

# PUBLIC HEALTH REPORTS

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No. 29

## MEDICAL CARE OF INJURED FEDERAL EMPLOYEES.

**HOSPITALS AND STATIONS OF THE PUBLIC HEALTH SERVICE TO FURNISH FREE MEDICAL TREATMENT TO EMPLOYEES OF THE UNITED STATES INJURED IN THE PERFORMANCE OF THEIR DUTIES.**

WASHINGTON, June 27, 1917.

*To commissioned medical officers, acting assistant surgeons, customs officers, and others concerned:*

Section 9 of act of Congress approved September 7, 1916, entitled "An act to provide compensation for employees of the United States suffering injuries while in the performance of their duties, and for other purposes," reads as follows:

SEC. 9. That immediately after an injury sustained by an employee while in the performance of his duty, whether or not disability has arisen, and for a reasonable time thereafter, the United States shall furnish to such employee reasonable medical, surgical, and hospital services and supplies unless he refuses to accept them. Such services and supplies shall be furnished by United States medical officers and hospitals, but where this is not practicable shall be furnished by private physicians and hospitals designated or approved by the commission and paid for from the employees' compensation fund. If necessary for the securing of proper medical, surgical, and hospital treatment, the employee, in the discretion of the commission, may be furnished transportation at the expense of the employees' compensation fund.

The commission referred to above has been created and is known as the "United States Employees' Compensation Commission." This commission has immediate jurisdiction over matters pertaining to the medical and surgical relief of Government employees who are injured while in the performance of their duties.

In accordance with the provisions contained in the above quoted section of the act of Congress approved September 7, 1916, civil employees of the United States who are injured while in the performance of their duties, shall be furnished, upon application and without personal charge, reasonable medical and surgical treatment by all medical officers at first, second, and third class relief stations of the service, in accordance with rules hereinafter prescribed:

1. An injured civil employee of the United States, in order to receive treatment, shall present to the medical officer a certificate stating that he is a Government employee and that he was injured on a certain date while in the performance of his

duties. Such certificates must be signed by the employee's superior officer, or by the medical officer, United States Employees' Compensation Commission.

2. An injured civil employee of the United States, in order to obtain the benefits of the service, must apply in person (or by proxy if too seriously injured so to do) at the local office of the Public Health Service, or to a medical officer of said service.

3. At marine hospitals, no charge shall be made for services or supplies furnished injured civil employees of the United States. Expenditures incurred at said hospitals for the care and treatment of such injured employees are payable from appropriations for the Public Health Service.

4. At second and third class relief stations of the service, expenditures incurred on account of either office or hospital treatment furnished injured civil employees of the United States shall be taken up in special vouchers rendered against the United States Employees' Compensation Commission. The rates charged for the care of seamen, as approved by the department, shall be charged for the care of injured Government employees at all contract hospitals of the service, and vouchers for such care should be rendered against the above-named commission. All vouchers for services or supplies furnished in the treatment of said injured employees will be paid direct by the United States Employees' Compensation Commission, and such vouchers should be forwarded to the bureau for reference to the proper officer of that commission, unless otherwise instructed. In preparing said vouchers, the words "Employees' compensation fund" should be written in at the station after the word "appropriation" appearing on voucher forms, and stubs attached to such vouchers should be altered to show that payment is made on account of the United States Compensation Commission. Until further notice, vouchers for said services or supplies should be rendered on blanks issued by the Public Health Service, Forms 1926 and 1949. Expenditures payable from the above-mentioned fund should not be listed among the expenditures noted in monthly schedules of encumbrances, Form 1955. No charges shall be made for professional services furnished said injured employees by medical officers of the service, nor shall any charge be made for supplies *in stock* furnished such persons.

5. Treatment furnished injured employees of the United States, in accordance with the above-mentioned act of Congress, shall be taken up in monthly reports of patients admitted to and discharged from hospital treatment at first and second class relief stations, and relief certificates and hospital permits shall be issued in case of treatment furnished such patients at third-class relief stations of the service. On such reports the class of patient should be designated or shown and authority for said treatment should be cited as "Act of September 7, 1916." Treatment furnished said patients shall also be taken up in "Medical officer's monthly report of relief, Form 1922," and in annual reports of medical and surgical relief furnished office and hospital patients, Forms 1923, 1924, and 1925.

6. Upon the termination of both office and hospital treatment, a copy of the clinical record of treatment furnished injured employees of the United States shall be forwarded, through the bureau, to the medical officer, United States Employees' Compensation Commission. Such clinical records shall include the history, diagnosis, treatment, and other pertinent information connected with each case, and shall be prepared on service Forms 1946 A, B, C, and D.

7. When it is in the interest of economy and to the welfare of injured employees of the United States, the above-mentioned commission will order the transfer of such patients from one station to another, including authority for the necessary expenses involved in such transfers. No injured employee should be so transferred without special authority from the United States Employees' Compensation Commission. Upon the transfer of an injured employee from a second or third class relief station to a marine hospital, for the purpose of receiving further treatment, a copy of the clinical record should be forwarded to the medical officer in charge of said marine hospital;

and upon discharge of the employee from the marine hospital a complete clinical record (covering his treatment at both the contract relief station and marine hospital) shall at once be forwarded, through the bureau, to the medical officer, United States Employees' Compensation Commission.

Officers in charge of second and third class relief stations are directed to obtain letters signed by the proper authorities of the local contract hospitals to the effect that civil employees of the United States, injured while in the performance of their duties, will be received at said hospitals and furnished quarters, subsistence, nursing, and necessary medicines, during the fiscal year ending June 30, 1918, at the same rates as named in their proposals submitted for the care of seamen during said fiscal year; the services to be the same as that furnished seamen. These letters should be addressed to the chairman, United States Employees' Compensation Commission, Washington, D. C. They should be obtained without delay and forwarded through the bureau.

Receipt of this circular should be acknowledged.

RUPERT BLUE, *Surgeon General.*

### QUARANTINE STATION, PHILIPPINE ISLANDS.

#### EXECUTIVE ORDER DESIGNATING THE ISLAND OF CAUIT, CEBU, PHILIPPINE ISLANDS, FOR USE AS A QUARANTINE STATION.

Whereas by Executive order dated October 25, 1904, Luke E Wright, civil governor of the Philippine Islands, set aside and reserved the Island of Cautit, Province of Cebu, Philippine Islands, "For the use of the Quarantine Service and the Marine Hospital Service," and said island is now used as a United States quarantine station; and

Whereas the act of Congress approved August 29, 1916, provides that all the property and rights which may have been acquired in the Philippine Islands by the United States under the treaty of peace with Spain, except such land or other property as has been or shall be designated by the President of the United States for military and other reservations of the Government of the United States \* \* \* are hereby placed under the control of the government of said islands to be administered or disposed of for the benefit of the inhabitants thereof,

I hereby designate, confirm, and set aside the island of Cautit, Province of Cebu, Philippine Islands, for use as a quarantine station under the Treasury Department of the United States.

(Signed)

WOODROW WILSON.

The WHITE HOUSE,

28 June, 1917.

## MALARIA IN NORTH CAROLINA.

### PREVALENCE AND GEOGRAPHIC DISTRIBUTION.

August 1, 1913, the periodical circularization of the physicians of North Carolina was begun to determine the prevalence and geographic

U. S. MARINE HOSPITAL, NEW ORLEANS, LA.

DEAR DOCTOR: The United States Public Health Service has undertaken to collect information of the prevalence and geographic distribution of malarial fevers in the United States. In order to obtain such information, this form of postal card, *which requires no stamp*, has been prepared for your reply.

Your report will be of value whether you have had cases or not. In every instance, please fill in your post-office address, county, and State, with your signature, as all data thus furnished will be tabulated and used in a report on the prevalence and geographic distribution of malarial fevers in your State.

Please keep a record of your cases of malaria, as postal cards will be sent you every quarter.

Thanking you for your cooperation, I remain,

Respectfully,

R. H. VON EZDORF, *Surgeon, U. S. P. H. S.*

.....  
(Post office.)

.....  
(County.)

.....  
(State.)

.....  
(Date.)

The following numbers of new cases of malarial fevers occurred in my practice during the months named, of the year 1915:

JULY.		AUGUST.		SEPTEMBER.	
White.	Colored.	White.	Colored.	White.	Colored.

The diagnoses were confirmed by the use of the microscope in ..... of these cases.

