------	------	------	------	------	------	------
Indiana	------	------	------	.4	.4	2.2	1.9	2.6	------	------	------	------	------
Iowa	.5	3.0	1.0	------	------	------	------	------	------	------	------	------	------
Kansas	7.1	.7	1.3	1.3	1.3	1.9	5.3	------	------	------	------	------	------
Kentucky	------	------	.5	.5	1.9	5.5	3.3	.9	------	------	------	------	------
Louisiana	------	.6	------	------	------	------	3.1	------	------	------	------	------	------
Michigan	------	------	1.8	1.5	.3	1.0	2.7	5.9	4.4	------	------	------	------
Minnesota	2.6	.9	2.2	.9	.4	2.6	1.3	1.7	------	------	------	------	------
Mississippi	------	------	------	------	.7	2.0	------	------	------	------	------	------	------
Nebraska	------	1.7	1.7	.8	------	3.3	.9	2.5	------	------	------	------	------
New Jersey	------	------	1.2	.6	1.0	.9	.6	1.8	1.5	------	------	------	------
New York [1]	1.9	2.8	1.1	.2	------	.4	2.8	1.7	------	------	3.0	1.5	------
North Carolina	1.2	------	.8	------	1.7	.8	1.7	1.6	2.4	2.8	------	------	------
Pennsylvania	3.6	1.4	.9	.7	.5	2.8	2.0	3.1	------	------	2.3	4.0	------
South Carolina	------	------	.6	1.3	------	(2)	(2)	(2)	1.3	.6	------	------	------
South Dakota	5.0	3.5	3.3	------	1.7	(2)	1.7	3.3	------	------	------	------	------
Tennessee	------	.5	.9	.5	.5	2.8	1.9	2.8	1.4	2.4	------	------	------
Virginia	------	------	------	------	------	------	2.8	2.3	1.4	------	------	------	------
Wisconsin	3.2	2.1	2.0	1.2	.4	1.6	3.3	3.6	2.4	1.2	------	------	------

WHOOPING COUGH (9)

Alabama:													
White	2.8	6.5	5.6	1.5	4.3	1.4	5.8	5.6	8.4	3.8	------	------	------
Colored	15.8	10.9	21.1	14.5	9.5	9.2	6.8	9.2	11.9	12.1	------	------	------
California	12.1	8.5	9.6	6.7	8.8	5.4	6.4	10.9	------	------	------	------	------
Connecticut	7.3	15.1	2.9	8.8	3.8	5.8	2.3	2.9	------	------	2.2	1.5	4.6
Hawaii	3.4	------	------	3.4	7.0	6.7	------	20.2	------	------	------	------	------
Indiana	------	------	------	6.3	3.4	1.1	.8	5.6	------	------	------	------	------
Iowa	4.8	3.5	2.4	------	------	------	------	------	------	------	------	------	------
Kansas	7.7	3.3	3.8	7.1	4.0	4.5	3.3	------	------	------	------	------	------
Kentucky	------	------	5.5	3.7	5.7	4.2	4.8	7.4	------	------	------	------	------
Louisiana	10.3	13.1	13.3	7.2	7.5	7.8	5.6	------	------	------	------	------	------
Michigan	------	------	1.8	4.9	4.8	3.3	3.2	10.0	7.2	------	------	------	------
Minnesota	2.6	2.7	2.6	5.2	1.3	2.6	3.6	6.5	------	------	------	------	------
Mississippi	------	------	17.1	7.9	2.7	3.9	6.8	5.9	------	------	------	------	------
Nebraska	------	2.6	3.3	3.3	1.7	4.2	------	5.0	------	------	------	------	------

[1] Exclusive of New York City.

[2] Not available.

Monthly State mortality statistics—Continued

WHOOPING COUGH (9)—Continued

	1928								1929	Corresponding month for—			
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	1928	1927	1926	1925
New Jersey			2.5	7.4	4.5	4.0	2.5	4.9	13.3				
New York [1]	5.3	4.6	4.6	3.0	3.9	2.3	2.8	1.7			1.9	5.2	
North Carolina	7.6	12.0	5.6	5.2	3.7	4.8	2.9	4.4	9.2	6.4			
Pennsylvania	2.3	4.7	3.7	6.1	6.2	4.9	7.4	12.0			2.3	6.0	
South Carolina	8.8	17.0	12.0	8.2	3.3	(2)	(2)	(2)	3.2	8.2			
South Dakota	6.7	3.5	6.7	8.4	6.9	(2)	3.5						
Tennessee		3.4	6.1	3.8	6.3	3.3	3.9	5.2	10.4	6.1			
Virginia							.9	6.4	18.3				
Wisconsin	4.4	1.2	2.0	4.0	2.9	2.8	.8	3.2	2.4	1.2			

DIPHTHERIA (10)

Alabama:													
White	2.8	.7	1.4	6.3	13.0	23.1	30.4	24.5	13.3	13.6			
Colored	4.0		2.6	2.6	4.1	6.6	10.9	5.3	5.3	4.8			
California	7.2	4.8	5.2	5.9	3.5	4.4	5.1	5.4					
Connecticut	4.4	2.3	1.5	2.9	5.3	5.1	6.0	8.0			9.6	9.8	11.5
Hawaii				6.7	10.5	13.5	7.0	6.7			7.2		
Indiana				2.2	4.6	7.8	10.0	10.0					
Iowa	1.0	1.5	1.9										
Kansas	2.6	2.7	.6	1.9	2.0	7.1	5.3						
Kentucky				2.8	14.3	26.3	25.7	17.5					
Louisiana	3.0	1.9	.6	3.6	4.4	11.5	14.4						
Michigan			6.2	6.7	7.2	8.7	9.3	12.8	12.1				
Minnesota	2.2	1.3	2.2	1.3	2.2	1.7	3.1	5.2					
Mississippi			3.9	1.3	9.5	11.8	12.9	15.1					
Nebraska		2.6	.8	3.3	1.7	5.0	6.1	4.2					
New Jersey			9.6	7.1	6.0	7.1	11.8	14.2	20.6				
New York [1]	3.4	4.4	3.4	1.3	3.1	2.3	4.6	3.8			7.7	6.8	
North Carolina	2.0	4.1	2.4	5.6	11.2	18.4	29.4	26.4	16.8	10.8			
Pennsylvania	7.3	7.2	4.8	3.6	4.2	6.0	10.9	10.8			11.3	8.5	
South Carolina	2.5	.7	.6	4.4	11.1	(2)	(2)	(2)	6.3	10.1			
South Dakota	5.0	1.7		1.7		(2)	3.5	1.7					
Tennessee		.5	2.4	2.4	12.2	17.4	24.8	18.8	7.5	8.5			
Virginia					5.2	10.1	15.6	12.3	8.2				
Wisconsin	2.8	4.1	3.6	1.2	2.5	2.8	3.7	4.8	2.8	3.2			

INFLUENZA (11)

Alabama:													
White	67.3	26.8	16.8	11.9	12.3	21.0	35.5	152.8	711.4	89.1	29.9	61.3	
Colored	112.1	45.0	29.0	25.1	30.0	33.0	42.2	185.9	973.1	86.0	39.5	81.5	
California	15.2	14.4	12.1	8.3	7.7	29.5	127.1	254.0					
Connecticut	71.5	16.6	6.6	2.9	6.0	12.4	9.0	34.3			21.5	26.4	26.9
Hawaii				37.1	45.3	37.1	27.9	30.4			14.5		
Indiana	96.4	27.4	13.7	8.2	11.9	16.3	24.1	267.7			23.9	36.2	36.5
Iowa	67.9	24.1	19.4										
Kansas	78.9	23.2	14.8	16.7	9.3	23.7	29.2						
Kentucky			11.5	17.1	11.0	18.5	38.1	142.0					
Louisiana	40.5	28.1	19.9	29.0	21.8	18.7	34.3						
Michigan			9.0	5.4	8.7	10.0	13.8	157.2	237.7				
Minnesota	104.2	24.1	13.8	7.8	8.0	16.4	16.1	150.1					
Mississippi			15.8	19.1	11.5	9.2	38.7	213.7					
Nebraska		19.0	8.4	11.7	9.5	20.1	30.2	367.9					
New Jersey	23.7	9.2	3.7	3.4	4.8	7.7	11.5	45.0	164.2	12.6	21.4	20.8	23.2
New York [1]	34.3	18.9	4.4	2.3	4.1	8.8	13.7	37.5			13.3	13.5	16.7
North Carolina	34.1	22.8	6.8	7.6	6.6	14.0	35.2	195.2	375.5	56.9			
Pennsylvania	65.0	28.6	10.3	7.7	12.1	14.4	21.0	172.3			26.6	29.7	29.7
South Carolina	26.5	20.2	8.8	12.0	11.1	(2)	(2)	(2)	382.2	49.9			
South Dakota	98.7	41.5	35.1	15.1	10.4	(2)	21.7	224.1					
Tennessee	74.4	40.8	16.0	13.2	9.7	17.9	34.5	225.9	644.7	77.2	40.3		
Virginia							21.7	155.0	501.2				
Wisconsin	83.7	25.1	11.6	5.2	11.1	10.0	16.5	199.8	269.1	24.7			

[1] Exclusive of New York City. [2] Not available.

Monthly State mortality statistics—Continued

POLIOMYELITIS (22)

	1928								1929	Corresponding month for—			
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	1928	1927	1926	1925
Alabama:													
White	0.7	1.4	1.4	1.4	------	1.4	------	2.1	0.7	0.7	------	------	------
Colored	1.3	1.4	1.3	------	------	------	------	1.3	------	1.2	------	------	------
California	2.3	1.1	1.6	1.6	1.6	1.6	1.6	1.3	------	------	------	------	------
Connecticut	.7	------	------	1.5	2.3	1.5	------	.7	------	------	------	------	0.8
Hawaii	------	------	------	------	------	3.4	------	------	------	------	------	------	------
Indiana	------	------	------	.7	.4	------	1.2	.4	------	------	------	------	------
Iowa	1.0	------	------	------	------	------	------	------	------	------	------	------	------
Kansas	------	.7	------	------	.7	.6	.7	------	------	------	------	------	------
Kentucky	------	------	2.8	1.4	.5	1.4	1.4	.9	------	------	------	------	------
Louisiana	.6	1.2	1.2	2.4	1.2	1.2	1.9	------	------	------	------	------	------
Michigan	------	------	.3	.5	.5	1.3	.8	.8	1.3	------	------	------	------
Minnesota	.9	------	1.3	6.1	9.4	3.9	4.0	------	------	------	------	------	------
Mississippi	------	------	2.0	1.3	2.0	.7	.7	------	------	------	------	------	------
Nebraska	------	------	.8	1.7	.9	------	------	------	------	------	------	------	------
New Jersey	------	------	.9	1.5	.6	1.8	1.0	------	.3	------	------	------	------
New York [1]	.6	.2	.8	.8	7.6	3.6	2.0	.4	------	------	.6	.4	------
North Carolina	1.2	.4	------	------	.4	.4	1.7	.4	.4	------	------	------	------
Pennsylvania	.6	.4	.5	1.2	1.5	.9	.6	1.1	------	------	.6	(2)	------
South Carolina	.6	.7	1.9	.6	2.0	(2)	(2)	(2)	.6	.6	------	------	------
South Dakota	1.7	------	3.3	8.4	5.2	(2)	1.7	3.3	------	------	------	------	------
Tennessee	------	.5	.9	1.9	1.9	1.9	1.5	4.2	.9	.9	------	------	------
Virginia	------	------	------	------	1.9	1.4	.5	1.8	.5	------	------	------	------
Wisconsin	2.0	------	------	.8	.4	------	.4	.8	------	.4	------	------	------

LETHARGIC ENCEPHALITIS (23)

Alabama:													
White	------	------	------	------	------	------	0.7	------	2.8	------	------	------	------
Colored	------	------	------	1.3	------	------	------	------	------	------	------	------	------
California	.8	1.3	.5	1.0	1.6	1.3	1.6	1.8	------	------	------	------	------
Connecticut	------	.8	2.2	.7	.8	.7	------	.7	------	------	0.7	0.8	2.3
Indiana	------	------	------	------	------	------	------	------	------	------	------	------	------
Iowa	2.4	.5	2.4	------	------	------	------	------	------	------	------	------	------
Kansas	1.9	1.3	1.3	.6	.7	1.3	------	------	------	------	------	------	------
Kentucky	------	------	------	.5	.5	.5	.5	------	------	------	------	------	------
Louisiana	1.2	.6	------	------	.6	.6	.6	------	------	------	------	------	------
Michigan	------	------	1.8	2.1	1.6	2.1	1.1	1.0	1.5	------	------	------	------
Minnesota	3.9	4.0	1.3	1.7	3.1	2.2	1.3	3.0	------	------	------	------	------
Mississippi	------	------	------	.7	1.4	1.3	------	------	------	------	------	------	------
Nebraska	------	------	1.7	1.7	1.7	------	.9	.8	------	------	------	------	------
New Jersey	------	------	2.5	1.2	1.9	1.8	1.3	.3	2.2	------	------	------	------
New York [1]	1.1	.7	.6	.8	.7	.6	.4	1.1	------	------	.6	1.1	------
North Carolina	.4	.4	.4	------	------	1.2	.8	.8	.4	1.6	------	------	------
Pennsylvania	1.3	.6	1.2	1.5	.8	.5	1.5	1.0	------	------	.6	1.1	------
South Carolina	.6	3.9	1.3	2.5	2.6	(2)	(2)	(2)	1.3	.6	------	------	------
South Dakota	------	------	3.3	------	------	(2)	------	1.7	------	------	------	------	------
Tennessee	------	.5	1.9	.5	1.5	.5	.5	.5	------	.5	------	------	------
Virginia	------	------	------	------	------	------	.9	------	2.3	------	------	------	------
Wisconsin	2.4	1.6	.8	.8	2.1	2.0	1.2	.8	.4	.8	------	------	------

MENINGOCOCCUS MENINGITIS (24)

Alabama:													
White	------	------	0.7	0.7	------	------	------	------	2.1	------	------	------	------
Colored	------	------	------	------	------	1.3	------	------	------	------	------	------	------
California	.5	1.9	3.1	1.8	.8	1.0	2.7	7.2	------	------	------	------	------
Connecticut	1.5	1.5	.7	1.5	.8	2.2	------	2.2	------	------	------	------	------
Hawaii	------	------	------	6.7	3.5	------	3.5	6.7	------	------	------	------	------
Indiana	------	------	------	.0	.4	------	.8	1.5	------	------	------	------	------
Iowa	1.0	.5	2.4	------	------	------	------	------	------	------	------	------	------
Kansas	1.9	------	------	1.6	.7	.6	2.0	------	------	------	------	------	------
Kentucky	------	------	------	------	------	------	------	------	------	------	------	------	------
Louisiana	1.2	.6	.6	------	------	------	------	------	------	------	------	------	------
Michigan	------	------	2.6	2.8	2.9	4.1	3.2	4.6	6.9	------	------	------	------
Minnesota	3.9	.9	3.0	.9	1.3	1.3	.9	3.9	------	------	------	------	------
Mississippi	------	------	.7	------	------	------	.7	2.0	------	------	------	------	------
Nebraska	------	------	.8	------	------	------	3.5	------	------	------	------	------	------
New Jersey	------	------	2.2	2.2	.3	1.5	1.9	3.1	3.4	------	------	------	------

[1] Exclusive of New York City.

[2] Not available.