NOTE.—Any additional information bearing on malarial fevers, their types, the kind of mosquitoes in the locality, the presence of breeding places of mosquitos, prophylactic measures, chronic malaria, proportion of children affected, and haemoglobinuric fevers, should be stated under remarks.

Remarks: .....

.....

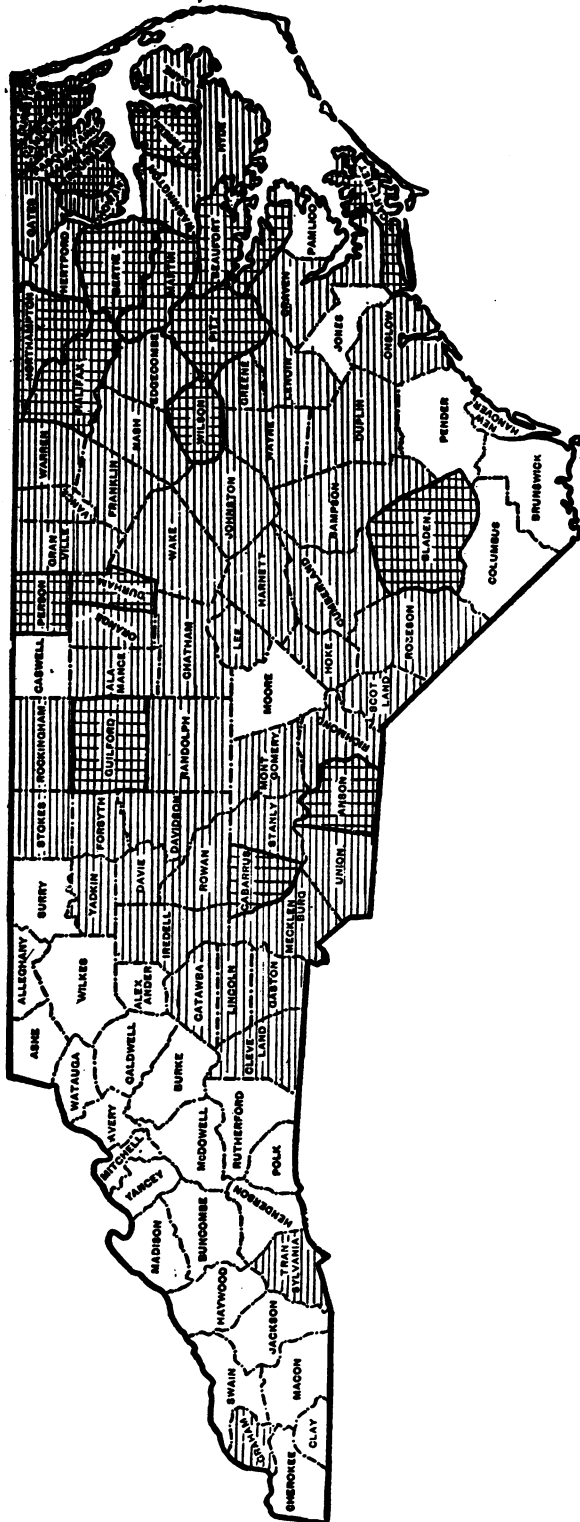
.....

.....

....., M. D.

Reproduction of reply postal card.

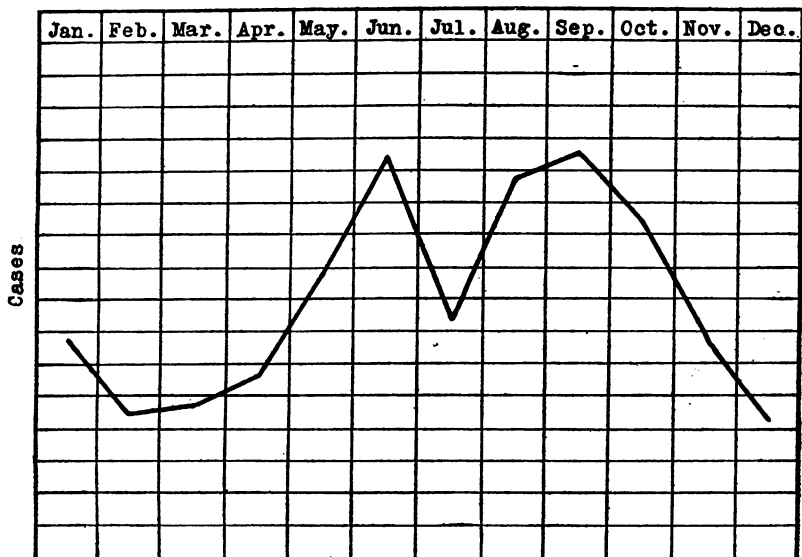
distribution of malaria infection in the State. This was a continuation of the work which had been begun more than two years before



Relative prevalence of malaria in North Carolina, by counties in proportion to the population, as indicated by the numbers of cases reported.

with the State of Alabama, and which had been carried out in the meantime in a number of other States. At regular intervals reply postal cards were sent to the practicing physicians in North Carolina. These cards were at first sent out each month. During 1915 and 1916 they were sent out quarterly. A reproduction of the card used in 1915 and 1916 is given on page 1128, showing the instructions sent to each physician and the schedule which he was requested to fill out and return.

The work of circularization and of compilation of the data on the returned cards was carried on by the late Surg. R. H. von Ezdorf up to the time of his death in September, 1916. Since then it has been carried on by Asst. Surg. Derivaux and Asst. Surg. Gen. Carter.



Relative prevalence of malaria in North Carolina, by months, as indicated by the numbers of cases reported.

The collection of data by circularization of physicians is not entirely satisfactory in the results it gives. Only about 16 per cent of the physicians fill out the schedules and return them. It is impossible to know the controlling reasons why these 16 per cent return the blanks and 84 per cent fail to do so. One is likely to wonder whether the 16 per cent represent the more capable and conscientious physicians. It is probable that they do and that the replies represent the information of the better practitioners. The number of cards sent out and numbers of schedules returned, and the other results of the circularization, are shown briefly in Table 1.

The results of circularization in this way, depending as they do upon voluntary cooperation of the physicians, do not show the actual number of cases of the disease that occur. The method, however, is dependable and furnishes quite satisfactory information regarding

the geographic distribution of the disease. The replies from the various localities also serve as a convenient and sufficiently accurate index of the relative prevalence of malarial fevers. The data returned by the physicians are probably as dependable an index of the relative prevalence of malaria in the several counties as are the mortality records which it has been customary to use as an index of the relative prevalence of typhoid fever and other diseases.

The numbers of cases reported by months for the entire State are given in Table 2, the cases reported by counties in Table 3, the types of infection reported to have been diagnosed microscopically in Table 4, and the counties in which hemoglobinuric fever was reported in Table 5.

The map on page 1129 shows the relative prevalence of the disease in the several counties, the heaviest shaded counties being those in which the infection is heaviest, the unshaded those in which the infection is lightest. The relative density of infection was determined by ascertaining the number of cases reported in each county from August 1, 1913, to December 31, 1916, per 1,000 population. The population used was that of the 1910 census.

It will be noticed in Table 4 that tertian infection was reported as having been diagnosed microscopically in 57 counties, quartan in 18 counties, and estivo-autumnal in 34 counties. Hemoglobinuric fever was reported in 4 counties, namely, Johnston, Martin, Person, and Bertie.

TABLE 1.—*Results of circularization of practicing physicians.*

Period.	Inquiry cards sent to physicians.	Replies received.	Percentage of replies.	Counties represented in replies.	Counties not heard from.	Cases of malaria reported.
1913.						
August to November.....	1,849	408	22.07	.....	.....	13,901
1914.						
January to December.....	21,126	3,320	15.72	.....	.....	8,357
1915.						
January to March.....	5,547	780	14.06	91	9	820
April to June.....	1,849	268	14.49	79	21	1,144
July to September.....	1,849	331	17.90	87	13	2,644
October to December.....	1,849	380	20.55	90	10	1,844
1916.						
January to March.....	1,849	300	16.24	83	17	465
April to June.....	1,849	304	16.45	79	21	1,363
July to September.....	1,849	220	11.89	67	33	1,524
October to December.....	1,849	266	14.46	86	14	1,081

<sup>1</sup> Includes 500 cases estimated.

TABLE 2.—*Cases of malaria reported by months.*

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1913.....								1,031	1,160	1,783	1,427	.....
1914.....	867	579	476	619	1,004	1,260	444	1,056	678	635	425	314
1915.....	351	205	264	228	350	566	662	797	1,185	889	653	302
1916.....	139	125	201	280	434	649	373	502	649	554	292	235

<sup>1</sup> 500 additional cases estimated; not distributed by months.

TABLE 3.—Cases reported by counties, by years, and by color.

County.	Aug. 1 to Nov. 30, 1913.			Calendar year 1914.			Calendar year 1915.			Calendar year 1916.		
	White.	Colored.	Combined.	White.	Colored.	Combined.	White.	Colored.	Combined.	White.	Colored.	Combined.
Alamance.....	64	26	90	111	30	141	91	24	115	36	11	47
Alexander.....	3		3				4		4	2		2
Alleghany.....	100	97	197	111	64	175	132	71	203	54	30	84
Anson.....										2	7	9
Ashe.....	2		2	7		7	1		1	3		3
Avery.....				589	355	944	420	363	783	186	150	339
Beaufort.....				184	162	346	1	3	4	35	32	67
Bertie.....				119	25	144	113	66	179	26	18	44
Bladen.....				12	3	15						
Brunswick.....				14		14	1		1	10		10
Buncombe.....	46		46	13	1	14	7		7	3		3
Burke.....	13		13	108	42	150	53	45	98	95	40	135
Cabarrus.....	91	6	97	3		3						
Caldwell.....				29	18	47	19	27	46	18	17	35
Camden.....				108	46	154	55	15	70	46	8	54
Carteret.....							1	3	4	2	1	3
Caswell.....				40	4	44	70	21	91	32	11	43
Catawba.....	10		10	120	18	138	21	7	28	6		6
Chatham.....	42	19	61	1		1				3		3
Cherokee.....	1		1	72	9	81						
Chowan.....												
Clay.....				125	25	150	38	19	57	112	27	139
Cleveland.....	68	8	76	48	11	59				6	6	12
Columbus.....				33	7	40	29	3	32	23	4	27
Craven.....				70	28	98	50	28	78	47	35	82
Cumberland.....	49	1	50	83	52	135	51	54	105	44	34	78
Currituck.....				13	8	21						
Dare.....				50	10	60	43	10	53	22	12	34
Davidson.....	73	30	103	29	2	31	6		6	9		9
Davie.....	5	5	10	47	37	84	27	31	58	2	3	5
Duplin.....				133	16	149	54	13	67	213	27	240
Durham.....	172	56	228	164	78	242	37	16	53	18	7	25
Edgecombe.....				61	5	66	40	8	48	12	1	13
Forsyth.....	67	9	76	85	27	112	68	12	80	78	11	89
Franklin.....				98	24	122	51	7	58	8	8	16
Gaston.....	73	44	117	20	15	35	16	9	25			
Gates.....				21		21	10		10	6		6
Graham.....				48	45	93	45	12	57	45	11	56
Granville.....				25	5	30	9	2	11	34	8	42
Greene.....				178	41	219	100	19	119	243	48	291
Guilford.....	354	71	425	103	92	195	118	71	189	19	28	47
Halifax.....			1 500	38	18	56	28	18	46	21	12	33
Harnett.....	60	2	62	8		8				11		11
Haywood.....		1	1	7		7	4	1	5	1		1
Henderson.....	10		10	51	30	81	22	34	56			
Hertford.....				9	6	15	3		3	2		2
Hoke.....				9	2	11	9	2	11	5	7	12
Hyde.....				82	14	96	127	1	128	29	7	36
Iredell.....	44	18	62									
Jackson.....												
Johnston.....	75	17	92	202	36	238	51	22	73	21	28	49
Jones.....							9	4	13			
Lee.....				22	10	32	11	8	19	3		3
Lenoir.....				44	21	65	75	48	123	13	55	68
Lincoln.....	36	4	40	39		39	2		2	5	1	6
McDowell.....				3		3	2		2	3		3
Macon.....							2		2			
Madison.....												
Martin.....				61	32	93	136	58	194	50	28	78
Mecklenburg.....	79	40	119	78	38	116	39	19	58	31	16	47
Mitchell.....							1		1	1		1
Montgomery.....	36	57	93	19	20	39	11		11	32	8	40
Moore.....	4		4	14	5	19	12		12	4		4
Nash.....				45	23	68	45	35	80	24	5	29
New Hanover.....				37		37	13	1	14	7	1	8
Northampton.....				89	87	176	89	67	156	59	97	156
Onslow.....				35	8	43	38	10	48	17	3	20
Orange.....	22		22	33	7	40	34	8	42	35	17	52
Pamlico.....				12	3	15	1		1	5	1	6
Pasquotank.....				60	86	146	28		28	44	5	49
Pender.....				1		1						
Perquimans.....				133	92	225	24	49	73	25	43	68
Person.....	79	8	87	24	4	28	81	8	89	179	63	242

¹ Estimated; color not stated.



TABLE 3.—Cases reported by counties, by years, and by color—Continued.

County.	Aug. 1 to Nov. 30, 1913.			Calendar year 1914.			Calendar year 1915.			Calendar year 1916.		
	White.	Colored.	Combined.	White.	Colored.	Combined.	White.	Colored.	Combined.	White.	Colored.	Combined.
Pitt.	5		5	499	386	885	541	264	805	195	74	269
Polk.							2		2			
Randolph.	95	26	121	65	7	72	40	6	46	71	2	73
Richmond.	3		3	23	1	24	43		43			
Robeson.				62	18	80	78	30	108	18	1	19
Rockingham.	62	12	74	44	13	57	22	19	41	56	48	104
Rowan.	198	49	247	71	15	86	62	22	84	24	14	39
Rutherford.	1	2	3	4	3	7				1		
Sampson.				50	18	68	31	14	45	45	15	60
Scotland.				35	8	43	14	8	22	12	8	20
Stanly.	27	18	45	39	31	70	17	17	34	41	16	57
Stokes.	28	34	62	11		11	35	18	53	20	13	33
Surry.				1	1	2				3		3
Swain.												
Transylvania.	1		1	4		4	20	19	39			
Tyrrell.				40	18	58	167	181	348	18	6	24
Union.	34	1	35	59	7	66	37	6	43	33	29	62
Vance.				29	3	32	11	25	36	57	19	76
Wake.	58	44	102	270	102	372	219	65	284	176	102	278
Warren.				45	31	76	13	3	16			
Washington.				9	4	13	33	49	82	25	37	62
Watauga.												
Wayne.	54	65	119	57	49	106	44	39	83	37	29	66
Wilkes.	12		12	11		11	12	2	14	13		13
Wilson.	163	160	323	49	34	83	85	51	136	19	5	24
Yadkin.	40	12	52	47	3	50	41	10	51	21	3	24
Yancey.				4		4	1		1	4	1	5
Total	2,459	942	13,901	5,758	2,599	8,357	4,252	2,200	6,452	3,019	1,414	4,433

<sup>1</sup> Includes 500 cases estimated; color not stated.

TABLE 4.—Types of infection reported diagnosed microscopically, by counties.

County.	Tertian.		Quartan.		Estivo-autumnal.	
	August-November, 1913.	January-September, 1914.	August-November, 1913.	January-September, 1914.	August-November, 1913.	January-September, 1914.
Alamance.	1	5		2	+	+
Alleghany.	1					
Anson.	44	66	1		6	6
Avery.	+	3				
Beaufort.		+		+		14
Bertie.		4		+		14
Bladen.		17		6		4
Brunswick.		2		+		+
Buncombe.	22	4	+		9	1
Burke.	+	+	+	+		
Cabarrus.	+	14	+	+	+	
Caldwell.		+		+		
Camden.	+	+		+		+
Carteret.		17				
Catawba.	1	6	1	+	+	1
Chatham.	3	19	+	+	+	
Cherokee.	+	+				
Chowan.		29		2		3
Cleveland.		5		+		2
Columbus.		2		+		+
Craven.		2			4	
Cumberland.	12	21		+		7
Currituck.		7		+		1
Dare.		1				
Davidson.	1	3	+	2	+	1
Davie.	+	+		+		+
Duplin.		+				+
Durham.	5	3	+	+	+	+
Edgecombe.	+	9		2		+

The figures indicate the numbers of cases reported diagnosed microscopically. The sign + indicates that cases were reported, but the diagnosis was not confirmed by the microscope. This information was collected during the years 1913 and 1914 only.