Monthly State mortality statistics—Continued

MENINGOCOCCUS MENINGITIS (24)—Continued

	1928								1929	Corresponding month for—			
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	1928	1927	1926	1925
New York [1]	1.1	.9	.6	.8	------	1.3	.2	.6	------	------	.6	.4	------
North Carolina	------	------	------	------	------	------	------	.4	------	------	------	------	------
Pennsylvania	1.6	1.4	.9	.9	.8	.5	1.1	1.3	------	------	.7	(2)	------
South Carolina	1.9	1.3	.6	1.3	.7	(2)	(2)	(2)	1.3	1.3	------	------	------
South Dakota	------	------	------	1.7	1.7	(2)	1.7	------	------	------	------	------	------
Tennessee	------	.5	------	1.4	.5	2.4	.5	2.8	1.9	.9	------	------	------
Virginia	------	------	------	------	.5	------	.9	.9	1.8	------	------	------	------
Wisconsin	4.8	3.3	2.0	.4	.8	3.6	3.7	3.6	.4	2.0	------	------	------

TUBERCULOSIS, ALL FORMS (31-37)

Alabama:													
White	43.5	52.1	50.5	37.8	50.7	38.5	39.1	44.9	54.7	58.1	49.6	62.1	------
Colored	160.9	182.6	172.7	168.8	128.1	141.1	158.0	125.3	129.2	136.9	126.3	139.3	------
California	143.4	128.4	133.4	120.7	113.5	118.1	129.0	146.0	------	------	------	------	------
Connecticut	71.5	73.9	68.6	55.4	55.8	63.5	53.5	66.4	------	------	57.9	82.3	69.3
Hawaii	------	------	------	148.4	104.6	121.5	90.6	141.7	------	------	126.8	------	------
Indiana	81.9	80.6	57.5	58.9	57.5	64.1	56.7	80.5	------	------	69.2	66.0	73.4
Iowa	45.6	35.6	38.3	------	------	------	------	------	------	------	------	------	------
Kansas	43.6	39.8	38.5	39.8	31.2	37.2	39.1	------	------	------	------	------	------
Kentucky	------	------	73.8	108.8	101.5	97.3	109.1	97.8	------	------	------	------	------
Louisiana	107.5	96.1	93.0	96.0	72.4	55.5	77.4	------	------	------	------	------	------
Michigan	------	------	62.8	60.8	59.1	58.2	64.1	69.2	80.0	------	------	------	------
Minnesota	64.0	47.8	43.7	54.9	50.1	34.6	47.8	50.2	------	------	------	------	------
Mississippi	------	------	78.2	82.9	78.1	54.6	80.2	90.1	------	------	------	------	------
Nebraska	------	35.4	20.1	28.4	20.7	20.1	21.6	19.2	------	------	------	------	------
New Jersey	86.3	87.2	68.4	76.1	66.9	73.6	63.7	65.9	76.4	65.0	74.4	81.9	75.2
New York [1]	82.5	82.9	73.2	71.1	70.0	71.8	67.2	67.1	------	------	62.3	73.1	95.3
North Carolina	93.8	106.4	65.7	81.8	77.9	60.9	69.2	84.2	91.0	74.1	------	------	------
Pennsylvania	79.9	68.6	69.0	59.6	62.4	58.0	55.5	67.3	------	------	63.3	67.7	77.4
South Carolina	97.9	80.9	87.8	66.3	53.5	(2)	(2)	(2)	65.1	73.9	------	------	------
South Dakota	61.9	57.0	83.6	95.3	29.4	(2)	43.2	60.2	------	------	------	------	------
Tennessee	104.9	129.8	134.1	112.5	99.7	106.8	118.2	145.9	140.7	121.9	115.1	------	------
Virginia	------	------	------	------	69.0	84.1	71.3	83.3	116.1	------	------	------	------
Wisconsin	79.3	60.1	52.2	52.2	49.0	42.3	47.8	48.6	44.3	45.9	------	------	------

CANCER, ALL FORMS (43-49)

Alabama:													
White	44.9	59.4	49.1	62.4	52.1	54.7	59.4	48.4	38.6	46.8	44.5	39.2	------
Colored	51.4	46.3	48.8	47.5	46.3	47.5	43.6	54.1	27.7	41.2	36.8	27.6	------
California	148.3	131.4	127.7	128.2	144.7	143.4	141.5	164.1	------	------	------	------	------
Connecticut	84.6	113.8	99.2	110.2	103.3	132.8	110.1	118.2	------	------	103.9	115.6	108.5
Hawaii	------	------	------	74.2	38.3	74.2	59.3	50.6	------	------	54.3	------	------
Indiana	90.8	104.3	87.1	109.7	94.6	90.8	105.0	100.5	------	------	102.0	96.5	105.8
Iowa	114.0	110.2	115.9	------	------	------	------	------	------	------	------	------	------
Kansas	93.0	98.8	80.8	93.7	103.4	108.4	104.1	------	------	------	------	------	------
Kentucky	------	------	54.4	70.1	73.4	64.1	72.0	57.7	------	------	------	------	------
Louisiana	71.2	61.8	70.6	75.5	69.9	73.1	64.3	------	------	------	------	------	------
Michigan	------	------	92.3	87.5	103.9	92.6	92.0	96.4	100.3	------	------	------	------
Minnesota	108.1	110.0	107.3	105.1	110.4	104.7	100.1	110.7	------	------	------	------	------
Mississippi	------	------	39.4	50.0	52.3	49.3	50.9	53.9	------	------	------	------	------
Nebraska	------	90.7	87.0	82.0	99.4	93.7	102.0	78.6	------	------	------	------	------
New Jersey	120.5	105.4	97.7	99.8	101.9	112.2	104.4	119.9	100.1	99.2	94.5	98.9	103.0
New York [1]	121.8	117.2	123.5	123.5	122.0	123.7	115.5	115.5	------	------	122.6	117.6	127.8
Pennsylvania	95.5	91.8	99.4	99.4	97.6	96.0	100.7	94.4	------	------	100.0	93.7	98.2
South Carolina	50.5	39.2	46.7	34.1	41.1	(2)	(2)	(2)	34.1	30.3	------	------	------
South Dakota	73.6	81.2	68.6	80.3	63.9	(2)	76.0	87.0	------	------	------	------	------
Tennessee	47.5	73.4	70.6	55.5	55.0	50.8	54.0	66.4	49.4	58.8	53.1	------	------
Virginia	------	------	------	------	------	------	61.0	63.6	55.3	------	------	------	------
Wisconsin	98.1	(2)	111.6	104.1	106.7	103.7	103.0	111.2	98.1	94.9	------	------	------

[1] Exclusive of New York City. [2] Not available.

Monthly State mortality statistics—Continued

DIABETES (57)

	1928								1929	Corresponding month for—			
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	1928	1927	1926	1925
Alabama:													
White	7.7	7.2	4.2	9.1	15.2	8.4	9.4	11.9	18.9	12.8	5.8	11.1	.....
Colored	7.9	6.8	10.5	5.3	15.0	4.0	9.5	6.6	15.8	14.5	5.3	10.5	.....
California	21.4	17.6	18.3	19.4	16.3	16.3	24.8	33.3	.....	.....	.....	.....	.....
Connecticut	16.1	18.1	20.4	16.8	15.8	18.2	15.8	14.6	.....	.....	.....	.....	.....
Hawaii	.....	.....	.....	6.7	10.5	13.5	7.0	6.7	.....	.....	7.2	.....	.....
Indiana	.....	.....	.....	14.5	16.1	16.3	10.7	14.8	.....	.....	.....	.....	.....
Iowa	19.4	12.5	15.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas	18.6	21.9	16.7	14.8	17.2	10.3	15.3	.....	.....	.....	.....	.....	.....
Kentucky	.....	.....	9.7	9.7	9.5	9.2	10.0	10.2	.....	.....	.....	.....	.....
Louisiana	8.5	8.1	9.7	13.3	6.9	15.1	11.9	.....	.....	.....	.....	.....	.....
Michigan	.....	.....	16.9	16.2	18.3	20.5	19.6	26.4	26.4	.....	.....	.....	.....
Minnesota	25.1	15.2	13.4	12.5	12.5	13.4	21.9	26.0	.....	.....	.....	.....	.....
Mississippi	.....	.....	5.9	7.2	5.4	6.6	3.4	14.5	.....	.....	.....	.....	.....
Nebraska	.....	15.6	16.7	13.4	19.0	15.1	22.5	40.1	.....	.....	.....	.....	.....
New Jersey	.....	.....	16.0	19.4	21.3	21.3	23.9	26.2	33.9	.....	.....	.....	.....
New York [1]	28.6	24.6	18.5	24.0	21.5	25.0	20.4	28.2	.....	.....	24.2	24.2	29.5
Pennsylvania	23.2	19.9	18.6	20.0	17.4	20.8	21.3	26.2	.....	.....	21.5	21.6	20.7
South Carolina	6.9	4.6	3.8	5.1	6.5	.....	.....	.....	7.0	12.6	.....	.....	.....
South Dakota	13.4	15.6	10.0	18.4	6.9	.....	10.4	31.8	.....	.....	.....	.....	.....
Tennessee	.....	6.8	6.1	7.1	10.2	7.5	13.6	8.5	11.8	.....	.....	.....	.....
Virginia	.....	.....	.....	.....	.....	.....	9.0	13.3	19.7	.....	.....	.....	.....

DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS OF SPECIAL SENSE (70-86)

Alabama:													
White	.....	.....	75.0	69.4	72.4	72.9	89.1	100.9	80.6	.....	.....	.....	.....
Colored	.....	.....	118.7	133.2	132.2	116.0	139.0	125.3	114.7	.....	.....	.....	.....
California	141.1	132.5	129.5	130.3	126.8	137.7	154.1	181.2	.....	.....	.....	.....	.....
Iowa	142.6	125.3	132.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas	146.3	115.4	132.2	111.0	125.3	136.0	161.8	.....	.....	.....	.....	.....	.....
Kentucky	.....	.....	82.1	97.3	103.4	.....	.....	.....	.....	.....	.....	.....	.....
Louisiana	91.8	89.8	102.6	103.3	97.3	75.5	106.1	.....	.....	.....	.....	.....	.....
Michigan	.....	.....	118.5	103.4	126.4	124.1	126.4	161.8	174.1	.....	.....	.....	.....
Minnesota	.....	.....	.....	76.6	82.7	88.2	80.9	99.9	.....	.....	.....	.....	.....
Nebraska	.....	102.8	94.5	97.0	96.8	102.0	102.8	117.9	.....	.....	.....	.....	.....
New Jersey	132.5	110.8	98.6	98.3	95.8	110.9	113.7	118.9	147.6	112.5	133.8	145.9	150.4
New York [1]	159.9	145.7	128.4	120.6	136.1	139.3	136.6	148.4	.....	.....	151.9	172.0	191.9
Pennsylvania	.....	119.4	109.8	108.1	97.6	115.4	119.8	129.1	.....	.....	.....	.....	.....
South Dakota	98.7	76.0	63.6	103.7	77.8	.....	.....	130.5	.....	.....	.....	.....	.....
Tennessee	.....	.....	.....	.....	.....	.....	.....	.....	105.9	.....	.....	.....	.....
Virginia	.....	.....	.....	.....	.....	.....	106.8	119.8	155.9	.....	.....	.....	.....

CEREBRAL HEMORRHAGE, APOPLEXY (74)

Alabama:													
White	56.1	49.2	45.6	35.7	42.7	39.2	51.4	65.9	45.6	42.3	46.6	39.9	.....
Colored	75.2	69.5	75.2	75.2	80.4	83.1	72.2	63.3	68.6	58.1	71.0	61.8	.....
California	100.5	92.1	89.7	91.7	88.9	94.1	112.2	128.7	.....	.....	.....	.....	.....
Hawaii	.....	.....	.....	70.8	13.9	84.3	76.7	67.5	.....	.....	65.2	.....	.....
Indiana	107.5	95.4	90.8	93.8	97.3	96.4	109.6	140.1	.....	.....	123.3	113.1	106.5
Iowa	105.7	92.7	91.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas	106.5	91.5	98.8	82.8	96.8	106.5	131.3	.....	.....	.....	.....	.....	.....
Kentucky	.....	.....	48.0	66.4	64.3	53.5	66.7	60.9	.....	.....	.....	.....	.....
Louisiana	57.4	63.6	75.5	61.6	61.8	53.1	73.6	.....	.....	.....	.....	.....	.....
Michigan	.....	.....	83.9	77.2	87.5	92.3	87.5	115.2	122.1	.....	.....	.....	.....
Minnesota	.....	.....	.....	59.3	59.0	67.5	63.0	74.4	.....	.....	.....	.....	.....
Mississippi	.....	.....	58.5	59.2	67.9	61.8	66.6	73.0	.....	.....	.....	.....	.....
Nebraska	.....	80.4	67.7	75.3	76.9	81.1	71.7	86.1	.....	.....	.....	.....	.....
New Jersey	.....	.....	73.6	70.3	72.0	80.7	86.0	90.3	107.5	.....	.....	.....	.....
New York [1]	124.6	113.5	95.5	92.0	104.2	104.4	107.2	113.2	.....	.....	118.5	133.1	149.5
Pennsylvania	88.2	87.8	78.7	76.8	68.4	80.7	92.0	94.9	.....	.....	.....	.....	.....
South Dakota	53.5	38.0	31.8	68.6	43.2	.....	51.9	78.6	.....	.....	.....	.....	.....
Tennessee	.....	.....	.....	.....	.....	.....	.....	.....	58.4	.....	.....	.....	.....
Virginia	.....	.....	.....	.....	.....	.....	70.9	82.8	108.8	.....	.....	.....	.....

[1] Exclusive of New York City.

Monthly State mortality statistics—Continued

DISEASES OF THE CIRCULATORY SYSTEM (87-96)

	1928								1929	Corresponding month for—			
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	1928	1927	1926	1925
Alabama:													
White	----	----	114.9	117.7	106.5	113.5	124.6	128.3	136.0	----	----	----	----
Colored	----	----	184.6	188.5	185.3	171.4	200.3	195.1	187.2	----	----	----	----
California	290.0	280.4	266.2	256.4	267.3	293.8	387.8	496.7	----	----	----	----	----
Iowa	238.1	211.5	226.9	----	----	----	----	----	----	----	----	----	----
Kansas	197.0	192.3	155.9	173.9	169.7	168.8	193.6	----	----	----	----	----	----
Kentucky	----	----	143.0	176.6	126.8	155.4	202.5	192.3	----	----	----	----	----
Louisiana	193.2	168.6	186.6	191.4	184.7	193.8	202.2	----	----	----	----	----	----
Michigan	----	----	197.5	188.8	222.1	240.3	241.7	345.2	----	----	----	----	----
Minnesota	----	----	----	145.3	156.0	172.2	194.4	269.5	----	----	----	----	----
Nebraska	----	176.3	151.4	152.2	163.3	178.1	188.4	243.3	----	----	----	----	----
New Jersey	286.0	231.2	209.2	213.2	215.9	250.8	254.7	307.2	391.3	272.7	258.8	272.3	256.1
New York [1]	379.4	342.5	301.6	276.5	311.4	335.4	358.2	384.7	----	----	354.6	358.2	364.7
Pennsylvania	----	247.5	209.1	196.9	218.6	236.1	243.2	330.3	----	----	----	----	----
South Carolina	341.1	279.4	305.1	274.1	283.3	----	----	----	262.1	221.7	----	----	----
South Dakota	152.2	136.5	110.4	88.6	129.6	----	160.7	224.1	----	----	----	----	----
Tennessee	----	----	----	----	----	----	----	----	162.8	----	----	----	----
Virginia	----	----	----	----	----	----	156.4	204.4	242.8	----	----	----	----

DISEASES OF THE HEART (87-90)

Alabama:													
White	101.6	109.4	102.3	104.4	99.2	103.0	115.2	115.6	129.7	114.7	84.5	93.9	----
Colored	188.6	183.9	163.8	180.7	166.2	155.6	182.6	187.2	175.4	124.8	105.3	153.8	----
California	255.6	243.0	225.9	214.0	223.0	245.5	344.5	442.4	----	----	----	----	----
Connecticut	101.4	160.6	192.6	164.9	156.0	156.8	198.3	196.3	----	----	186.3	216.8	205.5
Hawaii	----	----	----	121.5	115.0	114.7	108.1	108.0	----	----	108.7	----	----
Indiana	180.2	172.0	149.4	169.1	182.3	201.7	204.6	269.5	----	----	183.2	179.0	165.5
Iowa	215.8	186.9	193.0	----	----	----	----	----	----	----	----	----	----
Kansas	169.4	163.1	135.4	146.3	153.2	145.0	171.1	----	----	----	----	----	----
Kentucky	----	----	128.7	150.4	160.6	144.8	154.4	169.3	----	----	----	----	----
Louisiana	181.7	157.9	172.7	178.7	179.1	181.7	187.8	----	----	----	----	----	----
Michigan	----	----	173.4	163.9	187.9	215.4	205.7	299.3	347.3	----	----	----	----
Minnesota	154.4	130.1	120.7	128.5	127.4	144.5	157.8	231.4	----	----	----	----	----
Mississippi	----	----	111.1	103.9	99.9	88.7	89.7	99.3	----	----	----	----	----
Nebraska	----	157.3	132.1	136.3	140.8	153.9	181.5	223.3	----	----	----	----	----
New Jersey	----	----	191.4	196.6	193.3	229.0	233.7	278.6	361.5	----	----	----	----
New York [1]	324.3	300.7	267.8	237.4	237.2	291.3	312.9	297.1	----	----	276.8	273.5	289.2
Pennsylvania	233.0	220.9	189.7	176.6	196.9	214.0	222.0	301.8	----	----	239.0	240.0	221.0
South Dakota	135.5	115.8	93.7	85.3	112.3	----	138.3	204.0	----	----	----	----	----
Tennessee	122.4	127.9	124.7	122.4	118.7	126.1	123.5	158.6	149.2	105.9	----	----	----
Virginia	----	----	----	----	----	----	143.6	188.4	220.4	----	----	----	----

DISEASES OF THE RESPIRATORY SYSTEM (97-107)

Alabama:													
White	----	----	34.3	35.7	37.7	59.6	91.3	114.2	236.9	----	----	----	----
Colored	----	----	56.7	54.1	81.7	76.5	148.5	192.5	383.7	----	----	----	----
California	84.8	75.3	67.7	55.8	68.1	92.0	159.2	216.6	----	----	----	----	----
Iowa	91.2	53.1	36.9	----	----	----	----	----	----	----	----	----	----
Kansas	69.9	45.1	28.2	26.9	32.5	38.5	61.0	----	----	----	----	----	----
Kentucky	----	----	39.7	51.2	62.9	85.8	130.1	152.7	----	----	----	----	----
Louisiana	114.1	51.2	56.2	62.8	54.9	74.9	102.9	----	----	----	----	----	----
Michigan	----	----	51.3	41.5	49.3	76.2	107.9	219.8	253.9	----	----	----	----
Minnesota	----	----	----	26.4	39.8	56.2	78.2	153.1	----	----	----	----	----
Nebraska	----	38.9	26.8	27.6	30.2	53.5	83.0	194.8	----	----	----	----	----
New Jersey	----	----	47.1	45.6	64.0	78.3	95.8	486.9	357.5	----	----	----	----
New York [1]	138.7	93.1	42.9	44.2	65.2	82.5	104.4	145.8	----	----	117.8	137.9	161.6
Pennsylvania	----	90.4	58.1	51.9	72.8	88.9	112.7	254.2	----	----	----	----	----
South Dakota	118.7	69.1	53.5	56.9	31.1	----	69.1	145.5	----	----	----	----	----
Tennessee	----	----	----	----	----	----	----	----	234.4	----	----	----	----
Virginia	----	----	----	----	----	----	77.5	113.9	145.0	----	----	----	----

[1] Exclusive of New York City.