TABLE 4.—Types of infection reported diagnosed microscopically, by counties—Contd

County.	Tertian.		Quartan.		Estivo-autumnal.	
	August-November, 1913.	January-September, 1914.	August-November, 1913.	January-September, 1914.	August-November, 1913.	January-September, 1914.
Forsyth.....	15	16	3	+		3
Franklin.....		18		+		
Gaston.....	3	3	+	2	+	1
Gates.....		+				
Graham.....		4		1		+
Granville.....		10		+		+
Greene.....		+				
Guilford.....	83	8	5	1	15	10
Halifax.....	+	4	+	+	+	1
Harnett.....	2	6				13
Haywood.....	+	+				
Henderson.....	10			+		
Hertford.....		+		+		
Hoke.....						3
Hyde.....		+		+		+
Iredell.....	8	5		+		+
Johnston.....	4	38	+	11	1	10
Lee.....		1				+
Lenoir.....		4		+		2
Lincoln.....	+	6	+	+	1	+
McDowell.....		1				
Martin.....		+		+		+
Mecklenburg.....	16	15		+	2	+
Montgomery.....					3	1
Moore.....	1	+		1		
Nash.....		13				+
New Hanover.....		1		+		+
Northampton.....		+		+		+
Onslow.....		+		+		2
Orange.....	14	4		+	3	+
Pamlico.....		+		+		+
Pasquotank.....		+		+		+
Perquimans.....		+		+		+
Person.....	+	1		+		
Pitt.....		33		3		4
Polk.....	+					
Randolph.....	+	3	+			+
Richmond.....	2	+		+		+
Robeson.....		10		+		1
Rockingham.....	6	5	+	+	2	+
Rowan.....	10	2	+	+	12	
Rutherford.....	+	+				+
Sampson.....		6		2		+
Scotland.....		+		3		+
Stanly.....	+	3	+	+	+	+
Stokes.....		1				
Surry.....						1
Transylvania.....					1	
Tyrrell.....		+		+		+
Union.....	9	2	+	+	3	+
Vance.....		+				+
Wake.....	+	14	+	1	+	7
Warren.....		2		+		+
Washington.....		+				
Wayne.....	+	5	+	+	+	3
Wilkes.....	+	+		+		
Wilson.....	13	25	12	5	7	+
Yadkin.....	+	+	+		+	
Yancey.....		+				
Total.....	286	514	22	44	69	116

The figures indicate the numbers of cases reported diagnosed microscopically. The sign + indicates that cases were reported, but the diagnosis was not confirmed by the microscope. This information was collected during the years 1913 and 1914 only.

TABLE 5.—Hemoglobinuric fever reported, 1916.

County.	Period.	Cases.
Johnston.....	Second quarter.....	1
Martin.....	Third quarter.....	2
Person.....	Third quarter.....	1
Bertie.....	Fourth quarter.....	1

## HAY FEVER.

### ITS CAUSE AND PREVENTION IN THE ROCKY MOUNTAIN AND PACIFIC STATES.

By WILLIAM SCHEPPEGRELL, A. M., M. D., New Orleans.

The pollens which cause hay fever in the Eastern and Southern States have been the subject of considerable investigation, and the principal pollens have been identified. West of Kansas, however, this subject has received little attention, most writers having contented themselves with the vague statement that hay fever in this region is uncommon.

Investigations during the past year, however, have shown that hay fever in this section, while not as common as a whole as in the Eastern and Southern States, is by no means infrequent and is, moreover, constantly increasing. Reports from California and Colorado show that hay fever is a common disease in these States. A correspondent in Santa Fe, New Mexico, states that there is a "great deal" of hay fever in that section. Another from the State of Washington claims that hay fever is exceedingly common. Reports also show that hay fever is common in Montana, Oregon, Idaho, Arizona, Wyoming, Utah, and Nevada. In view of this prevalence of hay fever in these States the need for a careful investigation of this subject is clearly indicated.

The main difficulty in establishing the exciting cause of hay fever<sup>1</sup> in this section is that the common and giant ragweeds (*Ambrosia elatior* and *trifida*), which are the usual cause of autumn hay fever (85 per cent) east of Kansas, are found west of the 100th meridian in insufficient quantities to be of importance in hay fever except in a few localities.

In correspondence with the various State boards of health of the Pacific and Rocky Mountain States, we found uniform interest in the subject of hay-fever prevention, but a lack of information as to the exciting causes of the disease. With a view, therefore, of obtaining definite information on this subject, we have conducted a series of investigations during the past 18 months, which has enabled us to determine the principal hay fever plants of this section.

#### Hay Fever Plants.

The identification of hay fever plants in general is simplified by the fact that they are all wind-pollinated. Many insect-pollinated and self-pollinated plants contain pollen which will produce the hay fever reaction in the biological test, but as their pollen is not

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<sup>1</sup> The biological properties of the pollens described in this article have all been determined by direct tests on hay-fever subjects. In the unimportant pollens which have proved negative or, not being wind-borne, can cause hay fever only on direct inhalation, only a few tests have been made. In the important hay-fever pollens, however, many hundreds of tests (in the rag weeds several thousands) have been made in order to determine both qualitatively and quantitatively their responsibility in hay fever.

found in the air and can not therefore reach the nasal passages in ordinary respiration, they are not responsible for hay fever.

Wind-pollinated plants are characterized by inconspicuous flowers, which are without bright colors or scent, and by the large quantity of pollen which they generate.<sup>1</sup> Many wind-pollinated plants, however, have pollen which does not produce hay fever (pines, sedges, etc.), or which causes reactions of a mild character (amaranths (*Amaranthus*), docks (*Rumex*), chenopods (*Chenopodium*), etc.). These effects can be determined only by means of the biological test.

#### Biological Test for Hay Fever.

The method of making the biological test for hay fever is as follows: For the pollen of botanical genera which have not yet been tested, a weak saline extract (1 to 20,000) of the pollen is first used. Care should be taken that the saline solution used is a one-half of 1 per cent solution, as a stronger or weaker solution causes irritation of the nasal mucosa independent of the action of the pollen extract. When the subject fails to react to this weak extract, stronger extracts are applied. When these also prove negative, some of the pollen is applied directly as a final test.

The pollen extract is prepared by adding 1 centigram of the specified pollen to 10 c. c. of 5 per cent salt solution. After the soluble extracts have been dissolved, the liquid is filtered and 7 per cent alcohol added. When used for testing the reaction of a patient, or for immunizing, this is diluted so as to represent a pollen extract of 1 to 10,000 to 1 to 200,000 or more according to the toxicity<sup>2</sup> of the pollen used. In our research work, we are using a unit representing 0.001 milligram of pollen extract which has proved of practical value.

For the conjunctival reaction, the extract is applied to the conjunctival sac, the reaction being indicated by the hyperemia produced. The skin reaction is secured by making a number of light scratches on the skin and rubbing in a drop of the pollen extract to be tested. A positive reaction is indicated by reddening and edema of the area surrounding the abraded surface, accompanied by itching. In the hay-fever clinic of the Charity Hospital of New Orleans we use individual syringes in capillary tubes, by which a drop of the extract is injected into (not under) the skin. The reaction is similar to that obtained by scarifying the skin. The cutaneous tests have the advantage of being available when the patient is suffering from hay fever, when the conjunctival reaction is not practicable.

<sup>1</sup> "Hay fever and its prevention," Wm. Scheppegegrell, Public Health Reports, July 21, 1916.

<sup>2</sup> "Toxicity" in connection with pollens refers to the positive reaction in hay-fever subjects. The existence of a true toxin in hay-fever pollens is still under investigation.

Before enumerating the hay-fever plants of the Pacific and Mountain States, it will be well to make a brief resumé of the principal hay-fever plants of the Eastern and Southern States.

#### Principal Hay-Fever Plants of the Eastern and Southern States.

In this section, we have two distinct seasons of hay fever, which differ in the various States only in their dates and duration. The average dates for the two seasons of these States are May to July for the early form, and August to October for the autumnal form.

The early form of hay fever in this section is due principally to the pollen of the Gramineæ, which includes the grasses, both wild and cultivated, and some of the cereals such as rye, oats, and wheat. Theoretically, corn also is included, and is frequently referred to as a common cause of hay fever. The size of its pollen, however, is relatively so great (80 microns) that it causes few cases of hay fever and then only in close proximity to such crops. Rye and wheat also have large heavy pollen grains (50 microns) which gives them a limited potential area of distribution by the wind.

The trees, which are largely wind-pollinated and frequently distribute their pollen in enormous quantities, usually bloom in the spring, but are rarely responsible for hay fever. The pines (*Pinus scopulorum* and other species) are especially prolific in their pollen (fig. 1) but have always given a negative reaction in our biological tests. The pollen of some of the oaks, willows, ailanthus, and other trees give a mild reaction for hay fever, but not sufficiently to be of importance in a general consideration.

The autumn hay fever which forms about 65 per cent of all the cases, is due usually (85 per cent) to the pollen of the common ragweed (*Ambrosia elatior*, fig. 2), this being replaced in some sections by the giant ragweed (*Ambrosia trifida*, fig. 3). The remaining 15 per cent of cases are due to the pollen of other plants, of which the various species of cockle bur (*Xanthiums*) and the marsh elder (*Iva ciliata*) are the most important.

#### Hay-Fever Seasons in the Pacific and Rocky Mountain States.

In this region there are also two hay-fever seasons, but these have a greater tendency to merge and the fall hay fever usually commences earlier. The cause of this will be understood when the pollinating periods of the hay-fever plants are examined. The dates of the hay-fever seasons in these States are as follows:

State.	Spring and summer form.	Autumnal form.
Arizona.....	May 5-June 5.....	July 15-Oct. 1.
California.....	May 5-July 5.....	July 15-Sept. 15.
Colorado.....	May 10-July 1.....	July 20-Sept. 15.
Idaho.....	May 5-June 10.....	Aug. 1-Sept. 16.
Montana.....	May 15-July 15.....	Aug. 5-Sept. 15.
Nevada.....	May 1-July 15.....	Aug. 12-Sept. 15.
New Mexico.....	May 3-July 5.....	July 12-Sept. 28.
Oregon.....	Apr. 25-May 29.....	July 1-Sept. 1.
Utah.....	June 22-July 27.....	Aug. 5-Sept. 15.
Washington.....	June 12-July 1.....	July 5-Oct. 7 (fall rains,
Wyoming.....	May 1-May 15.....	Aug. 5-Sept. 15.

### Early Hay-Fever Season.

As in other sections of the United States, the early hay fever is due principally to the pollen of the grasses (Gramineæ), including both the wild and cultivated grasses. Other pollen which contribute to vernal hay fever in this section are those of the following plants in the localities in which they are found: Bud-brush, *Artemisia spinescens*; poverty weed, *Iva axillaris*; sand-bur, *Gærtneria dumosa*, and *Gærtneria bipinnatifida*.

While all the grasses give a positive hay-fever reaction in the biological test, these naturally vary in different sections. The principal grasses responsible for hay fever in California <sup>1</sup> are as follows: Johnson grass, *Holcus halepensis*; Gailleta grass, *Pleuraphis rigida*; crab grass, *Syntherisma sanguinalis*; knot grass, *Paspalum distichum*; barnyard grass, *Echinochloa crus-galli*; velvet grass, *Nothoholcus lanatus*; Bermuda grass, *Capriola dactylon*; salt grass, *Distichlis spicata*; walk grass, *Poa annua*; blue grass, *Poa pratensis*; broncho grass, *Bromus villosus*; rye grass, *Lolium perenne*, and barley grass, *Hordeum murinum*.

In Oregon, the most common grasses are the following: <sup>2</sup> Sweet vernal grass, *Anthoxanthum odoratum*; velvet grass, *Nothoholcus lanatus*; brome grass, *Bromus carinatus*; orchard grass, *Dactylis glomerata*; rye grass, *Lolium perenne*, and blue grass, *Poa pratensis*.

In the State of Washington <sup>3</sup>: Velvet grass, *Nothoholcus lanatus*; early hair grass, *Aira praecox*; rye grass, *Lolium perenne*; squirrel-tail grass, *Hordeum jubatum*; chess, *Bromus secalinus*, and other species of *Bromus*.

In Wyoming: <sup>4</sup> Western wheat grass, *Agropyron smithii*; hair grass, *Sporobolus airoides*; blue grass, *Poa pratensis*; timothy, *Phleum pratense*; crested hair-grass, *Koeleria cristata*; squirrel-tail grass, *Hor-*

<sup>1</sup>Report of Professor H. M. Hall, University of California.

<sup>2</sup>Report of Professor Howard S. Hammond, University of Oregon.

<sup>3</sup>Report of Professor George B. Rigg, University of Washington.

<sup>4</sup>Report of Professor Aven Nelson, University of Wyoming.

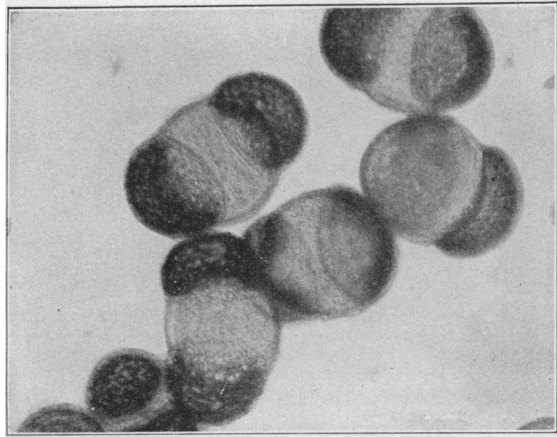


Fig. 1.—Pollen of pine (Coulter). In solution of chloral hydrate and iodine to show "wings" or "balloons" characteristic of the pine pollens and which enable them to traverse great distances. Negative in hay fever.

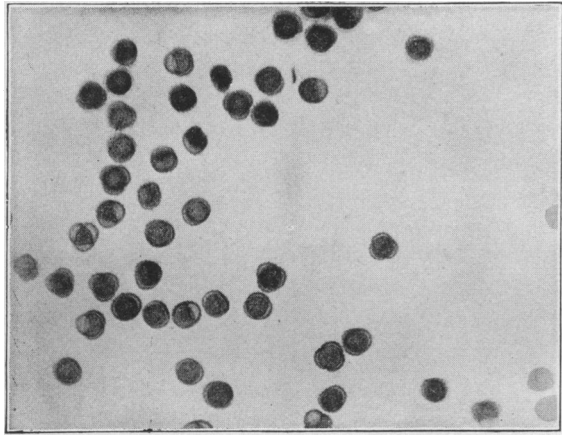


Fig. 2.—Pollen of common rag weed (*Ambrosia elatior*). Stained with methylene blue to show nucleus. Its small size (15 microns) gives it great buoyancy.

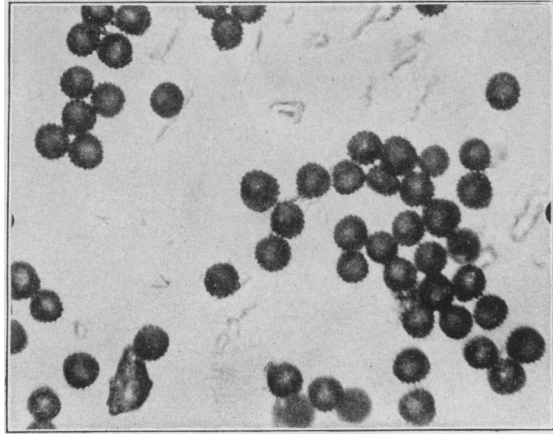


Fig. 3.—Pollen of giant ragweed (*Ambrosia trifida*). Its larger size (20 microns) gives it a more limited potential area than the common ragweed.

*deum jubatum*; reed meadow grass, *Panicularia grandis*; tall fescue grass, *Festuca elatior*; smooth lyme grass, *Elymus condensatus*, and tufted hair grass, *Deschampsia caespitosa*.

In Colorado:<sup>1</sup> Short-awned chess, *Bromus brizaeformis*; downy brome-grass, *Bromus tectorum*; western wheat grass, *Agropyron smithii*; Kentucky blue grass, *Poa pratensis*; orchard grass, *Dactylis glomerata*; crested hair-grass, *Koeleria cristata*; grama grass, *Bouteloua gracilis*; silk grass, *Agrostis hiemalis*; timothy, *Phleum pratense*, and squirrel-tail grass, *Hordeum jubatum*.

In Arizona:<sup>2</sup> Annual fescue, *Festuca octoflora*; six weeks grass, *Bouteloua aristidoides*; mesa grama, *Bouteloua rothrockii*; annual poverty weed, *Aristida bromoides*; blue grama, *Bouteloua gracilis* and silver top, *Andropogon saccharoides*.