Monthly State mortality statistics—Continued

PNEUMONIA, ALL FORMS (100-101)

	1928								1929	Corresponding month for—			
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	1928	1927	1926	1925
Alabama:													
White	84.8	48.5	30.1	28.0	29.7	46.3	81.1	104.4	227.1	167.6	86.0	161.9	.....
Colored	184.7	69.5	46.1	44.8	72.2	68.6	133.5	180.6	366.5	191.4	126.3	219.5	.....
California	74.7	65.7	54.8	43.9	57.4	78.0	139.9	190.5	.....	.....	.....	.....	.....
Connecticut	183.1	72.4	34.3	34.3	46.7	73.7	71.6	118.9	.....	.....	100.9	121.6	136.2
Hawaii	.....	.....	.....	118.1	118.5	134.9	97.6	141.7	.....	.....	210.1	.....	.....
Indiana	120.5	58.0	30.0	33.7	44.1	61.5	80.1	233.2	.....	.....	117.0	120.6	139.6
Iowa	80.5	41.1	31.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas	56.5	35.8	21.8	16.0	25.9	30.2	50.4	.....	.....	.....	.....	.....	.....
Kentucky	.....	.....	32.7	43.4	52.9	78.4	108.2	132.4	.....	.....	.....	.....	.....
Louisiana	102.6	41.2	46.5	52.5	41.2	60.4	88.6	.....	.....	.....	.....	.....	.....
Michigan	.....	.....	37.4	21.3	37.6	61.3	90.1	190.3	224.7	.....	.....	.....	.....
Minnesota	76.1	47.8	30.7	22.9	32.6	51.0	70.2	147.5	.....	.....	.....	.....	.....
Mississippi	.....	.....	25.0	23.0	29.9	28.9	76.8	142.0	.....	.....	.....	.....	.....
Nebraska	.....	32.0	15.1	18.4	23.3	43.5	76.0	179.0	.....	.....	.....	.....	.....
New Jersey	86.3	52.2	39.4	36.4	54.1	68.4	83.7	160.5	326.9	80.4	97.7	128.9	122.3
New York [1]	126.3	80.2	36.4	35.1	53.4	65.9	89.4	128.5	.....	.....	99.2	117.8	138.5
North Carolina	93.4	91.5	40.5	24.8	31.5	48.9	78.7	151.9	185.2	150.7	.....	.....	.....
Pennsylvania	156.0	75.7	45.3	40.4	56.2	72.8	97.1	228.6	.....	.....	103.0	151.0	157.0
South Carolina	111.2	58.7	44.2	49.9	56.8	.....	.....	.....	140.2	178.1	.....	.....	.....
South Dakota	110.4	55.3	43.5	43.5	20.7	.....	60.5	117.1	.....	.....	.....	.....	.....
Tennessee	104.5	61.3	38.1	39.5	40.4	59.3	91.9	122.4	215.1	163.8	129.8	.....	.....
Virginia	.....	.....	.....	.....	.....	.....	64.3	98.3	131.2	.....	.....	.....	.....
Wisconsin	116.8	99.7	40.7	29.9	38.3	58.2	[2]	164.3	161.9	95.3	.....	.....	.....

DISEASES OF THE DIGESTIVE SYSTEM (108-127)

Alabama:													
White	.....	.....	171.0	136.7	109.4	94.6	72.4	66.0	47.7	.....	.....	.....	.....
Colored	.....	.....	143.7	147.7	115.8	85.7	57.2	69.9	67.2	.....	.....	.....	.....
Hawaii	.....	.....	.....	185.6	167.3	124.8	122.0	145.1	.....	.....	130.4	.....	.....
Iowa	61.1	63.1	78.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas	81.5	74.3	95.6	138.0	141.2	95.1	76.9	.....	.....	.....	.....	.....	.....
Kentucky	.....	.....	135.6	180.8	171.6	107.5	89.6	57.2	.....	.....	.....	.....	.....
Louisiana	94.2	134.1	125.0	112.3	114.2	93.6	87.4	.....	.....	.....	.....	.....	.....
Michigan	.....	.....	81.3	95.7	110.5	94.6	84.5	90.8	84.4	.....	.....	.....	.....
Minnesota	.....	.....	.....	50.2	58.6	64.4	57.7	58.4	.....	.....	.....	.....	.....
Nebraska	.....	73.4	88.6	107.0	86.4	59.4	65.7	60.2	.....	.....	.....	.....	.....
New Jersey	[3]	[3]	82.0	101.4	90.7	78.6	68.5	74.6	72.7	.....	.....	.....	.....
New York [1]	79.5	70.9	68.2	79.8	84.6	73.7	72.4	73.0	.....	.....	68.6	74.4	81.3
Pennsylvania	.....	71.7	79.3	94.7	118.3	86.4	73.8	72.2	.....	.....	.....	.....	.....
South Dakota	61.9	60.5	45.2	46.8	74.3	.....	70.9	87.0	.....	.....	.....	.....	.....
Tennessee	.....	.....	.....	.....	.....	.....	.....	.....	44.2	.....	.....	.....	.....
Virginia	.....	.....	.....	.....	.....	.....	48.7	51.7	35.7	.....	.....	.....	.....

DIARRHEA AND ENTERITIS UNDER 2 YEARS (113)

Alabama:													
White	16.8	77.5	89.7	68.7	62.3	37.1	16.7	13.3	2.8	11.3	5.8	11.1	.....
Colored	18.5	59.9	73.8	58.0	53.1	18.5	8.2	13.2	6.6	4.8	5.3	7.9	.....
California	22.2	29.4	21.2	25.1	19.8	19.6	15.0	18.9	.....	.....	.....	.....	.....
Connecticut	4.4	5.3	3.6	13.9	12.1	8.8	4.5	3.6	.....	.....	7.4	7.6	16.2
Hawaii	.....	.....	.....	114.7	97.6	74.2	59.3	104.6	.....	.....	47.1	.....	.....
Indiana	7.8	7.3	20.0	50.4	47.1	28.2	12.6	5.2	.....	.....	4.5	7.2	10.3
Iowa	3.4	2.5	6.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas	6.4	11.3	22.5	52.0	40.4	20.5	12.6	.....	.....	.....	.....	.....	.....
Kentucky	.....	.....	70.1	95.9	99.1	60.0	34.3	12.5	.....	.....	.....	.....	.....
Louisiana	29.6	51.8	43.5	30.3	26.8	24.8	23.7	.....	.....	.....	.....	.....	.....
Michigan	.....	.....	14.6	23.9	38.7	25.9	15.1	13.3	11.8	.....	.....	.....	.....
Minnesota	[4]	[4]	[4]	4.3	6.7	6.1	4.9	3.0	.....	.....	.....	.....	.....
Mississippi	.....	.....	77.6	35.5	24.5	22.4	12.2	8.5	.....	.....	.....	.....	.....
Nebraska	.....	9.5	5.9	23.4	17.3	10.0	2.6	3.3	.....	.....	.....	.....	.....
New Jersey	11.4	10.2	16.6	29.6	24.5	16.9	14.0	12.6	11.1	9.6	14.8	13.8	16.7
New York [1]	10.9	13.5	8.0	14.5	20.9	15.2	10.0	7.4	.....	.....	1.8	12.9	17.7
North Carolina	29.7	119.7	97.8	70.9	44.7	30.9	26.1	30.1	10.4	12.8	.....	.....	.....
Pennsylvania	16.5	13.5	18.6	32.1	50.7	30.0	15.8	15.9	.....	.....	16.9	17.6	15.2
South Carolina	[5] 38.5	[5] 83.5	[5] 78.3	[5] 43.0	[5] 36.6	.....	.....	.....	[5] 5.7	[5] 3.4	.....	.....	.....
South Dakota	1.7	5.2	8.4	6.7	12.1	.....	12.1	8.4	.....	.....	.....	.....	.....
Tennessee	8.9	59.8	94.6	80.5	55.9	35.8	19.9	18.4	3.3	4.7	4.7	.....	.....
Virginia	.....	.....	.....	.....	42.1	22.9	9.0	7.3	3.7	.....	.....	.....	.....
Wisconsin	15.6	9.5	12.4	8.8	[3]	8.4	4.5	13.6	8.8	9.2	.....	.....	.....

[1] Exclusive of New York City.
[2] Not available.
[3] Rate previously published was exclusive of infantile diarrhea.
[4] Rate previously published was for diarrhea in children under 5 years.
[5] Reported as intestinal diarrhea in children under 1 year.

Monthly State mortality statistics—Continued

NEPHRITIS (128, 129)

	1928									Corresponding month for—			
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	1928	1927	1926	1925
Alabama:													
White	68.0	80.4	74.3	60.3	73.9	65.2	75.3	91.8	72.2	74.7	52.5	61.3	------
Colored	124.0	113.1	151.6	156.9	137.6	123.9	147.1	112.1	109.4	92.1	97.4	107.8	------
California	109.6	105.2	96.7	93.8	100.1	96.1	130.1	142.7	------	------	------	------	------
Connecticut	84.6	89.0	67.8	57.6	63.3	60.5	67.1	61.3	------	------	------	------	------
Hawaii	------	------	------	[6] 60.7	[6] 59.3	[6] 40.5	[6] 66.2	[6] 54.0	------	------	[6] 83.3	------	------
Indiana	83.0	76.1	71.2	77.1	84.3	75.6	82.7	96.4	------	------	74.8	75.4	72.3
Iowa	52.4	56.1	61.6	------	------	------	------	------	------	------	------	------	------
Kansas	94.3	78.9	75.1	75.7	88.2	93.7	108.7	------	------	------	------	------	------
Kentucky	------	------	71.0	76.6	80.5	98.4	84.5	86.7	------	------	------	------	------
Louisiana	131.6	99.2	120.2	102.6	93.6	117.1	124.2	------	------	------	------	------	------
Michigan	------	------	61.3	68.2	62.5	68.2	74.7	82.3	82.1	------	------	------	------
Minnesota	54.9	38.0	45.9	45.9	50.5	52.8	39.3	71.4	------	------	------	------	------
Mississippi	------	------	101.9	106.5	81.5	112.4	95.1	117.7	------	------	------	------	------
Nebraska	------	44.9	44.3	44.3	31.1	46.8	53.6	57.7	------	------	------	------	------
New Jersey	114.6	98.7	95.2	84.7	90.4	91.5	101.3	118.9	137.7	108.5	104.9	101.4	117.7
New York [1]	121.4	104.2	93.0	94.1	92.6	100.6	99.6	116.6	------	------	115.1	121.3	129.2
Pennsylvania	125.0	95.6	93.3	94.2	90.7	99.9	109.3	125.6	------	------	110.0	115.0	114.0
South Carolina	[7] 95.4	[7] 106.4	[7] 111.8	[7] 87.8	[7] 92.7	------	------	------	[7] 85.3	[7] 83.4	------	------	------
South Dakota	46.8	34.6	41.8	31.8	41.5	------	25.9	63.6	------	------	------	------	------
Tennessee	------	------	------	------	------	------	------	------	77.2	------	------	------	------
Virginia	------	------	------	------	------	------	94.5	112.0	104.7	------	------	------	------

PUERPERAL STATE (143–150)

Alabama:													
White	14.7	16.7	14.7	15.4	14.5	19.6	13.0	14.0	14.7	9.1	11.7	16.3	------
Colored	33.0	31.3	34.3	36.9	24.5	23.7	17.7	21.1	19.8	18.2	15.8	22.3	------
California	10.3	9.1	9.8	9.3	10.4	8.0	7.7	14.2	------	------	------	------	------
Connecticut	8.8	6.0	10.2	8.0	5.3	9.5	6.0	8.8	------	------	6.7	13.6	6.9
Hawaii	------	------	------	6.7	17.4	------	7.0	6.7	------	------	7.2	------	------
Indiana	13.3	10.8	8.9	11.1	15.3	9.3	10.3	8.9	------	------	9.7	10.6	9.1
Iowa	10.7	9.5	4.8	------	------	------	------	------	------	------	------	------	------
Kansas	22.5	12.6	13.5	9.6	9.9	9.6	12.6	------	------	------	------	------	------
Kentucky	------	------	6.0	9.7	10.5	11.5	8.6	11.1	------	------	------	------	------
Louisiana	22.9	29.3	26.6	19.9	19.3	30.8	20.0	------	------	------	------	------	------
Michigan	------	------	10.8	12.6	7.7	9.7	10.6	12.3	11.8	------	------	------	------
Minnesota	12.1	8.0	7.8	7.8	4.0	5.6	4.0	8.7	------	------	------	------	------
Mississippi	------	------	22.4	23.0	14.3	18.4	16.3	22.4	------	------	------	------	------
Nebraska	------	14.7	13.4	12.5	6.9	10.9	7.8	9.2	------	------	------	------	------
New Jersey	------	------	9.6	12.0	10.2	12.6	14.5	8.0	10.2	------	------	------	------
New York [1]	12.8	8.5	12.2	9.7	8.9	7.6	8.7	10.1	------	------	9.0	8.3	12.3
Pennsylvania	[8] 7.1	[8] 5.8	[8] 5.4	[8] 4.4	[8] 4.4	[8] 5.1	[8] 5.6	[8] 6.7	------	------	[8] 5.5	[8] 5.3	[8] 5.1
South Dakota	10.0	5.2	6.7	10.0	12.1	------	12.0	10.0	------	------	------	------	------
Tennessee	[9] 7.5	[9] 4.4	[9] 5.6	[9] 6.6	[9] 3.9	[9] 4.7	[9] 2.9	[9] 7.1	[9] 18.4	------	------	------	------
Virginia	------	------	------	------	------	------	14.2	18.3	15.1	------	------	------	------

CONGENITAL MALFORMATION AND DISEASES OF EARLY INFANCY (159–163)

Alabama:													
White	79.2	73.9	61.0	63.1	73.9	68.7	46.4	62.4	67.3	67.2	62.7	70.2	------
Colored	83.1	58.6	60.7	93.6	77.7	65.9	58.6	44.8	68.6	69.0	52.6	64.4	------
California	57.4	49.7	53.0	48.8	54.7	50.1	53.9	63.5	------	------	------	------	------
Indiana	64.5	59.5	53.4	51.2	52.9	55.6	51.6	70.8	------	------	------	------	------
Iowa	60.0	66.1	65.5	------	------	------	------	------	------	------	------	------	------
Kansas	46.8	40.4	51.3	52.6	64.3	59.0	60.3	------	------	------	------	------	------
Louisiana	64.6	49.3	71.2	65.8	75.5	67.6	59.3	------	------	------	------	------	------
Michigan	------	------	43.3	61.6	69.7	74.9	72.1	91.6	76.9	------	------	------	------
Minnesota	------	------	------	53.6	48.3	52.3	43.8	34.6	------	------	------	------	------
Mississippi	------	------	55.2	44.0	47.6	49.3	49.6	42.1	------	------	------	------	------
Nebraska	------	59.6	51.8	53.5	57.9	68.6	49.3	34.2	------	------	------	------	------
New York [1]	72.4	72.2	60.6	62.7	60.0	58.9	60.2	62.7	------	------	67.3	59.4	76.2
Pennsylvania	[10] 37.7	[10] 30.8	[10] 31.1	[10] 30.4	[10] 27.5	[10] 32.7	[10] 34.1	[10] 37.3	------	------	[10] 36.1	[10] 40.1	[10] 40.6
South Dakota	56.9	57.0	26.8	73.6	63.9	------	65.7	80.3	------	------	------	------	------
Tennessee	------	------	------	------	------	------	------	------	35.5	------	------	------	------
Virginia	------	------	------	------	------	------	55.8	[2]	[2]	------	------	------	------

[1] Exclusive of New York City.
[2] Not available.
[6] Chronic nephritis (129) only.
[7] Reported as kidney diseases.
[8] Reported as puerperal septicemia.
[10] Rate per 1,000 live births.

COURT DECISIONS RELATING TO PUBLIC HEALTH

Ordinance regulating sale of meat held valid in part and invalid in part.—(California First District Court of Appeal, Division 1; Ex parte Hennessy, 273 P. 826; decided December 26, 1928.) Ordinance 6157, new series, of the city and county of San Francisco provided in section 1 as follows:

It shall be unlawful for any person, firm, partnership, association, or corporation, within the city and county of San Francisco, to sell or offer for sale any uncured or uncooked meats from any established place of business in the city and county of San Francisco for the purpose of sale and delivery to dealers or consumers or for the purpose of any delivery, or to keep open for business any place of business where any uncured or uncooked meats are sold or offered for sale, or permit such place to be kept open for business, or to receive at such place of business, any uncured or uncooked meats, except between the hours of 7 o'clock a. m. and 6 o'clock p. m., on days other than Sunday, New Year's Day, Washington's Birthday, Decoration Day, and Christmas Day, or to sell or offer for sale within the city and county of San Francisco any uncured or uncooked meats, except at and from an established and fixed place of business at which said meats are regularly inspected by State and municipal inspectors: *Provided, however,* That in case of a holiday falling on Saturday, the place of business hereinabove defined may be kept open between the hours of 7 o'clock a. m. and 12 o'clock noon.

And provided further, That any place of business where strictly kosher meats are sold or offered for sale may be kept open on Saturdays from sundown until 10 o'clock p. m., and on Sundays from 7 o'clock until noon: *And be it further provided,* That all emergency cases be left to the discretion of the health officer of the city and county of San Francisco.

In a habeas corpus proceeding to obtain the release from custody of a person charged with violating the said ordinance by selling and offering for sale at his butcher shop uncured and uncooked meats between 7 and 8 p. m. on a certain Saturday, the appellate court held void, as the granting of a privilege to one class from which another was arbitrarily excluded, the proviso in the ordinance permitting places where strictly kosher meats were sold to keep open on Saturday evening and Sunday morning. The remaining portion of the ordinance, however, the court held to be a valid exercise of the police power. In passing on the ordinance the court said:

It is contended on behalf of the prisoner that the ordinance is unconstitutional and void for the reason that the proviso therein "that any place of business where strictly kosher meats are sold or offered for sale may be kept open on Saturdays from sundown until 10 o'clock p. m. and on Sundays from 7 o'clock a. m. until 12 noon" creates as against those who do not sell or offer for sale kosher meats at their places of business (his shop being of that class) an arbitrary and unreasonable discrimination.

* * * * * * *

* * * The purpose of such ordinances as the one in question is the protection of public health, and the provision thereof regulating the hours of business of shops and markets where the products sold are subject to inspection by public authority is to prevent evasion of the law during the hours when such inspectors are not on duty. An ordinance of this character will be upheld as a valid exercise of the police power if its requirements are not unreasonable and its provisions

do not discriminate in favor of or against particular persons or classes of persons as to whom no reasonable basis of discrimination exists.

The first objection does not obtain here, but the ordinance by the exception noted above does discriminate between meat called "Kosher," that is, the flesh of animals killed according to the Hebrew ritual, and the flesh of animals not so killed. * * *

As stated, the ordinance divides butcher shops into two classes, viz, those where "strictly kosher meats are sold or offered for sale" (this classification by implication including shops w[h]ere both kosher and other meats are sold), and those where only meats other than kosher are sold or offered for sale. Those forming the first class are permitted to do business on Saturday nights and Sundays, while to the second class this privilege is denied, notwithstanding that no material difference in the quality of the meats or the conditions under which the same are prepared or distributed is claimed to exist.

* * * * * * *

In the present case the facts shown furnish no reasonable basis for the classification attempted to be made, and the result is the granting of a privilege to one class from which the other is arbitrarily excluded. The invalidity of the exception, however, does not necessarily affect the validity of the remaining portion of the ordinance. The supervisors had the power to adopt as a police measure an ordinance closing meat markets on Sunday and after nightfall on Saturday. Aside from the exception the ordinance is complete, is not unreasonable, and applies without discrimination to all shops where uncured or uncooked meats are sold. * * * The evident object of the board was to regulate for inspection purposes the hours during which the business of selling uncured and uncooked meats might be carried on, which object is accomplished without the invalid exception. The latter was not so intimately or inherently connected with the general provisions of the act nor did it enter so entirely into its scope and design as to indicate the intention that the general provisions should not be effective or would not have been adopted without it. Under such circumstances, though the exception be treated as a nullity, the balance of the act, under which the prisoner is held in custody, is not affected. * * *

Fees for inspection of places selling fresh meats upheld.—(Louisiana Supreme Court; Oubre et al. *v.* City of Donaldsonville, 120 So. 30; decided November 26, 1928.) An ordinance of the city of Donaldsonville required an inspection at regular periods of all places where fresh meats were sold, and fixed an annual inspection fee of $120 to be paid by each of the places. The plaintiffs, seven butchers doing business in the city, sought to restrain the enforcement of the said ordinance.

They contended that, even though the city could make the inspection, it could charge no inspection fee in the absence of express legislative authority. In answering this the supreme court said that "the right to make the inspection carries with it by necessary implication the right to charge the cost of such inspection to the business inspected."

The contention most seriously urged, however, was that the fee charged was excessive and, therefore, a mere pretext for the raising of general revenue under the guise of inspection fees. The court stated that this involved "only a question of fact, to wit, whether said charges grossly exceed the cost of inspection." The holding was that they did not, it being pointed out that "the evidence shows that

the cost of inspection would be in excess of the amount collected as inspection fees, if it were not that the city council had, in the interest of economy, combined the duties of two offices [chief of police and market inspector] and thus reduced the cost of inspection."

DEATHS DURING WEEK ENDED MARCH 30, 1929

Summary of information received by telegraph from industrial insurance companies for the week ended March 30, 1929, and corresponding week of 1928. (From the Weekly Health Index, April 3, 1929, issued by the Bureau of the Census, Department of Commerce)

	Week ended Mar. 30, 1929	Corresponding week, 1928
Policies in force	73, 734, 291	70, 802, 855
Number of death claims	13, 268	15, 118
Death claims per 1,000 policies in force, annual rate	9. 4	11. 2

Deaths from all causes in certain large cities of the United States during the week ended March 30, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928. (From the Weekly Health Index, April 3, 1929, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Mar. 30, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended Mar. 30, 1929 [2]
	Total deaths	Death rate [1]		Week ended Mar. 30, 1929	Corresponding week, 1928	
Total (66 cities)	7,634	13.3	15.2	765	960	[3] 66
Akron	49			7	7	72
Albany [4]	38	16.5	19.5	7	3	139
Atlanta	63	12.9	18.9	7	13	73
White	34			3	5	
Colored	29	[5]	[5]	4	8	
Baltimore [4]	209	13.2	18.3	23	37	74
White	160			15	19	60
Colored	49	[5]	[5]	8	18	127
Birmingham	77	18.1	15.8	11	5	160
White	38			6	2	90
Colored	39	[5]	[5]	5	3	115
Boston	222	14.5	17.5	28	39	77
Bridgeport	37			7	6	121
Buffalo	146	13.7	14.0	14	24	60
Cambridge	32	13.3	14.5	2	6	36
Camden	30	11.6	17.0	7	7	121
Canton	28	12.5	9.4	3	3	71
Chicago [4]	757	12.5	15.2	72	85	64
Cincinnati	145			16	19	93
Cleveland	214	11.1	11.4	20	23	59
Columbus	76	13.3	18.5	7	11	66
Dallas	55	13.2	15.8	6	12	
White	43			6	9	
Colored	12	[5]	[5]	0	3	
Dayton	50	14.2	13.9	6	0	95
Denver	83	14.8	16.4	8	6	77
Des Moines	41	14.1	14.8	5	2	90
Detroit	377	14.3	14.6	42	61	87
Duluth	19	8.5	10.7	0	1	0
El Paso	41	18.2	26.6	11	12	
Erie	28			4	2	82
Fall River [4]	23	9.0	8.6	3	3	56
Flint	29	10.2	8.4	3	9	36
Fort Worth	37	11.3	13.5	4	7	
White	32			4	5	
Colored	5	[5]	[5]	0	2	
Grand Rapids	31	9.9	10.8	3	3	45
Houston	48			7	7	
White	25			5	3	
Colored	23	[5]	[5]	2	4	
Indianapolis	114	15.6	14.0	8	23	64
White	94			7	19	65
Colored	20	[5]	[5]	1	4	60
Jersey City	88	14.2	12.7	13	15	100
Kansas City, Kans	30	13.3	23.0	3	5	66
White	25			3	3	76
Colored	5	[5]	[5]	0	2	0

Footnotes at the end of table.

Deaths from all causes in certain large cities of the United States during the week ended March 30, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928—Continued

City	Week ended Mar. 30, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended Mar. 30, 1929 [2]
	Total deaths	Death rate [1]		Week ended Mar. 30, 1929	Corresponding week, 1928	
Kansas City, Mo	129	17.3	19.7	14	15	118
Knoxville	35	17.4	9.9	2	0	44
White	24			1	0	24
Colored	11	(5)	(5)	1	0	211
Los Angeles	307			21	18	62
Louisville	99	15.7	21.4	6	7	49
White	77			5	3	47
Colored	22	(5)	(5)	1	4	63
Lowell	19			2	6	45
Lynn	21	10.4	17.3	3	4	82
Memphis	90	24.7	21.7	15	8	177
White	45			6	6	114
Colored	45	(5)	(5)	9	2	281
Milwaukee	127	12.2	12.0	18	19	79
Minneapolis	85	9.7	10.1	5	10	31
Nashville	47	17.6	19.9	5	7	81
White	35			4	6	87
Colored	12	(5)	(5)	1	1	63
New Bedford	30			1	3	21
New Haven	34	9.5	13.9	7	4	107
New Orleans	131	16.0	21.8	9	12	45
White	70			5	3	35
Colored	61	(5)	(5)	4	9	67
New York	1,569	13.6	15.4	156	188	64
Bronx Borough	200	11.0	10.8	18	10	53
Brooklyn Borough	534	12.1	13.8	49	69	50
Manhattan Borough	645	19.2	22.4	72	83	88
Queens Borough	150	9.2	9.7	15	22	61
Richmond Borough	40	13.9	19.4	2	4	36
Newark, N. J	109	12.0	14.1	14	16	74
Oakland	63	12.0	11.4	3	3	33
Oklahoma City	24			1	0	20
Omaha	50	11.7	17.8	8	6	94
Paterson	44	15.9	17.7	5	7	88
Philadelphia	443	11.2	16.2	41	62	58
Pittsburgh	174	13.5	17.2	24	33	83
Portland, Oreg	82			4	3	46
Providence	78	14.2	14.2	9	6	79
Richmond	54	14.5	15.3	6	4	84
White	33			2	1	42
Colored	21	(5)	(5)	4	3	164
Rochester	98	15.6	11.6	12	10	102
St. Louis	228	14.1	15.7	9	14	30
St. Paul	53			5	5	51
Salt Lake City [4]	41	15.5	17.0	1	2	15
San Antonio	62	14.9	20.6	10	11	
San Diego	45	19.7	22.3	5	10	96
San Francisco	179	16.0	15.1	7	10	45
Schenectady	20	11.2	13.4	2	2	64
Seattle	73	10.0	9.7	4	3	42
Somerville	21	10.7	8.7	4	3	144
Spokane	22	10.5	19.2	0	4	0
Springfield, Mass	37	12.9	12.2	2	2	33
Syracuse	78	20.5	11.8	10	5	120
Tacoma	20	9.5	13.2	1	1	26
Toledo	77	12.9	9.7	8	7	75
Trenton	45	16.9	16.2	3	6	54
Utica	33	16.6	17.6	2	6	51
Washington, D. C	134	12.7	13.0	12	13	70
White	88			8	5	68
Colored	46	(5)	(5)	4	8	76
Waterbury	10			0	2	0
Wilmington, Del	28	11.4	12.2	2	1	52
Worcester	40	10.6	20.4	0	10	0
Yonkers	23	9.9	11.6	0	0	0
Youngstown	38	11.4	10.5	5	9	72

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 73 cities.
[4] Deaths for week ended Friday.
[5] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C, 25.

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Reports for Weeks Ended March 30, 1929, and March 31, 1928

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended March 30, 1929, and March 31, 1928

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928
New England States:								
Maine	4	2	5	13	204	73	0	0
New Hampshire	2		9	11	26	31	0	0
Vermont		1				88	0	0
Massachusetts	72	88	46	11	331	1,930	3	3
Rhode Island	7	14	1	10	52	204	0	0
Connecticut	15	39	23	11	449	317	3	1
Middle Atlantic States:								
New York	320	315	[1] 33	[1] 67	1,195	2,711	17	13
New Jersey	93	128	9	39	273	1,442	4	2
Pennsylvania	123	199			1,712	1,469	6	9
East North Central States:								
Ohio	67	174	73	88	2,606	966	8	8
Indiana	26	22		31	568	204	0	0
Illinois	145	143	322	387	1,732	180	15	12
Michigan	124	63	9	8	657	1,376	88	7
Wisconsin	14	33	22	105	863	149	12	6
West North Central States:								
Minnesota	14	19			426	111	0	2
Iowa	9	16			84	55	2	0
Missouri	73	36	7	53	522		25	12
North Dakota	4				39	2	2	2
South Dakota	6			30	35	39	0	0
Nebraska	10	10	5	84	68	37	0	0
Kansas	16	8	28	31	313	115	1	6
South Atlantic States:								
Delaware	1				34	19	0	0
Maryland [2]	15	33	22	48	78	1,020	0	2
District of Columbia	13	22		1	18	229	0	0
West Virginia	14	19	40	43	340	88	1	1
North Carolina	13	38			76	2,913	0	0
South Carolina	16	16	671	905	8	765	0	0
Georgia	8	13	82	140	41	759	4	1
Florida	11	6	5		85	66	0	0

[1] New York City only.