The most common grasses in Idaho, Western Nevada, New Mexico, and Utah are the following:<sup>3</sup> Hungarian brome grass, *Bromus inermis*; wild oat grass, *Stipa viridula*; long-awned grass, *Aristida longiseta*; sleepy grass, *Stipa vaseyi*; false oat grass, *Trisetum spicatum*; western wheat grass, *Agropyron smithii*; bearded wheat grass, *Agropyron richardsonii*, and other tall wheat grasses.

#### Important Hay-Fever Plants of the Pacific and Rocky Mountain States.

While the common ragweed (*Ambrosia elatior*, fig. 4), the principal cause of fall hay fever in the Eastern States, is uncommon west of Kansas, it is found in certain sections. In some parts of Colorado it is very abundant in the towns<sup>4</sup> being usually found in company with the "Great ragweed" (*Iva xanthiifolia*, fig. 5). The latter should not be confused with the Great ragweed of the Eastern and Southern States, which, while belonging to the same family (Ambrosiaceae), is *Ambrosia trifida*. Their hay-fever reaction, however, is similar.

The great ragweed (*Ambrosia trifida*, fig. 6) which is a cause of autumnal hay fever in portions of the Eastern and especially in the Gulf States, is also found in a few sections of the Pacific and Mountain States. It is found in Wyoming<sup>5</sup> as well as the western ragweed (*Ambrosia psilostachya*, fig. 7), but is not as abundant as *Iva xanthiifolia* and sage brush (*Artemisia tridentata*).

In Arizona, some of the ragweeds are found, these being the "great ragweed" (not *Ambrosia trifida* of the Eastern States but *Ambrosia aptera*) and the "small ragweed" (not *Ambrosia elatior* of the Eastern States but *Gærtneria tenuifolia*).

<sup>1</sup> Report of Professor Francis Ramáley, University of Colorado.

<sup>2</sup> Report of Professor J. J. Thornber, University of Arizona.

<sup>3</sup> Report of Professor P. L. Ricker, Assistant Botanist, U. S. Department of Agriculture, Washington, D. C.

<sup>4</sup> Report of Professor Theo. D. A. Cockerell, University of Colorado.

<sup>5</sup> Report of Prof. Aven Nelson, University of Wyoming.



The western ragweed (*Ambrosia psilostachya*, fig. 7) is so common in some parts of California that it is an important factor in hay fever<sup>1</sup> in that State. It is found in moist, open soil from Illinois to Saskatchewan, Texas, Mexico and California. It is a perennial weed, 2 to 6 feet high, growing from running root stocks, thicker and stouter than the common ragweed, covered with loose shaggy white hairs; leaves thick, much divided, the lobes of the leaves lanceolate and acute; the staminate heads on short pedicels; the fruit solitary in the axils below.



FIG. 4.—Common rag weed (*Ambrosia elatior*). The principal cause of hay fever in the Eastern and Southern States. (From "Illustrated Flora of North America," by Britton and Brown.)

The most important hay-fever weeds of the Pacific and Mountain States, and which give the most severe reaction, are the wormwoods (*Artemisias*). While their pollen is not produced in the same profusion as that of the ragweeds (*Ambrosias*), they give a marked hay-fever reaction which in some species is five times<sup>2</sup> as active as

<sup>1</sup> Report of Prof. H. M. Hall, University of California.

<sup>2</sup> The *Artemisia heterophylla* produces a reaction in dilution of 1 to 100,000.

that of the ragweeds (*Ambrosias*). The pollens of all the *Artemisias* examined are three-lobed, and are all smooth with exception of *Artemisia biennis*, which is slightly spiculated.

In California, *Artemisia heterophylla* (mugwort) and *Artemisia tridentata* (sagebrush, fig. 8) are the principal hay-fever plants.

In Oregon the *Artemisias* are also the principal cause, being far more abundant than other hay-fever weeds, such as the *Ivas*, *Xanthiums*, *Gærtnerias* and *Ambrosia psilostachya*,<sup>1</sup> and this is the case



FIG. 5.—Bur marsh elder, also known in the West as the "great rag weed" (*Iva xanthifolia*). Grows in moist soil and is a cause of hay fever from Idaho and Saskatchewan, Iowa to Mexico, but is not found on the Pacific Coast. (From "Illustrated Flora of North America," by Britton and Brown.)

in most of this section except in the moist region near the Pacific Coast. In Colorado<sup>2</sup> on the western slope of the mountains, *Artemisia tridentata* covers vast areas almost to the exclusion of other plants. In the sagebrush district persons suffer a great deal from what is popularly called "mountain fever." This has all the symptoms of severe hay fever and is prevalent from August to November, the period of pollination of the sagebrush, and is evidently due to the pollen of the *Artemisia tridentata*.

<sup>1</sup> Report of Prof. Howard S. Hammond, University of Oregon.

<sup>2</sup> Report of Prof. Theo. D. A. Cockerell, University of Colorado.

In view of the importance of the *Artemisias* from a hay-fever standpoint a description of the most common varieties is given:

**The *Artemisias* in the Rocky Mountain and Pacific States.<sup>1</sup>**

*Artemisia* is a genus of mostly bitter and aromatic herbs and shrubs, of which the European wormwood is perhaps the best known. It belongs to the mayweed section of the Compositæ family, but, unlike the mayweed, the flower heads of *Artemisia* are small, inconspicuous, and without rays. In some cases the flowers are apparently self-pollinated; in others the pollen is wind-carried, and in these it is produced in great abundance. There is no reason to suppose that insects aid in their pollination. Only those which are wind-pollinated are important from a hay-fever standpoint.



FIG. 6.—Giant rag weed (*Ambrosia trifida*). Replaces the common rag weed (*Ambrosia elatior*) in most parts of the Eastern and Southern States and is also found in some sections of Nebraska, Colorado, and New Mexico. (From "Illustrated Flora of North America," by Britton and Brown.)

The genus comprises some 200 species. Its greatest development is in the Mediterranean region and in arid North America. About 50 species are found native in the Rocky Mountain and Pacific States, but most of these are of limited distribution, or occur only at high altitudes, or because of some other peculiarity are not important as causes of hay fever. On the other hand, a few of the species grow in great abundance in the neighborhood of towns and in agricultural districts, where they constitute a serious menace. The California mugwort (*Artemisia heterophylla*) is perhaps the most common of these on ditch banks and in waste places, while the Sagebrush (*Artemisia tridentata*) is the most abundant shrub in the Great Basin area. Both of these have been tested in the Biological Laboratory of the American Hay-Fever-Prevention Association and have been found to give a marked hay-fever reaction.

<sup>1</sup> Report of Prof. H. M. Hall, University of California.

California mugwort, *Artemisia heterophylla*. This name includes several forms, some of which are considered as distinct species by some botanists, but they are all much alike and the properties of the pollen are probably the same for all. The mugwort is an erect perennial herb 3 to 8 feet high. The leaves are rather broadly oblong, 2 to 4 inches long, either cleft or entire, and green above but white beneath. The plants are in bloom from about July 1 to late autumn. They grow either scattered or in masses, often forming thickets on river banks or along ditches. They are especially common on low, moist land.

The banks on which mugwort grows are usually too uneven to permit cutting by mowing machines, but it could be cut by hand with a scythe. The plants would grow up again from the roots, but by cutting the tops occasionally the amount of pollen



FIG. 7.—Western rag weed (*Ambrosia psilostachya*), western representative of the rag weeds (*Ambrosias*). Moist open soil from Illinois to Saskatchewan, Texas, Mexico, and California. (From "Illustrated Flora of North America," by Britton and Brown.)

could be greatly reduced. In suitable situations, the mugwort may be expected anywhere from southern California to British Columbia, and east as far as Nevada. It does not grow above an altitude of about 5,000 feet, but from Oregon to Alaska it is replaced by the closely-related *Artemisia tilesii*, which ranges higher.

Dark-leaved mugwort, *Artemisia ludoviciana*. In general habit this species is much like the mugwort, but the leaves are usually narrower and are whitened on both faces by a woolly pubescence, at least when young. (In *Artemisia gnaphalodes*, a very closely related species and likewise common, the leaves are permanently and densely white-hairy.) It grows in waste places, especially in dry, stony stream beds. In California it is quite scattered, only occasionally growing in masses, but it is much more common

in the Northwest and in the Rocky Mountains, where it grows both on the plains and on stream banks. Its period of bloom and the method of control are similar to those indicated for the mugwort.