[2] Week ended Friday.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended March 30, 1929, and March 31, 1928—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928
East South Central States:								
Kentucky				31		399	2	0
Tennessee	13	14	91	126	12	273	2	2
Alabama	11	10	76	311	121	580	1	1
Mississippi	6	14					1	2
West South Central States:								
Arkansas	2	9	31	583	95	556	2	0
Louisiana	16	18	40	77	112	250	4	1
Oklahoma [3]	14	18	80	416	54	443	5	4
Texas	21	34	78	48	119	121	2	0
Mountain States:								
Montana	7	9			70	2	1	0
Idaho		1	2		1		11	3
Wyoming	3				34	39	2	2
Colorado	8	27	7	13	24	44	10	18
New Mexico	4	8	16	6	2	160	1	0
Arizona	2	5			1	33	10	2
Utah [3]	3	5	4	4		5	15	2
Pacific States:								
Washington	7	5	3	2	94	193	21	2
Oregon	8	9	71	31	180	69	2	3
California	33	59	84	30	61	184	47	4

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928
New England States:								
Maine	1	1	37	51	9	0	3	3
New Hampshire	0	0	14	14	1	0	0	0
Vermont	0	0	5	11	4	0	0	1
Massachusetts	0	0	307	309	0	0	5	4
Rhode Island	0	0	31	60	0	0	1	1
Connecticut	0	0	67	223	4	0	0	1
Middle Atlantic States:								
New York	0	5	626	911	0	2	17	17
New Jersey	0	0	150	328	0	16	3	4
Pennsylvania	0	0	410	587	6	1	8	10
East North Central States:								
Ohio	1	4	427	255	47	30	12	5
Indiana	0	0	304	115	88	123	26	2
Illinois	2	0	482	381	94	56	6	6
Michigan	1	0	573	264	66	23	10	4
Wisconsin	1	1	187	187	12	9	3	3
West North Central States:								
Minnesota	0	1	110	175	1	2	3	6
Iowa	0	0	165	96	30	81	0	3
Missouri	0	2	133	114	14	53	5	1
North Dakota	0	0	28	73	3	3	2	1
South Dakota	1	1	21	46	13	12	0	0
Nebraska	0	0	112	106	85	47	0	0
Kansas	0	2	152	153	49	90	4	1
South Atlantic States:								
Delaware	0	0	3	1	0	0	0	0
Maryland [2]	0	0	53	71	0	2	2	7
District of Columbia	0	1	28	60	0	1	1	1
West Virginia	0	0	40	35	13	62	2	7
North Carolina	0	0	40	31	16	115	1	2
South Carolina	1	1	18	2	0	6	9	1
Georgia	0	0	6	20	0	0	9	9
Florida	1	0	9	7	0	12	3	9

[2] Week ended Friday.
[3] Figures for 1929 are exclusive of Oklahoma City and Tulsa and for 1928 are exclusive of Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended March 30, 1929, and March 31, 1928—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928	Week ended Mar. 30, 1929	Week ended Mar. 31, 1928
East South Central States:								
Kentucky	0	0	88	66	38	18	0	2
Tennessee	1	2	57	13	2	13	2	4
Alabama	1	0	9	8	5	10	8	13
Mississippi	0	1	9	7	1	2	9	9
West South Central States:								
Arkansas	0	0	6	9	1	7	1	11
Louisiana	0	0	54	11	6	25	6	3
Oklahoma [3]	0	0	48	60	89	203	7	4
Texas	1	0	72	53	104	37	0	0
Mountain States:								
Montana	0	0	20	6	6	9	8	0
Idaho	0	1	3	6	18	8	0	0
Wyoming	0	1	9	17	1	4	0	1
Colorado	0	0	41	81	28	2	1	0
New Mexico	0	0	14	33	2	1	1	0
Arizona	0	1	8	4	29	30	2	4
Utah [3]	0	0	5	3	4	18	0	0
Pacific States:								
Washington	0	1	30	48	50	51	2	7
Oregon	1	3	34	18	19	75	3	2
California	0	3	334	154	56	14	5	8

[2] Week ended Friday.
[3] Figures for 1929 are exclusive of Oklahoma City and Tulsa and for 1928 are exclusive of Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
February, 1929										
California	78	286	737	1	224	4	11	1,720	361	39
Colorado	20	65	110	----	24	----	2	130	137	7
Idaho	37	7	6	----	23	----	0	37	130	13
Kansas	8	62	194	----	467	1	0	687	229	6
Massachusetts	10	331	1,575	----	1,517	1	3	1,058	0	10
Montana	9	11	17	----	596	----	0	136	66	2
New Hampshire	----	5	406	----	----	----	0	37	0	0
South Carolina	----	130	5,654	326	21	133	5	42	24	19
South Dakota	7	12	10	----	262	----	0	147	113	0
Virginia	8	107	6,685	31	677	7	0	190	22	9
Washington	23	50	266	----	454	----	2	158	192	12
Wisconsin	43	96	857	----	3,129	----	3	839	51	29

February, 1929

Anthrax:	Cases
Massachusetts	2
Botulism:	
California	5
Chicken pox:	
California	2,140
Colorado	260
Idaho	59
Kansas	516
Massachusetts	683
Montana	54
Chicken pox—Continued.	
South Carolina	269
South Dakota	64
Virginia	534
Washington	366
Wisconsin	1,221
Dengue:	
South Carolina	2
Dysentery:	
California (amebic)	1
Massachusetts	2
Virginia	44
Washington	1

German measles:	Cases
California	175
Colorado	15
Kansas	750
Massachusetts	67
Montana	1
Washington	21
Wisconsin	92
Granuloma, coccidoidal:	
California	7
Hookworm disease:	
California	2
South Carolina	184
Impetigo contagiosa:	
California	13
Washington	2
Jaundice:	
California	3
Lead poisoning:	
Massachusetts	7
Leprosy:	
California	3
Kansas	1
Lethargic encephalitis:	
California	8
Kansas	1
Massachusetts	8
Montana	1
Wisconsin	6
Mumps:	
California	1,326
Colorado	100
Idaho	55
Kansas	530
Massachusetts	358
Montana	12
South Carolina	31
South Dakota	19
Washington	291
Wisconsin	525
Ophthalmia neonatorum:	
California	4
Colorado	1
Massachusetts	120
South Carolina	14
Wisconsin	1
Paratyphoid fever:	
California	1

Puerperal septicemia:	Cases
Colorado	1
Washington	3
Rabies in animals:	
California	70
Idaho	1
South Carolina	14
Scabies:	
Colorado	4
Washington	6
Septic sore throat:	
Colorado	1
Kansas	3
Massachusetts	25
Montana	8
Washington	1
Tetanus:	
California	6
Kansas	1
Massachusetts	2
Trachoma:	
California	8
Kansas	1
Massachusetts	4
Trichinosis:	
Washington	1
Tularaemia:	
Kansas	3
Undulant fever:	
California	1
Kansas	4
South Carolina	2
Wisconsin	1
Vincent's angina:	
California	3
Kansas	1
South Carolina	1
Washington	2
Whooping cough:	
California	748
Colorado	63
Idaho	7
Kansas	233
Massachusetts	488
Montana	33
South Carolina	237
South Dakota	26
Virginia	504
Washington	189
Wisconsin	827

RECIPROCAL NOTIFICATIONS

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

Disease	California	Connecticut	Illinois	Kansas	Minnesota	New York	Washington
Diphtheria		1			2		
Measles						3	
Scarlet fever						1	1
Smallpox	1	1	3				
Syphilis				5			
Trachoma					1		
Tuberculosis	1				37		
Typhoid fever					1		

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

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

Weeks ended March 23, 1929, and March 24, 1928

	1929	1928	Estimated expectancy
Cases reported			
Diphtheria:			
46 States	1,494	1,838	
97 cities	817	953	909
Measles:			
45 States	13,154	20,969	
97 cities	4,555	7,855	
Meningococcus meningitis:			
46 States	323	158	
97 cities	149	75	
Poliomyelitis:			
46 States	26	33	
Scarlet fever:			
46 States	5,685	5,223	
97 cities	2,086	1,828	1,523
Smallpox:			
46 States	1,127	1,463	
97 cities	66	149	101
Typhoid fever:			
46 States	199	138	
97 cities	42	27	34
Deaths reported			
Influenza and pneumonia:			
90 cities	1,118	1,412	
Smallpox:			
90 cities	0	0	

City reports for week ended March 23, 1929

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during 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 1920 is included. In obtaining the estimated expectancy the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	78,600	4	1	1		0	59	0	1
New Hampshire:									
Concord	(1)	1	0	1		0	0	0	0
Manchester	85,700	0	1	0		0	0	0	4
Nashua	(1)	0	0	0		0	0	0	0

[1] No estimate of population made.

City reports for week ended March 23, 1929—Continued

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND—con.									
Vermont:									
Barre	(1)	0	0	0		0	0	3	0
Massachusetts:									
Boston	799,200	50	40	24	11	2	20	39	39
Fall River	134,300	2	3	7	1	0	7	0	3
Springfield	149,800	5	3	4		0	13	1	3
Worcester	197,600	6	4	2		0	4	2	3
Rhode Island:									
Pawtucket	73,100	0	1	1		0	10	0	3
Providence	286,300	0	9	6	2	0	77	0	9
Connecticut:									
Bridgeport	(1)	0	6	5	7	0	16	1	3
Hartford	172,300		7						
New Haven	187,900	17	2	0		0	1	0	8
MIDDLE ATLANTIC									
New York:									
Buffalo	555,800	32	12	15		1	16	2	22
New York	6,017,500	403	241	265	52	26	100	270	225
Rochester	328,200	16	11	2	2	0	46	18	7
Syracuse	199,300	22	7	2		0	7	4	10
New Jersey:									
Camden	135,400	4	6	7	1	3	4	1	2
Newark	473,600	54	16	35	6	0	8	93	10
Trenton	139,000	4	3	0		0	4	0	5
Pennsylvania:									
Philadelphia	2,064,200	141	70	34	13	9	62	31	70
Pittsburgh	673,800	44	20	12		7	18	22	38
Reading	115,400	4	3	2		1	107	0	4
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	413,700	12	9	9		7	6	0	16
Cleveland	1,010,300	85	30	26	13	3	584	13	21
Columbus	299,000	6	4	0	4	3	33	1	3
Toledo	313,200	15	5	1	7	7	33	9	4
Indiana:									
Fort Wayne	105,300	4	2	2		0	37	0	3
Indianapolis	382,100	47	5	5		1	120	5	17
South Bend	86,100	2	1	2		0	21	0	1
Terre Haute	73,500	1	0	1		0	3	0	2
Illinois:									
Chicago	3,157,400	122	76	107	19	7	682	20	83
Springfield	67,200	6	1	1	1	1	0	0	1
Michigan:									
Detroit	1,378,900	78	50	56	8	6	56	21	43
Flint	148,800	9	3	2		0	3	1	4
Grand Rapids	164,200	12	2	0		0	159	1	1
Wisconsin:									
Kenosha	56,500	6	1	0		0	56	0	2
Milwaukee	544,200	59	17	10	1	1	585	28	24
Racine	74,400	16	2	2	2	2	155	0	0
Superior	(1)	3	0	0		0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	116,800	12	0	0		0	0	70	5
Minneapolis	455,900	48	14	9		2	347	73	8
St. Paul	(1)	17	11	1		4	298	46	8
Iowa:									
Davenport	(1)	4	2	0	0		2	0	
Des Moines	151,900	2	7	0			4	0	
Sioux City	80,000	12	1	1			9	0	
Waterloo	37,100	3	0	0			10	34	
Missouri:									
Kansas City	391,000	37	6	5		2	235	5	17
St. Joseph	78,500	1	0	0		0	9	0	4
St. Louis	848,100	38	42	44	7		13	13	

[1] No estimate of population made.

City reports for week ended March 23, 1929—Continued

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CENTRAL—continued									
North Dakota:									
Fargo	(1)	3	1	0	-------	0	39	1	0
Grand Forks	(1)	0	2	0	-------	-------	0	0	-------
South Dakota:									
Aberdeen	(1)	1	4	0	-------	-------	3	0	-------
Sioux Falls	(1)	0	2	0	-------	-------	8	0	-------
Nebraska:									
Omaha	222,800	1	3	7	-------	0	1	1	12
Kansas:									
Topeka	62,800	17	1	0	-------	2	-------	0	3
Wichita	99,300	25	2	1	-------	0	17	25	6
SOUTH ATLANTIC									
Delaware:									
Wilmington	128,500	5	2	0	-------	2	25	0	7
Maryland:									
Baltimore	830,400	89	27	11	34	8	3	182	33
Cumberland	(1)	0	0	0	2	0	2	2	0
Frederick	(1)	0	0	0	-------	1	0	0	1
District of Columbia:									
Washington	552,000	52	11	11	5	0	24	0	17
Virginia:									
Lynchburg	38,600	8	0	1	-------	0	5	101	3
Norfolk	184,200	31	1	1	-------	0	1	75	5
Richmond	194,400	3	2	4	-------	2	4	2	4
Roanoke	64,600	12	1	1	-------	0	0	0	1
West Virginia:									
Charleston	55,200	0	1	1	3	1	114	0	0
Wheeling	(1)	1	1	0	-------	0	47	2	4
North Carolina:									
Raleigh	(1)	3	0	0	-------	0	0	0	4
Wilmington	39,100	0	0	0	-------	0	0	0	3
Winston-Salem	80,000	2	0	0	-------	0	0	1	2
South Carolina:									
Charleston	75,900	0	0	1	24	0	2	0	3
Columbia	50,600	4	0	0	-------	0	0	1	4
Greenville	(1)	2	0	0	-------	0	0	0	0
Georgia:									
Atlanta	255,100	7	3	2	31	2	14	1	6
Brunswick	(1)	0	0	0	-------	0	0	0	1
Savannah	99,900	0	0	0	3	0	0	0	4
Florida:									
Miami	156,700	10	4	0	21	0	2	0	0
Tampa	113,400	4	1	0	-------	0	1	0	2
EAST SOUTH CENTRAL									
Kentucky:									
Covington	59,000	0	1	0	-------	1	1	0	4
Tennessee:									
Memphis	190,200	28	4	0	-------	2	0	1	3
Nashville	139,600	4	1	1	-------	2	0	0	5
Alabama:									
Birmingham	222,400	10	2	2	10	6	1	2	9
Mobile	69,600	1	0	3	1	1	18	2	2
Montgomery	63,100	6	0	0	2	-------	0	0	-------
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	(1)	0	0	1	-------	-------	2	1	-------
Little Rock	79,200	1	0	0	-------	1	0	4	4
Louisiana:									
New Orleans	429,400	6	10	18	7	6	17	0	1
Shreveport	81,300	3	1	0	-------	0	5	0	1
Oklahoma:									
Oklahoma City	(1)	1	2	4	-------	1	0	0	7
Tulsa	170,500	28	1	1	-------	-------	3	5	-------

[1] No estimate of population made.

City reports for week ended March 23, 1929—Continued

Division, State, and city	Population, July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST SOUTH CENTRAL—continued									
Texas:									
Dallas	217,800	14	5	4	6	6	19	0	4
Fort Worth	170,600	14	3	2	27	3	3	0	7
Galveston	50,600	0	0	0	----	0	0	0	2
Houston	(1)	2	3	4	----	2	5	0	4
San Antonio	218,100	0	2	4	1	4	2	1	4
MOUNTAIN									
Montana:									
Billings	(1)	4	0	0	----	0	0	0	0
Great Falls	(1)	0	1	0	----	1	56	6	1
Helena	(1)	0	0	0	----	0	5	0	0
Missoula	(1)	0	1	0	----	0	6	0	3
Idaho:									
Boise	(1)	1	0	0	----	0	1	0	0
Colorado:									
Denver	294,200	44	9	3	----	5	5	30	10
Pueblo	44,200	34	1	0	----	1	11	0	1
New Mexico:									
Albuquerque	(1)	4	0	0	----	0	0	1	0
Utah:									
Salt Lake City	138,000	18	2	1	----	2	4	167	3
Nevada:									
Reno	(1)	0	0	0	----	0	0	0	1
PACIFIC									
Washington:									
Seattle	383,200	28	5	4	----	----	5	11	----
Spokane	109,100	6	1	0	----	----	69	0	----
Tacoma	110,500	19	1	0	1	0	3	10	0
Oregon:									
Salem	(1)	5	0	2	1	1	1	1	0
California:									
Los Angeles	(1)	127	45	13	45	7	17	37	47
Sacramento	75,700	20	2	0	3	3	1	19	3
San Francisco	585,300	24	21	11	9	0	4	12	2

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	4	6	0	0	0	0	0	0	0	1	29
New Hampshire:											
Concord	2	0	0	0	0	0	0	0	0	1	13
Manchester	2	0	0	0	0	0	0	0	0	0	19
Nashua	1	0	0	0	0	0	0	0	0	0	5
Vermont:											
Barre	1	0	0	0	0	1	0	0	0	6	3
Massachusetts:											
Boston	84	85	0	0	0	21	1	1	0	12	283
Fall River	5	5	0	0	0	2	0	0	0	5	22
Springfield	7	15	0	0	0	0	0	0	0	5	36
Worcester	11	15	0	0	0	6	0	0	0	28	59
Rhode Island:											
Pawtucket	1	4	0	0	0	1	0	0	0	0	17
Providence	10	16	0	0	0	6	0	2	0	4	85
Connecticut:											
Bridgeport	13	6	0	0	0	3	0	1	0	0	37
Hartford	5	----	0	----	----	----	0	----	----	----	----
New Haven	11	1	0	3	0	1	0	0	0	1	51

[1] No estimate of population made.

City reports for week ended March 23, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
MIDDLE ATLANTIC											
New York:											
Buffalo	26	48	0	0	0	13	1	0	0	25	146
New York	358	434	0	0	0	105	8	8	0	87	1,619
Rochester	14	3	0	0	0	1	1	0	0	10	71
Syracuse	13	7	0	0	0	0	0	1	0	8	60
New Jersey:											
Camden	7	3	0	0	0	0	0	0	0	5	35
Newark	42	19	0	0	0	7	0	0	0	27	136
Trenton	5	4	0	0	0	4	0	0	0	0	40
Pennsylvania:											
Philadelphia	104	81	0	0	0	27	2	2	0	82	542
Pittsburgh	30	29	0	0	0	18	1	1	1	30	216
Reading	4	11	0	0	0	0	0	0	0	12	29
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	20	71	1	3	0	9	0	1	1	17	178
Cleveland	42	40	0	0	0	13	1	1	0	69	202
Columbus	12	6	2	0	0	5	0	0	0	23	85
Toledo	13	18	1	0	0	7	1	0	0	92	78
Indiana:											
Fort Wayne	6	4	1	0	0	1	0	0	0	0	21
Indianapolis	11	90	11	4	0	7	0	0	0	63	123
South Bend	3	2	0	1	0	0	0	0	0	0	18
Terre Haute	3	0	0	0	0	0	0	0	0	0	23
Illinois:											
Chicago	135	197	3	0	0	61	2	0	0	52	798
Springfield	3	8	0	1	0	1	0	0	0	6	29
Michigan:											
Detroit	109	260	2	0	0	20	1	4	0	94	358
Flint	9	34	2	6	0	2	0	0	0	5	28
Grand Rapids	9	8	0	4	0	4	1	0	0	25	27
Wisconsin:											
Kenosha	3	1	0	0	0	0	0	0	0	9	12
Milwaukee	30	52	1	0	0	9	0	0	0	174	151
Racine	5	1	1	0	0	0	0	0	0	1	----
Superior	4	2	2	0	0	0	0	0	0	0	4
WEST NORTH CENTRAL											
Minnesota:											
Duluth	9	13	1	0	0	2	0	0	0	0	29
Minneapolis	54	19	3	0	0	1	1	0	0	91	98
St. Paul	35	24	0	0	0	5	0	0	0	54	59
Iowa:											
Davenport	2	4	1	5	----	----	0	0	----	1	----
Des Moines	7	38	2	0	----	----	0	0	----	1	32
Sioux City	2	0	1	[1] 1	----	----	0	0	----	1	----
Waterloo	3	21	0	0	----	----	0	0	----	11	----
Missouri:											
Kansas City	16	30	4	3	0	10	0	0	0	11	110
St. Joseph	2	0	1	0	0	3	0	0	0	2	26
St. Louis	39	17	3	0	0	14	1	2	0	49	281
North Dakota:											
Fargo	1	0	0	0	0	1	0	0	----	6	8
Grand Forks	2	1	0	0	----	----	0	0	----	0	----
South Dakota:											
Aberdeen	4	0	0	5	----	----	0	0	----	0	----
Sioux Falls	2	0	1	0	----	----	0	0	----	0	7
Nebraska:											
Omaha	4	2	4	1	0	1	0	1	0	3	60
Kansas:											
Topeka	3	4	1	0	0	2	0	0	0	10	30
Wichita	4	22	1	1	0	0	0	0	0	13	32

[1] Nonresident.

City reports for week ended March 23, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
SOUTH ATLANTIC											
Delaware:											
Wilmington	4	1	0	0	0	0	0	0	0	1	41
Maryland:											
Baltimore	36	44	0	0	0	18	1	1	0	132	225
Cumberland	1	1	0	0	0	0	0	0	0	0	8
Frederick	2	0	0	0	0	0	0	0	0	0	7
District of Columbia:											
Washington	27	24	1	0	0	19	1	0	0	32	175
Virginia:											
Lynchburg	1	0	0	0	0	1	0	0	0	1	21
Norfolk	1	2	0	0	0	4	0	0	0	17	----
Richmond	3	2	0	0	0	3	0	1	0	0	56
Roanoke	1	0	0	0	0	0	0	0	0	0	15
West Virginia:											
Charleston	1	0	1	0	0	0	0	1	1	8	11
Wheeling	2	1	0	0	0	0	0	0	0	2	21
North Carolina:											
Raleigh	0	0	1	0	0	0	0	0	0	12	14
Wilmington	1	0	0	0	0	0	0	0	0	0	17
Winston-Salem	0	0	3	0	0	0	0	0	0	26	18
South Carolina:											
Charleston	0	0	0	0	0	2	0	0	1	1	27
Columbia	0	0	0	0	0	1	0	0	0	1	24
Greenville	0	0	1	0	0	1	0	0	0	2	6
Georgia:											
Atlanta	4	11	3	0	0	6	1	0	0	6	77
Brunswick	0	0	0	0	0	0	0	0	0	0	5
Savannah	1	0	1	0	0	1	0	0	0	9	40
Florida:											
Miami	1	2	0	0	0	2	1	0	0	18	18
Tampa	1	1	0	0	0	1	0	0	0	3	25
EAST CENTRAL											
Kentucky:											
Covington	2	7	0	1	0	1	0	0	0	0	23
Tennessee:											
Memphis	5	24	3	0	0	8	0	3	0	4	89
Nashville	2	8	1	0	0	3	1	0	0	2	56
Alabama:											
Birmingham	3	3	8	0	0	9	1	0	0	6	73
Mobile	0	1	1	0	0	0	0	0	0	0	21
Montgomery	0	2	0	0	----	----	0	1	----	0	----
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	1	0	0	----	----	0	0	----	0	----
Little Rock	1	0	0	0	0	2	0	1	0	0	----
Louisiana:											
New Orleans	7	50	0	0	0	16	2	0	0	1	151
Shreveport	0	0	2	1	0	2	0	0	0	0	30
Oklahoma:											
Oklahoma City	2	4	5	1	0	1	0	1	0	6	38
Tulsa	1	4	2	1	----	----	1	0	----	16	----
Texas:											
Dallas	3	10	4	23	0	2	0	0	0	0	61
Fort Worth	1	10	2	45	0	3	0	0	0	0	38
Galveston	0	1	0	0	0	0	1	0	0	0	18
Houston	1	7	2	1	0	3	0	0	0	0	76
San Antonio	1	2	0	1	0	6	0	1	0	0	53
MOUNTAIN											
Montana:											
Billings	0	2	0	0	0	0	0	0	0	0	4
Great Falls	1	0	1	0	0	0	0	0	0	2	7
Helena	0	0	0	0	0	0	0	0	0	0	5
Missoula	0	0	0	0	0	0	0	0	0	0	10
Idaho:											
Boise	0	0	1	1	0	0	0	0	0	0	4

City reports for week ended March 23, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
MOUNTAIN—contd.											
Colorado:											
Denver	14	5	2	0	0	5	1	0	0	6	85
Pueblo	1	0	0	1	0	1	0	1	0	0	11
New Mexico:											
Albuquerque	1	2	0	0	0	9	0	0	0	39	20
Utah:											
Salt Lake City	3	3	2	2	0	1	0	0	0	2	37
Nevada:											
Reno	0	3	0	1	0	0	0	0	0	0	
PACIFIC											
Washington:											
Seattle	11	4	2	2			1	2		45	
Spokane	7	2	7	0			0	0		1	
Tacoma	3	4	4	2	0	0	0	0	0	5	17
Oregon:											
Salem	0	0	0	0	0	2	0	0	0	0	
California:											
Los Angeles	30	56	3	2	0	25	1	1	0	26	310
Sacramento	2	21	1	0	0	4	1	2	0	6	29
San Francisco	16	65	2	0	0	13	1	3	0	38	160

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	1	0	0	0	0	0	0	0	0
Massachusetts:									
Boston	1	0	2	0	0	0	0	1	1
Worcester	1	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	33	14	1	3	0	0	1	1	0
Syracuse	2	0	0	0	0	0	0	0	0
New Jersey:									
Newark	1	0	0	0	0	0	0	1	0
Pennsylvania:									
Philadelphia	2	0	0	0	0	0	0	0	0
Pittsburgh	3	1	0	0	0	0	0	0	0
Reading	0	0	0	0	0	0	0	1	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	1	0	0	0	0	0	0	0	0
Cleveland	2	0	2	0	0	0	0	0	0
Columbus	0	0	0	0	0	0	0	1	0
Toledo	2	0	0	0	0	0	0	0	0
Illinois:									
Chicago [1]	9	6	4	0	0	0	0	0	0
Michigan:									
Detroit	26	12	1	0	0	0	0	0	0
Flint	1	2	0	0	0	0	0	0	0
Wisconsin:									
Kenosha	0	1	0	0	0	0	0	0	0
Milwaukee	6	7	0	0	0	0	0	0	0

[1] Rabies (in man), 1 case and 1 death at Chicago, Ill.

City reports for week ended March 23, 1929—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	1	0	1	1	0	0	0	0	0
St. Paul	1	0	1	0	0	0	0	0	0
Missouri:									
Kansas City	17	13	0	0	0	0	0	0	0
St. Louis	11	1	0	0	0	0	0	0	0
North Dakota:									
Fargo	1	0	2	1	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	0	0	1	0	0	0	0	0
North Carolina:									
Wilmington	0	0	0	0	0	1	0	0	0
Winston-Salem	0	0	0	0	1	1	0	0	0
South Carolina:									
Greenville	0	0	0	0	0	1	0	0	0
Georgia:									
Atlanta	0	1	0	0	0	0	0	0	0
Savannah	0	0	0	0	4	1	0	0	0
Florida:									
Miami	0	0	0	0	1	0	0	0	0
Tampa	0	0	0	0	0	0	0	1	0
EAST SOUTH CENTRAL									
Kentucky:									
Covington	0	2	0	0	0	0	0	0	0
Tennessee:									
Memphis	4	3	0	0	0	0	0	0	0
Nashville	0	0	0	0	0	1	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	1	1	0	0	4	3	0	0	0
Oklahoma:									
Oklahoma City	0	1	0	0	0	0	0	0	0
Tulsa	1	0	0	0	0	0	0	0	0
Texas:									
Dallas	1	1	0	0	0	0	0	1	0
Fort Worth	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Montana:									
Great Falls	1	0	0	0	0	0	0	0	0
Missoula	1	1	0	0	0	0	0	0	0
Colorado:									
Denver	2	3	0	0	0	0	0	0	0
Utah:									
Salt Lake City	10	4	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	1	0	0	0	0	0	0	1	0
California:									
Los Angeles	5	4	0	0	0	0	0	1	0
Sacramento	3	3	0	0	0	0	0	0	0
San Francisco	0	5	0	0	0	1	0	0	3

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended March 23, 1929, compared with those for a like period ended March 24, 1928. The population figures used in computing the rates are approximate estimates, authoritative figures for many of the cities not being available. The 98 cities reporting cases had estimated aggregate populations of more than 31,000,000. The 91 cities reporting deaths had nearly 30,000,000 estimated population. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, February 17 to March 23, 1929—Annual rates per 100,000 population compared with rates for the corresponding period of 1928 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Feb. 23, 1929	Feb. 25, 1928	Mar. 2, 1929	Mar. 3, 1928	Mar. 9, 1929	Mar. 10, 1928	Mar. 16, 1929	Mar. 17, 1928	Mar. 23, 1929	Mar. 24, 1928
98 cities	118	177	[2] 122	174	134	174	127	160	[2] 136	161
New England	118	138	124	140	109	145	136	136	[3] 125	124
Middle Atlantic	139	224	140	234	185	214	159	213	180	223
East North Central	106	169	131	163	130	171	120	135	142	148
West North Central	131	125	[4] 136	113	144	131	152	115	131	133
South Atlantic	67	168	64	140	67	132	84	151	60	122
East South Central	68	35	54	98	68	84	54	119	41	56
West South Central	182	191	[5] 156	98	119	170	99	138	123	118
Mountain	44	71	61	186	61	97	44	106	35	80
Pacific	110	161	75	141	37	171	67	125	70	105

MEASLES CASE RATES

98 cities	458	993	[2] 585	1,123	539	1,120	681	1,356	[2] 757	1,325
New England	385	1,908	640	1,980	428	1,658	622	2,267	[3] 507	1,536
Middle Atlantic	140	880	158	1,003	162	973	135	1,216	179	1,397
East North Central	882	564	1,141	760	982	864	1,385	1,061	1,593	1,008
West North Central	1,252	256	[4] 1,687	342	1,698	491	1,965	593	1,880	728
South Atlantic	167	2,489	197	2,698	234	2,830	380	3,105	452	3,021
East South Central	0	1,171	61	1,543	61	1,227	41	1,824	136	1,361
West South Central	83	1,986	[5] 63	1,719	107	1,309	146	1,346	198	1,135
Mountain	923	168	697	142	819	283	636	346	766	505
Pacific	150	750	237	893	147	906	137	832	247	809

SCARLET FEVER CASE RATES

98 cities	262	291	[2] 301	290	299	299	326	301	[2] 346	309
New England	294	414	339	347	310	377	371	402	[3] 375	412
Middle Atlantic	202	336	230	346	228	359	266	353	308	375
East North Central	340	285	401	309	410	292	417	296	495	305
West North Central	373	276	[4] 340	262	356	291	367	272	292	293
South Atlantic	144	243	137	207	155	245	146	216	159	226
East South Central	183	98	217	112	197	175	231	63	306	154
West South Central	281	122	[5] 220	97	281	130	379	211	281	126
Mountain	113	204	218	257	157	195	157	248	113	177
Pacific	302	233	509	194	424	192	459	217	379	202

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1929 and 1928, respectively.
[2] Omaha, Nebr., Forth Smith, Ark., and Galveston, Tex., not included.
[3] Hartford, Conn., not included.
[4] Omaha, Nebr., not included.
[5] Fort Smith, Ark., and Galveston, Tex., not included.

Summary of weekly reports from cities, February 17 to March 23, 1929—Annual rates per 100,000 population compared with rates for the corresponding period of 1928—Continued

SMALLPOX CASE RATES

	Week ended—									
	Feb. 23, 1929	Feb. 25, 1928	Mar. 2, 1929	Mar. 3, 1928	Mar. 9, 1929	Mar. 10, 1928	Mar. 16, 1929	Mar. 17, 1928	Mar. 23, 1929	Mar. 24, 1928
98 cities	12	25	[3] 16	17	12	23	12	21	[3] 11	25
New England	0	0	2	0	0	0	5	0	[3] 7	0
Middle Atlantic	0	0	0	0	0	0	0	0	0	0
East North Central	15	13	24	18	18	14	20	26	12	18
West North Central	15	92	[4] 10	63	6	92	31	65	12	125
South Atlantic	4	29	7	21	6	25	6	36	0	25
East South Central	0	56	7	0	7	21	7	21	7	35
West South Central	99	8	[5] 118	20	99	36	43	45	103	36
Mountain	35	62	87	53	44	115	17	53	44	62
Pacific	20	125	25	49	17	69	22	38	15	61

TYPHOID FEVER CASE RATES

98 cities	4	5	[3] 4	10	5	4	5	5	[3] 7	5
New England	9	7	2	0	5	2	2	7	[3] 7	9
Middle Atlantic	4	5	2	8	4	3	4	2	6	4
East North Central	2	1	0	7	3	4	2	3	4	3
West North Central	6	4	[4] 8	6	4	2	2	4	6	0
South Atlantic	4	10	2	13	6	10	7	11	6	11
East South Central	7	28	14	70	7	7	7	14	27	7
West South Central	8	16	[5] 21	32	20	4	12	12	8	8
Mountain	0	0	9	9	0	0	26	0	9	0
Pacific	5	5	7	8	17	3	10	5	20	5

INFLUENZA DEATH RATES

91 cities	45	22	[4] 40	25	33	23	33	26	[3] 27	33
New England	41	7	20	7	16	21	25	7	[3] 5	9
Middle Atlantic	35	24	30	16	25	20	31	26	23	22
East North Central	33	14	31	17	31	16	23	12	20	35
West North Central	45	3	[4] 45	15	21	18	27	24	30	24
South Atlantic	69	31	67	34	47	27	37	21	30	42
East South Central	81	46	148	123	74	54	118	123	89	100
West South Central	138	75	89	104	122	75	106	117	77	100
Mountain	78	35	52	89	61	62	35	80	78	133
Pacific	39	20	33	24	23	20	16	10	33	7

PNEUMONIA DEATH RATES

91 cities	194	166	[4] 222	193	204	196	185	227	[3] 168	218
New England	235	147	274	193	219	205	201	239	[3] 176	182
Middle Atlantic	192	156	240	218	233	221	197	259	190	245
East North Central	170	156	180	148	159	156	155	197	141	211
West North Central	207	107	[4] 214	159	195	144	180	208	189	178
South Atlantic	238	231	255	205	234	212	199	216	185	239
East South Central	155	222	281	245	237	306	200	268	170	222
West South Central	260	275	215	266	235	258	239	266	81	279
Mountain	226	248	279	266	183	266	253	204	165	168
Pacific	134	115	154	155	144	121	141	125	170	101

[3] Omaha, Nebr., Fort Smith, Ark., and Galveston, Tex., not included.
[3] Hartford, Conn., not included.
[4] Omaha, Nebr., not included.
[5] Fort Smith, Ark., and Galveston, Tex., not included.

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

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	
			1929	1928	1929	1928
Total	98	91	31,568,400	31,052,700	29,995,100	29,498,600
New England	12	12	2,305,100	2,273,900	2,305,100	2,273,900
Middle Atlantic	16	10	10,899,700	10,702,200	10,809,700	10,702,200
East North Central	16	16	8,181,900	8,001,300	8,181,900	8,001,300
West North Central	12	9	2,712,100	2,673,300	1,736,900	1,708,100
South Atlantic	19	19	2,783,200	2,732,900	2,783,200	2,732,900
East South Central	6	5	767,900	745,500	704,200	682,400
West South Central	8	7	1,319,100	1,289,900	1,285,000	1,256,400
Mountain	9	9	598,800	590,200	598,800	590,200
Pacific	6	4	2,090,600	2,043,500	1,590,300	1,551,200

FOREIGN AND INSULAR

INFLUENZA IN FOREIGN COUNTRIES

According to publications of the health section of the League of Nations for the week ended March 13, the influenza epidemic had reached its maximum in England, northern France, and the Rhine area. It was on the wane in almost every country of Europe. The mortality had been higher in Great Britain, with the exception of Wales, than on the Continent. The total number of deaths caused by the present epidemic could not yet be estimated, but the mortality has certainly been higher than that of any other epidemic since 1919. Persons of advanced age have suffered most, the mortality not having been very high at younger ages.