"Indian hair tonic," *Artemisia dracunculoides*. The stems of this perennial herb are stiffly erect and grow to a height of 4 to 6 feet. Unlike most artemisias the herbage is glabrous and green. All of the other species here described, except *Artemisia biennis* have a gray or whitish herbage. The leaves are mostly entire, 1 to 3 inches long and less than  $\frac{1}{2}$  inch wide. June to September is the period of bloom. Next to the sagebrush, this is perhaps the most plentiful species in western North America. It grows in mountain valleys and on the plains, but is generally absent from the deserts. Sometimes it forms dense stands. In such cases its subjection by mowing would seem feasible.



FIG. 8.—Sagebrush (*Artemisia tridentata*). A cause of hay fever over an extended area, as it grows from New Mexico and Lower California north as far as Washington and Montana. (From "Illustrated Flora of North America," by Britton and Brown.)

Sagebrush (Fig. 8), *Artemisia tridentata*. The sagebrush is an erect, much-branched, gray shrub with a distinct trunk and shreddy bark. The narrowly wedge-shaped leaves are only  $\frac{1}{2}$  to  $1\frac{1}{2}$  inches long and mostly 3-toothed across the summit, although some of the upper ones are narrower and not toothed. The pollen is produced from August to November. This shrub grows from New Mexico and Lower California, north across the high plains of the Great Basin States, extending even into Washington and Montana. It is by far the most abundant and best-known shrub in this whole region, forming the principal vegetation over thousands of acres. It belongs to the arid districts of plains and mountains but does not grow near the coast nor in the hot

deserts of the south. In California it is scarcely known west of the Sierra Nevada. The sagebrush is sometimes known as "black sage," but it is not to be confused with the true black sage nor with the white sage, both natives of Southern California. These true sages belong to the mint family and do not cause hay fever. Because of its woody, almost arboreous habit and great abundance, the elimination of sagebrush will form a difficult problem.

Bud brush, *Artemisia spinescens*. This is a low, gray shrub with many stiff branches ending in spines. It grows  $\frac{1}{2}$  to  $1\frac{1}{2}$  feet high. The very small leaves are densely white-hairy and much lobed. The flowering period is earlier than that of most *Artemisias*, the pollen being produced from March to June. The bud brush grows on sandy or somewhat alkaline soil from the Mohave Desert of California, north and east to eastern Oregon, Wyoming, and Colorado. It is especially common in Nevada and Utah. Eradication is difficult because of the woody nature of the stems.

"California old man," or hill-brush, *Artemisia californica*. This is a gray, highly aromatic shrub, 2 to 4 feet high, best identified by its leaves, which are parted into almost thread-like segments. It blossoms from June to October. Geographically it is restricted to the hills of the Coast Ranges from middle California southward, but there it often forms dense growths of considerable area, especially in southern California. Since the stems are decidedly woody the eradication of this plant is also difficult.

Wormwood sage, *Artemisia frigida*. The stems of this plant are woody at base and mostly 1 to  $1\frac{1}{2}$  feet high. The herbage is gray and soft because of the many short hairs which cover it, and the leaves are finely cut into linear lobes. The plant blooms from July to October. It grows from Idaho, Nevada, and New Mexico, to Minnesota and Texas, and is especially common on the plains of Utah and Colorado. There is much of it around Denver. In Estes Park, Colo., hay fever is coincident with the blooming of the wormwood sage.

Biennial wormwood, *Artemisia biennis*. This is an erect herb 1 to 3 feet high. It grows from a slender annual or biennial taproot, whereas all others here described have tough, perennial roots, many of them more or less woody. The leaves are green and scarcely at all hairy. They are 1 to 3 inches long and deeply cleft into narrow lobes which are sharply toothed. The pollen is shed from July to December. This plant occupies open places, especially ditch banks and neglected yards, throughout western North America, but is not often present in large amounts. It can be destroyed easily by pulling, especially when the ground is soft, since the root is not deep.

*Artemisia cana*, *Artemisia canadensis*, and *Artemisia discolor*, as well as a few others, may be found in quantity at a few places but usually not in proximity to closely populated districts.

*Artemisia absinthium*, the common wormwood, seems to have been introduced with seed into eastern Washington, adjacent to Idaho and Oregon. It is spreading rapidly throughout those localities.<sup>1</sup>

### The Ivas, Gärtnerias and Cockleburs.

Next in importance to the *Artemisias* are the burweed marsh elder, or "Great ragweed" (*Iva xanthiifolia*), and the rough marsh elder (*Iva axillaris*).

Their pollens, which are spiculated like those of the rag-weeds (*Ambrosias*), also give a similar reaction for hay fever.

#### IVAS.

Western elder or povertyweed, *Iva axillaris*. (Fig. 9.) The povertyweed belongs to the ragweed section of the *Compositæ* family but is unlike all the ragweeds in its leaves, which are only an inch long, sessile, and not at all toothed or cut. The

<sup>1</sup>Report of Prof. Howard S. Hammond, University of Oregon.

stems are not woody but grow from perennial creeping rootstocks, so that eradication would be extremely difficult. Cutting close to the ground at the beginning of the flowering season would greatly reduce the amount of pollen produced, but the stems

would again shoot up from the same rootstocks. The plants grow in alkaline or saline soil from the Rocky Mountains to the Pacific Coast and from Canada to Mexico. The blooming period is March to September.

Burweed marsh elder or great ragweed, *Iva xanthifolia*. (Fig. 5.) This is a tall, coarse, annual weed with ovate, sharply toothed leaves 2 to 6 inches long. In habit and foliage it resembles the common sunflower, although it is not so large, but the small, homely heads of flowers are borne in long terminal clusters. It grows from Idaho and Saskatchewan south to New Mexico but is absent from the Pacific coast. It blooms in late summer and autumn. Since the root is of only annual duration, any practice which will prevent the plants from going to seed will be effective as a method of eradication. Mowing is advisable where the plants grow in dense stands.

Next to the *Artemisias* and *Ivas*, the *Gærtnerias* were found to be important as an active cause of hay fever. Their pollen, which resembles

that of the common ragweed (*Ambrosia elatior*) so closely that it is difficult to distinguish microscopically, also gives a similar reaction.

#### GÆRTNERIAS.<sup>1</sup>

*Gærtneria* (sometimes called *Franseria*) is a genus of herbs and low shrubs with alternate leaves which are often gray with short stiff hairs and usually lobed or toothed. It belongs to the ragweed section of the Compositæ family and has pistillate and staminate flowers on the same plant as in the ragweeds. The *Gærtnerias* differ from the ragweeds in the burs which surround the pistillate flowers; these burs are armed with several rows of spines or prickles, while those of the ragweeds have the prickles arranged in a single circle. It is probable that the species are all wind-pollinated, but some of them may be self-pollinated. The most common species in the West are the following:

Sand bur, *Gærtneria dumosa*. The sand bur is a low, spreading, white-stemmed shrub, with brittle, woody branches. The leaves are less than an inch long, parted into many small lobes and white with minute hairs, which cover the surface. It grows in great abundance on the hot, dry deserts from southern Utah to southeastern California and southern Arizona. It is very common along some of the railways cross-



FIG. 9.—Poverty weed or western elder (*Iva axillaris*). A cause of hay fever. Alkaline or saline soil from the Rocky Mountains to the Pacific Coast and from Canada to Mexico. (From "Illustrated Flora of North America," by Britton and Brown.)

<sup>1</sup> Report of Prof. H. M. Hall, University of California.

ing the southwestern deserts. The flowers shed their pollen from about the first of March to the end of June.

False ragweed, *Gartneria acanthicarpa*. (Fig. 10.) This is a spreading and bushy annual or biennial weed. The leaves are ashy gray, ovate in outline, but cut into short, rounded lobes somewhat as in ragweed. The flat spines of the bur are straight or only slightly curved. This species inhabits sandy plains and stubble and is common in arid sections from the Rocky Mountains to the Pacific coast. In California it is restricted to the southern and eastern parts of the State, and similarly in Oregon and Washington it is found only in the drier parts away from the coast. It is reported as one of the commonest weeds in New Mexico. The blooming period is August to December. Since the roots are short-lived, the weed may be easily held in check by



FIG. 10.—“False rag weed” (*Gartneria acanthicarpa*). A common cause of hay fever. In sandy plains and stubble on the arid sections from the Rocky Mountains to the Pacific coast. (From “Illustrated Flora of North America,” by Britton and Brown.)

mowing or burning before the burs ripen. Hand pulling is very effective, and may be practiced where the area covered is not too large.