The incidence of influenza was decreasing everywhere in Germany except in a few southern towns. Influenza cases reported among members of the local sickness insurance societies decreased during the week ended March 2 at Breslau, Berlin, Leipzig, Hamburg, Bremen, and Dortmund. Only at Stuttgart was a small increase reported during the latter part of February.

During the week ended March 9, 2,127 influenza deaths occurred in 107 large English towns, as compared with 2,183 during the preceding week. The number of deaths attributed to influenza was slightly lower than during the preceding week in London and Lancashire towns, but there was a marked increase in the midland towns and in Yorkshire. During the week ended March 2 influenza deaths per 1,000 population averaged 9.1 in west midland towns, 6.1 in east midland towns, and 8.6 in Yorkshire, while the corresponding rate for Lancashire towns was 4.9, for greater London 5, and for Wales 1.9.

The general death rate for Paris was 30.4, with 207 influenza deaths, for the 10 days ended February 20, as compared with 28.7 and 242 influenza deaths during the first 10 days of the month. The death rate of Lille increased from 27.1 during the week ended February 9 to 39.5 during the week ended February 16. At Lyons the death rate for the week ended February 27 was 31 as compared with 32.6 for the preceding week.

The number of influenza cases reported in Switzerland during the week ended March 2 was 6,781 as compared with 5,465 during the preceding week. There were increases in the death rates at Zurich and Basel, but none in the western part of Switzerland.

Influenza was decreasing in Czechoslovakia, except in the eastern part of the country. In Moravia-Silesia 23 deaths were reported during the week ended March 7, and in Slovakia 13 deaths, as compared with 18 and 6 during the preceding week.

Influenza was decreasing in Denmark, Italy, the Netherlands, and Hungary, and the death rates of towns in Norway and Spain were again returning to their normal level.

ANGOLA

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

Disease	Cases	Disease	Cases
Ancylostomiasis	34	Pneumonia	44
Bilharzia	51	Puerperal fever	5
Cerebrospinal meningitis	1	Relapsing fever	10
Chicken pox	33	Scabies	1
Dengue	1	Scurvy	14
Dysentery	111	Tetanus	1
Influenza	311	Trypanosomiasis	1,196
Itch	323	Tuberculosis	37
Leprosy	8	Typhoid fever	7
Malaria	310	Venereal disease	371
Malarial hemoglobinuria	9	Whooping cough	48
Measles	67	Yaws	606
Mumps	12		

CANADA

Provinces—Communicable diseases—Week ended March 16, 1929.—The Department of Pensions and National Health reports cases of certain communicable diseases from eight Provinces of Canada for the week ended March 16, 1929, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal fever				2					2
Influenza	21		34	8	1			40	104
Smallpox			4	12	9	1	2	25	53
Typhoid fever		2	8	10	2		1	1	24

Quebec Province—Communicable diseases—Week ended March 23, 1929.—The Bureau of Health of the Province of Quebec reports cases of certain communicable diseases for the week ended March 23, 1929, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	74	Puerperal fever	1
Chicken pox	51	Scarlet fever	142
Diphtheria	38	Smallpox	3
German measles	16	Tuberculosis	64
Influenza	6	Typhoid fever	16
Measles	139	Whooping cough	17

CHINA

Shanghai—Meningitis.—Information dispatched April 2, 1929, reported meningitis to be present in epidemic form in Shanghai, China. Two hundred new cases had been admitted to the hospital since February 1, a number of which was estimated to be less than 5 per cent of the actual cases among the Chinese in the city. Only 10 cases were reported among foreigners.

JAPAN

Kobe—Meningitis.—During the two weeks ended March 18, 1929, 20 deaths from meningitis were reported at Kobe, Japan.

39970°—29——5

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

CHOLERA

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

Place		Sept. 23–Oct. 20, 1928	Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Week ended— December, 1928		January, 1929				February, 1929				March, 1929		
					22	29	5	12	19	26	2	9	16	23	2	9	16
Ceylon	C					5	2								2		
	D					2	2								2		
Colombo	C							3	1	1							
	D							1									
Ingiriya Province	C		1														
	D		1														
China:																	
Canton	C		2		2			1									1
	D				1												
Shanghai	C	3															
India	C	17,028	20,937	23,528	4,602	4,507	4,128	3,801	4,173	3,739							
	D	10,187	12,490	14,950	2,839	2,673	2,589	2,406	2,358	2,233							
Bassein	D			1					1	4	1		2			2	
Bombay	C	15	1	4					1								
	D	7	1	4												1	
Calcutta	C	41	219	247	28	12	33	30	23	43	34	29	43				
	D	39	140	155	15	13	13	20	13	30	19	23	30	31	40		
Madras	C	97	203	102	6		6	4	1		1	2	2	3			
	D	78	115	42	4	2	8	3		1	4		1		3		
Madras Presidency	C			1													
	D			1													
Moulmein	D			1													4
Negapatam	C			1		3	1	2	8	9		1	1	1	1		
	D	1		1													
Rangoon	C	1		5				6	4	4	1						
	D	2		3			1	4	1	3	1	4			4	1	
Tuticorin	C	1		2	33	39	27	16	31	31	7	16	5	1			
	D		1		19	18	15	9	15	21	5	11	2	2			
India (French):																	
Chandernagor	C	16	43	25	2	1		1									1
	D	7	34	10	2	1		1									1

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

CHOLERA—Continued

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

Place		Sept. 23–Oct. 20, 1928	Oct. 31–Nov. 17, 1929	Nov. 18–Dec. 15, 1928	Week ended— December, 1928		January, 1929				February, 1929				March, 1929		
					22	29	5	12	19	26	2	9	16	23	2	9	16
India (French)—Continued																	
Karikal	C	9	111	7	4	9	20	21	40	61	31	18	28	10	28	------	------
	D	8	85	4	4	8	13	16	34	46	31	17	21	8	21	------	------
Pondicherry Province	C	31	6	37	5	25	37	25	27	58	32	22	29	18	29	------	------
	D	19	5	30	3	12	21	19	21	45	22	16	24	18	24	------	------
Indo-China (see also table below):																	
Pnompenh	C	------	1	1	------	1	3	2	1	------	------	1	7	22	12	1	------
	D	------	1	1	------	1	------	------	------	------	------	1	5	20	10	1	------
Saigon	C	------	1	------	------	3	1	2	3	1	2	------	------	------	------	------	2
	D	------	------	------	------	1	1	2	1	1	1	------	------	------	------	------	------
Japan: Osaka	C	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Kwangchow-Wan (see table below).																	
Siam	C	14	47	104	35	45	84	60	59	72	29	35	39	43	41	42	------
	D	10	27	68	13	33	53	51	50	38	23	27	26	32	22	37	------
Anthoang	C	------	------	------	4	------	------	------	1	------	------	------	3	------	------	------	------
	D	------	------	------	1	------	------	------	1	------	------	------	2	------	------	------	------
Ayudhaya	C	7	15	2	1	2	8	5	1	------	2	1	------	------	4	------	------
	D	6	12	2	1	1	6	6	1	------	2	1	------	------	4	------	------
Bangkok	C	4	5	18	9	8	2	3	11	14	12	17	17	19	12	13	------
	D	1	3	12	3	1	2	------	18	8	8	9	12	7	5	12	------
Chaxoengsao	C	------	------	------	------	------	------	------	1	------	3	5	------	1	------	------	------
	D	------	------	------	------	------	------	------	1	------	3	5	------	1	------	------	------
Dhannapuri	C	------	------	6	2	3	9	2	2	------	------	1	1	1	1	------	------
	D	------	------	5	1	2	7	------	2	------	------	------	------	1	------	------	------
Lobpuri	C	------	------	------	------	26	27	21	------	------	------	------	2	------	------	1	------
	D	------	------	------	------	23	18	20	------	------	------	------	1	------	------	------	------
Nagara Pathom	C	------	------	------	------	------	------	------	------	------	------	------	------	------	------	2	------
	D	------	------	------	------	------	------	------	------	------	------	------	------	------	------	2	------
Nondpuri	C	------	------	1	------	4	------	------	------	------	------	------	------	------	------	------	------
	D	------	------	1	------	2	------	------	------	------	------	------	------	------	------	------	------
Pradhumdham	C	------	------	------	------	------	------	------	------	------	------	1	------	------	------	------	------
	D	------	------	------	------	------	------	------	------	------	------	1	------	------	------	------	------
Singhapuri	C	------	------	------	------	------	------	17	2	------	3	1	1	------	------	------	------
	D	------	------	------	------	------	------	12	2	------	4	1	1	------	------	------	------

Smud Prakar	C			37	19	6	3	2	6		2	2	1					
	D			28	4	5	1		5		2	1						
Smud Sagara	C		27	34														
	D		12	16														

Place		September, 1928	October, 1928	November, 1928			December, 1928			January, 1929			February, 1929	
				1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20
Indo-China (French) (see also table above):														
Annan	C	4	11			5								
Cambodia	C	16	25		4	17		21	4	26	25	28	29	40
Cochin-China	C	28	52	27	48	81		351	346	232	202	226	107	115
Kwangchow-Wan	C				1									

PLAGUE

Place		Sept. 23-Oct. 20, 1928	Oct. 21-Nov. 17, 1928	Nov. 18-Dec. 15, 1928	Week ended—														
					December, 1928		January, 1929				February, 1929				March, 1929				
					22	29	5	12	19	26	2	9	16	23	2	9	16	23	30
Algeria:																			
Algiers	C		2																
Oran	C	1	2																
Philippeville	C	2																	
Argentina: [1]																			
Buenos Aires [2]																			
Catamarca Province: Recreo	C		P	9															
Cordoba Province—																			
Canada Honda	C		14																
Laborde	C						1												
Jujuy Province: Perico	C						1					3							
Rosario	C					1	1					1						[3] 20	
Santiago del Estero	C		7																
Tucuman Province: El Mollar	C			5															

[1] During the period from Nov. 10 to Dec. 11, 1928, 13 cases of plague were reported at El Mollar, Tucuman Province, Argentina. During the same period 1 case of plague was reported at Chipion and 1 at Ucacha, both in Cordoba Province, Argentina.
[2] 18 plague-infected rats were reported at Buenos Aires, Argentina, from July 1 to Dec. 31, 1928.
[3] Unofficial report.

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

PLAGUE—Continued

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

Place		Sept. 23–Oct. 20, 1928	Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Week ended— December, 1928		January, 1929				February, 1929				March, 1929				
					22	29	5	12	19	26	2	9	16	23	2	9	16	23	30
Azores: St. Michaels Island	C	3	3			1	1		1										
	D		1																
Belgian Congo:																			
Djugu	C		2									1	3						
	D											1							
Lenza	C		1	1		1													
Brazil:																			
Para	C									1									
Santos	C			2															
British East Africa (see also table below):																			
Mombasa	C	3																	
	D	3																	
Plague-infected rats		2																	
Uganda	C	106	114	124	36	21	51	47	39	37	30								
	D	86	103	121	35	21	51	45	38	37	30								
Canary Islands:																			
Las Palmas	C	2																	
	D	1																	
Teneriffe	C	2		1															
Laguna	C	4										1							
Ceylon:																			
Colombo	C	2	1	4	2	1	2	3		1	2	3	2			2			
	D	1	1	4	2	1	2	3		2	1	2	2			1			
Plague-infected rats		1		5								2	2						
Jaffna	C	2	1																
	D	2																	
China:																			
Hainan	C												P						
Mongolia—																			
Chien Chia Tien	C	P																	
Tungliao	C	173	19																
Shansi—Fengchow	C	P																	
Suyuan Province	C											P							

Dutch East Indies:																			
Celebes—Makassar	C	1																	
	D	1						1											
Plague-infected rats		4	2									1							
Java—																			
Batavia and West Java	C	29	23	43	9	18	13	14	13	12	22	27					1		
	D	29	22	42	9	18	12	14	13	12	22	26					1		
Plague-infected rats				1											2	2			
East Java and Madura	C	16																	
	D	16																	
Surabaya	C	1	2	1					1	1	3								
	D	1	2						1	1	3								
Kediri Residency	C									P									
Ecuador (see table below).																			
Egypt:																			
Alexandria	C									2	1								
Amrieh District	C	1																	
	D	1																	
Assiout Province	D	1	3																
Beheira Province	C	1																	
Beni-Suef	C			4		4	2	3	1	2						4	2		
	D			1		1	1			3						1	1	1	
Dierout	D		1																
Girga	C			1															
Kena Province	C			4															
Menoufieh Province	C		7																
Suez	C														1			1	1
Tanta	C		5																
Greece (see also table below):																			
Athens and Piræus	C	5	5																
Corfu	C			1															2
India	C	6,209	8,710	7,767	1,750	1,239	2,402	2,450	2,592	3,117									
	D	3,225	4,428	4,863	1,194	771	1,611	1,658	1,834	2,166									
Bassein	D		2					1	1		3		2	1					
Bombay	C	4	5	4					1			1							
	D	5	2	6					1	1	2		1	1					
Plague-infected rats		13	7	32	7	5	14	9	11	10	11	6		8	12				
Cochin	D						10												
Madras Presidency	C	196	539	686	136	111	152	101	120	107	130								
	D	97	235	307	69	41	73	48	65	60	66								
Rangoon	C	7	2	1				1		1	2								
	D	5	3	1	1			1	1	1	2	1	1	1	2				
Plague-infected rats			4									5	1	4	3	3			
Indo-China (see also table below):																			
Pnompenh	C	1	1	4		2	2	4	2	4	1	3	2		1	2	3		
	D	1	1	4		1	2	3	2	4	1	2	1		1	1	3		
Saigon	C		1											1					
Tourane	C												5						
Iraq:																			
Baghdad	C		9	10	1	2	5	1	2	1	3			1	6	3	4	5	2
	D		5	5	1	2	5			1	2				3			2	1
Plague-infected rats											1	5	6	6		5			

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

PLAGUE—Continued

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

Place		Sept. 23–Oct. 20, 1928	Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Week ended— December, 1928		January, 1929				February, 1929				March, 1929				
					22	29	5	12	19	26	2	9	16	23	2	9	16	23	30
Iraq—Continued																			
Naudham	C									2									
Plague-infected rats												1							
Madagascar (see also table below):																			
Tamatave	C	13	7		2				1										
	D	10	8	1															
Nigeria:																			
Lagos	C	88	83	43	5	4	2	1	1	4	2		2	4	5				
	D	88	77	41	5	3	2	1	1	3	1		1	4	5				
Plague-infected rats		91	145	30		13	15			14	12								
Paraguay: Asuncion	C	3																	
Peru (see table below).																			
Senegal (see table below).																			
Siam	C		1	9				4	2	11	6	26							
	D		1	8				3	2	6	6	3		1					
Bangkok	C		1				2	2	1					1					
	D		1				1		1		1			1					
Panknampo	C			8															
Straits Settlements:																			
Penang	C	1																	
Singapore	C													1					
	D													1					
Syria (see table below).																			
Turkey:																			
Adalia	C	1	1																
Constantinople	C	1																	
Union of South Africa:																			
Cape Province	C		2	1			2	2											
Orange Free State	C	1	P					1	1		2	3	1						
	D											1							
Transvaal	C							3											

Union of Socialist Soviet Republics:																				
Kalmouks District	C			10																
Kasacks	C			7																
Ural Government	C			7																
Uruguay:																				
Montevideo	C																			4
Rivera	C								1											
On vessel:																				
S. S. Automedon, at Penang, Straits Settlements	C	P																		
S. S. Halydan, at Bangkok, from Singapore	C						1													
S. S. Sjomand, at Alexandria, from Batoum	C										1									

Place		September, 1928	October, 1928	November, 1928	December, 1928	January, 1929	February, 1929
British East Africa (see also table above):							
Kenya	C	15	37	16	15	5	
Uganda	C	128	134				
	D	98	108				
Ecuador: Guayaquil	C	3	3	21	20	25	
	D		2	8	7	12	
Plague-infected rats		27	21	29	75	29	
Greece (see also table above)	C			1	2	3	
	D			1	1	1	
Indo-China (see also table above)	C	6	2			11	
Madagascar (see also table above)	C	59	88		282		
	D	51	84		263		
Ambositra Province	C		8	14	79		
	D		8	14	74		
Antisirabe Province	C	10	2	6	4		
	D	10	2	6	4		
Itasy Province	C	2	5	6	11		
	D	2	5	6	11		
Moramanga Province	C	20	38	32	28		
	D	18	35	32	27		
Tamatave	C	18	9	2	2		
	D	10	7	2	2		

Place		September, 1928	October, 1928	November, 1928	December, 1928	January, 1929	February, 1929
Madagascar—Continued.							
Tananarive Province	C	75	100	159	158		
	D	62	95	141	144		
Peru	C	3	10	18	26	37	
	D	1	4	6	6	9	
Senegal	C	199					
	D	127					
Baol [1]	C	73	39	18	4		
	D	40	14	6	2		
Cayor [1]	C	20	17		14		
	D	8	6		10		
Fatick [1]	C		35				
	D		20				
Louga [1]	C		14	2			
	D		5	1			
Rufisque [1]	C	1	49	8			
	D	1	14	4			
Thies [1]	C	106	51	11			8
	D	78	29				7
Tivaouane [1]	C						12
Syria: Beirut	C		1	3			

[1] Reports incomplete.

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

SMALLPOX

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

Place		Sept. 23–Oct. 20, 1928	Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Week ended— December, 1928		January, 1929				February, 1929				March, 1929				
					22	29	5	12	19	26	2	9	16	23	2	9	16	23	30
Algeria:																			
Algiers	C	4	2	1															
Cherchell	C													4	11				
Oran	C	21		7											1				
Arabia: Aden	C		1	1			1	1	1										
Brazil (see table below).																			
British East Africa (see also table below), Kenya, Mombasa	C	1			3														
British South Africa:																			
Northern Rhodesia	C	195	342	67	173														
	D	7	14	8	23														
Southern Rhodesia	C	9	1	5								1							
Tanganyika	C		1								1	12			1				
Canada:																			
Alberta	C	4	4	21	1		1	1	3					2	1	1			
Calgary	C															1			
Edmonton	C				1	11	1	1	2					2			2		
British Columbia—Vancouver	C	16	21	25	13	9	17	12	24	16	16	10	17	14	21	18	22	5	
Manitoba	C	1	14	29	16	2	1	4	3		12	6	2	5	3	5			
Winnipeg and vicinity	C			17		1	1												
Nova Scotia	C							5	1		1								
Ontario	C	15	12	15	4	1	14	17	7	4	25	47	38	23	15	7			
Kingston	C		1																
Niagara Falls	C																	1	
North Bay	C			1									1	2		1			
Ottawa	C	2	6	2										1					
Sarnia	C		1																
Toronto	C										1							1	
Prince Edward Island	C										2					2			
Quebec	C	75	118	125	10	8	7	12	9	5	5	5	6	14	3	5	4		
Montreal	C	4	10	3	2	1	2	3	5	2	2	1	3	10	2	1	3		
Quebec	C	12	12	6				4	4	2		2							

Saskatchewan	C	1	10	52	1	6	7		3	2	13	17	13	22	31	4					
Moose Jaw	C		2	1															1		
Regina	C			2			1		2	4											
Saskatoon	C										3	1									
China:																					
Amoy	C	P	P	2	2	1	1	1				P		1							
Canton	C			14	7			11	14	21	36	16	17	25	15	29					
	D							2	1			1	3	1	2	9					
Chefoo	C		P	P																	
Foochow	C	P	P	P	P	P	P	P	P	P	P										
Hong Kong	C	13	66	202	81	73	80	85	91	78	58	80	47	54	51	37					
	D	8	21	78	22	38	48	44	83	77	67	59	61	59	34	42					
Manchuria—																					
Changshun	C										3			2							
Fushun	C		1						1		1	3									
Harbin	C	1	7	4				2	5												
Kwantung—Dairen	C	1	2	5								1		1	3	1					
	D	1										1			2						
Mukden	C	1					1					3									
	D											1									
Shanghai—																					
Foreigners only	C	3	9	6	5	9	5	4	8	3	4	8	3	4	1						
Including natives	D	6	20	32	14	12	14	24	15	18	18	9	9	9	10	12					
Tientsin	C	4	6	2			4	2		2		1									
Tsingtao	C												P	P	P						
Colombia: Cartagena	D			7										7							
Dominican Republic	C											1									
Dutch East Indies:																					
Balikpapan	C													1							
Belawan Deli	C	9	5	6		2	3	2	5	11	2	8	4	3	1	1					
	D	3	2	2			3		1	4		1	3	2	1						
Borneo—																					
Pontianak	C	2	1																		
	D	1																			
Samarinda	C	3	16	27	8	3						4		17	3	27					
	D		2	4	2		1							3	1						
Celebes—Makassar	C			1																	
Java—																					
Batavia and West Java	C	6	2	1																	
	D	2																			
East Java and Madura	C	5	1																		
	D		1																		
Surabaya	C	2	1	2																	
Palembang	C												1		8						
	D												1		1						
Sumatra—																					
Baros	C						70	26	50	14	25	17									
	D						22	8	12	7	5	2									
Medan	C	14	4	3	3	1	3	2		1	2	8							50		
	D	4	2	1	1	1	3			4		1									

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

SMALLPOX—Continued

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

Place		Sept. 23–Oct. 20, 1928	Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Week ended— December, 1928		January, 1929				February, 1929				March, 1929				
					22	29	5	12	19	26	2	9	16	23	2	9	16	23	30
Ecuador (see table below).																			
Egypt:																			
Gharbieh	C												1						
Port Said	C											1							
Suez	C			1															
France (see table below).																			
Great Britain:																			
England and Wales	C	514	581	719	201	131	188	213	171	239	250	231	275	268	289				
Bradford	C	1		1								1		1		1			
Bristol	C								1										
Cardiff	C			1							4								
Castleford	C	8	6	8	3	2	4	7	4	14	16	14	22	31	12	20			
Hull	C	7	3	1							2								
Leeds	C		1	2	1					1	1	1	1	1	3	1			
Liverpool	C								1										
London	C	12	21	14	6	10	14	6	6	13	17	4	9	17	10	18			
Manchester	C	1																	
Newcastle-on-Tyne	C	1	1	3							1	5	2		3	1			
Nottingham	C	5	1	3	3							1							
Plymouth	C	2	6																
Stoke-on-Trent	C		9	11	1	1	1	1	2	8	2	2	5	4	4	5			
Scotland—																			
Dundee	C	3	2	1															
Greece (see table below).																			
Hedjaz	C						22	26	55	21	22	55	29	42	37				
	D						9	6	20	7	9	20	13	15	12				
India	C	2,792	3,041	5,902	1,583	1,621	2,176	2,497	2,887	3,285									
	D	696	836	1,602	388	406	702	647	729	798									
Bombay	C	24	9	11		3	10	21	34	42	44	38	44	93	112				
	D	12	4	4		1	6	14	13	17	25	23	32	37	49				
Calcutta	C	7	2	13	6			4	8	4	7	13	13	9	11				
	D	4	2	7	2	1		3	5	1	3	7	6	7	7				
Karachi	C	1					2	4		10	1	16	28	24	49	46			
	D									1		4	7	4	11	22			

Madras	C	77	71	58	8	5	36	45	50	82	37	54	60	56	68	76			
	D	23	22	16	2	1	4	18	6	11	12	6	13	6	18	24			
Moulmein	C	2		5				3	2	2	2		4		5				
	D			1			1			1	1								
Negapatam	C	51	38	33		4	3	1	3	14	2	7	2	2		1			
	D	11	8	5						1		5	2	1		1			
Rangoon	C		1	1			1			4	1	3	4	6	2	5			
	D										1		1	1	2	2			
Tuticorin	C	3							1		1			1					
Vizagapatam	C	1						2	2			6	12	4	17				
	D												2		3				
India (French):																			
Chandernagor	C	4	3																
	D	4	3																
Pondicherry Province	C	111	84	48	24	19	11	21	22	13	12	12	18	26	16				
	D	73	67	46	20	18	10	14	20	13	10	8	14	22	12				
Indo-China (see also table below):																			
Pnompenh	C	28	30	44	13	10	6	9	11	6	38	22	19	15	18	10	13		
	D	10	5	20	8	6	1	6	8	3	17	14	10	8	11	7	5		
Saigon	C	3	2			2	1	9	2		1	2		1	1				
	D		2					6			1								
Iraq:																			
Baghdad	C	38	40	46	5	6	7	2	13	1	1	2	4	2	1		2	3	
	D	12	23	45	10	1	6	12	2	1			4	1				1	
Basra	C	23	35	35	3	3	5		5	4	1	8	4	2		1	2	1	1
	D	9	33	26	2	2	3		4	3	1	2	3	1		1			1
Hillah Liwa	C						34	20	20										
	D						5	9	9										
Kirkuk Liwa	C			173			86						9	9					
	D			38			17						2	2					
Mossoul	C		53	294	6	13	30	6	2		23	5	14	14					
	D		23	110	12	14	5	8	4		12	1	2	2					
Sinjar	C						45	8	61										
	D						1	4	15										
Italy:																			
Palermo	C		2	3	1	2													
Turin	C												1						
Ivory Coast (see table below).																			
Jamaica (outside Kingston) (alastrim)	C	2						1											
Kingston (alastrim)	C			1															
Japan:																			
Kobe	C														1				
Nagasaki	C								1	1	1								
	D									1	1								
Osaka	C														1				
Macao	D						5	4	2	8		14	24	24	12	15	6		
Malta: Valetta	C	1																	
Mexico:																			
Aguascalientes	D			2			1		1	1	1			3					
Chihuahua	D								1										
Jalisco (State)	C	11																	
Guadalajara	D	1		4		1				2	2	4	4	2	1	1			

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

SMALLPOX—Continued

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

Place		Sept. 23–Oct. 20, 1928	Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Week ended— December, 1928		January, 1929				February, 1929				March, 1929				
					22	29	5	12	19	26	2	9	16	23	2	9	16	23	30
Mexico—Continued.																			
Juarez	D	1			2	3				1					1		3		
Mexico City and surrounding territory	C	1	5		1		1	5	2					2					
Palomas	C														1				
Saltillo	D		1																
San Luis Potosi	D	2	1																
Tampico	C		1																
Torreon	D	1																	
Morocco (see table below).																			
Nigeria:																			
Lagos	C		1																
Southern Provinces	C									57	105								
	D									11	20								
Poland	C	1	1	3	1							41							
	D		1									3							
Portugal (see also table below):																			
Lisbon	C				2				2		2								
Senegal (see table below).																			
Siam	C	3	1	8				19				2							
	D							2											
Bangkok	C			1															
Spain: Valencia	C													1	1				
Straits Settlements: Singapore	C	2					1			2	1	2	2		1				
Sudan (Anglo-Egyptian)	C	89	79	220	192	157	129	13	190	17	58		49	71	13	55	30	22	
	D	19	13	42	12	43	1	1	24	5	5		13	14	11	16	6		
Sudan (French) (see table below).																			
Sweden: Stockholm	C			1															
Switzerland: Lucerne Canton	C	1																	
Syria (see table below).																			
Tunisia: Tunis	C		1	2	13		1								3	2			
Union of South Africa:																			
Cape Province	C	P	P	P															
Natal	C					1													

Orange Free State	C	P	P																	
Transvaal	C	P	P																	
Upper Volta	C	10	5							1		2	2							
On vessel:																				
S. S. Ballarat, en route to Cape Town, South Africa	C		1																	
Motorship Tantalus at Amsterdam	C													3						

Place		September, 1928	October, 1928	November, 1928			December, 1928			January, 1929			February, 1929		
				1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20	21-28
Indo-China (see also table above)	C	73	100	55	57	32	23	100	120	74	130	107	128	236	
Ivory Coast	C	2	1												
Senegal	C	4	2										80		
Sudan (French)	C	P	32				2		P						
"	D		2												
Syria: Beirut	C		1	1		1			1		1		21	24	3

Place		September, 1928	October, 1928	November, 1928	December, 1928	January, 1929	February, 1929
Brazil: Porto Alegre	C	1	12	3			
British East Africa (see also table above):							
Kenya	C		36	37	31		
Zanzibar	C		2				
Ecuador: Guayaquil	C	22	6	6	13	12	7
	D	1	3	1	1	1	2
France	C	3	3		18	9	

Place		September, 1928	October, 1928	November, 1928	December, 1928	January, 1929	February, 1929
Greece	C	6	6	6	6	8	5
	D		1			1	1
Morocco	C	4	5	2		7	
Portugal (see also table above)	C	24	27				
	D	2	3				
Turkey	C					16	
	D					6	

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

TYPHUS FEVER

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

Place		Sept. 23–Oct. 20, 1928	Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Week ended— December, 1928		January, 1929				February, 1929				March, 1929		
					22	29	5	12	19	26	2	9	16	23	2	9	16
Algeria:																	
Algiers	C	1	4														
Constantine Department	C											2	2				
Oran	C	1	2							5							
Bulgaria	C	8	4	9			4	1	3	4			3				
	D		1														
Sofia	C											1					
Chile: Valparaiso	C			1													
China:																	
Canton	C								2								
	D								2								
Hong Kong	C								1								
Manchuria—																	
Harbin	C			2													
Kwantung	C	2	1														
Chosen (see table below).																	
Egypt:																	
Alexandria	C																1
Assiout Province	C	1															
Assouan Province	C												2				
	D												2				
Beheira Province	C	2							6								
	D	1															
Cairo	C	1															
	D	1															
Daqalhiya Province	C			15	4	3	3	1									34
	D			1				2									
Gharbieh	C											1					
Menoufieh Province	C	1															
	D	1															
Port Said	C	1	1														
Suez	C	4															

Greece (see table below).																		
Ireland:																		
Irish Free State—																		
Clare County—Scariff	C		1															
Cork County	C															1		
Dublin	C									1								
	D										1							
Kerry County—Tralee	C	7																
Japan: Miyagi	C	2																
Lithuania (see table below).																		
Mexico (see also table below):																		
Aguascalientes	D			2														3
Chihuahua	D					1												
Mexico City, including municipalities in Federal District	C	9	15	12	3	2	1	3	3	4	1	3	1	3	1			
	D	1	2	1			1	1		1		2	1					
San Luis Potosi	D				1													
Morocco	C	1	1	16				4	1	7	7	5	6	10				
Palestine	C	11	6	12	1		1			2		1		2				
Peru (see table below).																		
Poland	C	31	81	117	47	73	38	45	33	76	72	41	47					
	D	4	10	11	2	5	4	5	5	3	4	3	6					
Portugal: Oporto	C			1														
Rumania	C	11	17	42	21	49	38	59	56	40	47							
	D			1		2	3	6	5	7	7							
Tunisia	C		4	6							2		3					
Menzel	C	1	1															
Sfax	C	11																
Turkey (see table below).																		
Union of South Africa:																		
Cape Province	C	P	P	P	P	P	P	P		P	P	P						
East London	C	1																
	D		1															
Natal	C	P	P	P	1	1	P											
Orange Free State	C	P	P	P	P	P	P	P		P	P	P						
Transvaal	C							P		1								
Yugoslavia (see table below).																		

Place		September, 1928	October, 1928	November, 1928	December, 1928	January, 1929	February, 1929
Chosen	C	36					
Chemulpo	C		1	1			
Seoul	C	2	3		3		
Greece: Athens	C	1	1	4	1		
Lithuania	C	1		4	11	32	24
	D					3	3

Place		September, 1928	October, 1928	November, 1928	December, 1928	January, 1929	February, 1929
Mexico: Sonora (see also table above)	D					1	
Peru	C			3			
Turkey	C	6	4		19	1	
Yugoslavia	C	6	1	17	7	15	13
	D						2

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

YELLOW FEVER

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

Place		Sept. 23–Oct. 20, 1928	Oct. 21–Nov. 17, 1928	Nov. 18–Dec. 15, 1928	Week ended— December, 1928		January, 1929				February, 1929				March, 1929				
					22	29	5	12	19	26	2	9	16	23	2	9	16	23	30
Brazil:																			
Bahia	C		1																
	D						1												
Para	C							2		1								50	61
Rio de Janeiro [1]	C	6	2	2			2											30	38
	D	4	1				2												
Dahomey: Ouidah Military Camp	C		1	1															
	D		1																
Gambia: Bathurst	C		4	3															
	D		1	2															
Liberia: Monrovia	C									[2] 3									
	D									2									
On vessel:																			
S. S. Bernini, at Santos, Brazil	C	4																	
	D	1																	
S. S. Victoria, at Manaos, from Para, Brazil	C							1											
	D							1											

[1] 29 cases of yellow fever with 14 deaths were reported at Rio de Janeiro during January, 1929, mostly suburban. During February there were 25 confirmed cases of yellow fever at Rio de Janeiro, with a mortality of about 66 per cent of the cases.

[2] Suspected cases.