*Gartneria tenuifolia*. This perennial very closely simulates the western ragweed in general appearance, but may be distinguished by the burs, which have more than one row of spines, and these are incurved or hooked. It grows in warm, dry districts from the westerly part of the Mississippi Valley to Colorado, Nevada, and southern California, and ranges south to Texas, but it is not so common as the other species. The pollen is produced during late summer and autumn.



*Gartneria bipinnatifida*. The stems of this plant spread along the ground from a perennial root. The white-hairy leaves are much cut into spreading lobes. The burs form in dense clusters toward the ends of the branches, and each cluster is surmounted by a fingerlike projection made up of the staminate heads, which yield the pollen. This pollen is produced from April to December. The species grows only on the sea-shore, usually on the beach sands or dunes, and extends from Lower California to British Columbia. From middle California northward it is accompanied by *Gartneria chamissonis*, a very closely related species with merely toothed or cut leaves. Either sort would be difficult to eradicate because of the deep, perennial roots.

#### COCKLEBURS.

The cockleburrs (*Xanthium*) give a positive reaction for hay fever, but less marked than the *Artemisias*, *Ambrosias*, *Ivas*, and *Gartnerias*. The pollen is also spiculated, but their large size (36 microns) reduces their potential area. It is abundant in some localities, especially on bottom lands along the rivers. It is a coarse annual, with branching stems and alternate petioled leaves. Leaves broadly ovate, cordate, usually three-lobed, and simply or doubly dentate. Sterile and fertile flowers in different heads, the latter clustered below, the former in short spikes. The fruit, a rough bur, usually has two curved beaks and is covered with prickles straight-tipped or hooked, 2 to 6 feet high. It blooms from June to December.

#### Other Hay-Fever Plants of the Pacific and Mountain States (Minor Importance).

The hay-fever plants of minor importance in this region are the following: Dock, *Rumex conglomeratus* and *obtusifolius*; sheep sorrel, *Rumex acetosella*; goosefoot or lamb's quarters, *Chenopodium ambrosioides*; tumbleweed, *Amaranthus græcizans* and salt bush, *Hymenoclea salsola*. Most of these plants generate pollen in abundance, but these produce only a mild hay-fever reaction similar to that of the docks, *Rumex crispus*, and amaranths, *Amaranthus spinosus* of the eastern States.

Among the trees, the pollen of the majority have proven either negative or so slight in reaction as to be of little importance in hay fever. An exception, however, is the cottonwood (*Populus*). Of the varieties tested, the pollen of *Populus sargentii* (fig. 11) gives a marked reaction and is responsible for hay-fever cases in localities in which it is found in sufficient quantities. *Populus angustifolia* gives a much milder reaction, and also the Arizona cottonwood, *Populus arizonica*.

#### Plants Not Responsible for Hay Fever.

While describing the plants which are responsible for hay fever, it is also opportune to say a few words regarding the much abused roses and goldenrods. The rose is insect pollinated and could, therefore, cause hay fever only on direct inhalation, as the pollen is never found in the atmosphere. In addition to this, its reaction is practically negative, so that in spite of the common term applied to the early hay-fever rose cold it is not responsible for hay fever.

The goldenrod has a spiculated pollen (20 by 22 microns), which gives a positive hay-fever reaction. The flowers, however, are insect pollinated and cause hay fever only on direct inhalation or when used for ornamental purposes, as in room decorations. In most sections the goldenrod continues to bloom many weeks after the hay-fever season is over. In the atmospheric-pollen plates exposed in New Orleans during the whole of the past hay-fever season the pollen of the goldenrod (*Solidago*) was never found.<sup>1</sup> In spite of its repu-



FIG. 11.—Western cottonwood (*Populus sargentii*). One of the few trees whose pollen cause hay fever. River bottoms Saskatchewan to North Dakota, Nebraska, Kansas, and New Mexico. (From "Illustrated Flora of North America," by Britton and Brown.)

tation, therefore, the goldenrod is an insignificant factor in hay fever.

Another falsely accused plant, whose reputation, however, is limited to the Rocky Mountain States, is the resin weed, *Grindelia squarrosa* (fig. 12), which is blamed in Wyoming and the adjoining States for the prevalence of hay fever. Specimens of this were sent to a biological laboratory by Dr. W. A. Wyman, of the Wyoming

<sup>1</sup> "Hay-fever and Hay-fever Pollens," W. Scheppegrell, M. D. The Archives of Internal Medicine, June 15, 1917.

State Board of Health. The pollen was found to be spiculated and measures 20 microns in diameter, which is the size of the *Trifida* rag-weed pollen, which it also resembles very closely microscopically.

The pollen, however (fig. 13), like the flowers, is sticky and resin-like, as implied by the popular name. The pollen itself gives a positive reaction, but as it is not wind-borne, and therefore not in the atmosphere, it is not a cause of hay fever. The probability, therefore, is that the resin weed, on account of its prevalence and conspicuousness, was selected in the same manner that the goldenrod



FIG. 12.—Resin weed (*Grindelia squarrosa*). Popularly supposed to be the cause of hay fever in Arizona, Wyoming, and the adjacent States. The plant is harmless, as it is not wind-pollinated. (From "Illustrated Flora of North America," by Britton and Brown.)

has been so long held responsible for hay fever, while the real but insignificant hay-fever weeds were unsuspected.

#### Potential Area of Pollen Distribution.

In regard to the responsibility of the noxious plants for hay fever, this depends, first, on the proximity of these plants and, secondly, on the size of the pollen, which has a marked effect on their buoyancy. As already stated, the pollen of corn, in spite of its toxicity, is rarely responsible for hay fever, as its relatively great size (80

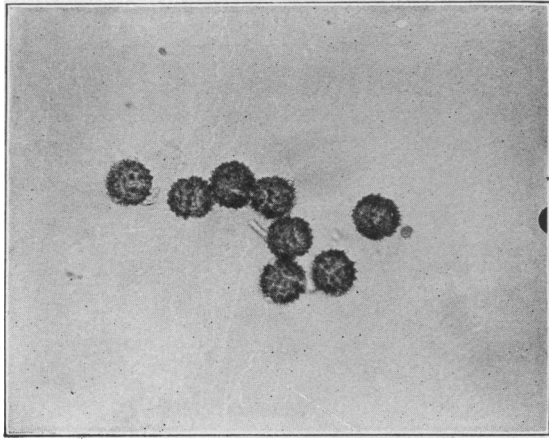


Fig. 13.—Pollen of resin weed (*Grindelia squarrosa*). Resembles the pollen of the common ragweed, but is not found in the air and therefore does not cause hay fever.

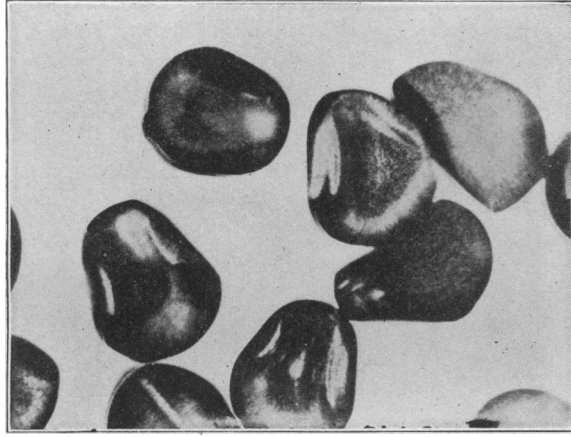


Fig. 14.—Pollen of corn. Its large size (80 microns) limits its potential area to a few yards from the plants.

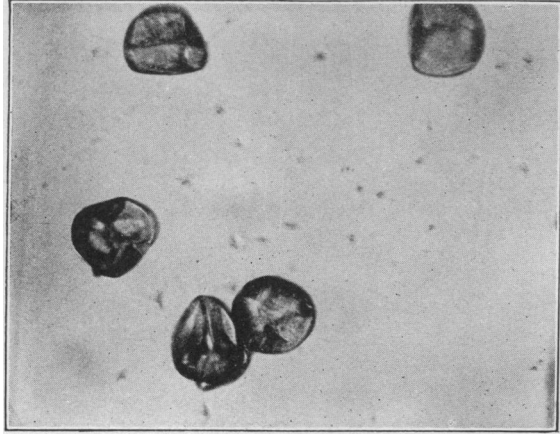


Fig. 15.—Pollen of foxtail grass (*Chaetochloa glauca*). The relatively large size of the grass pollens (average 40 microns) limits their potential area, which greatly facilitates municipal efforts for their control.

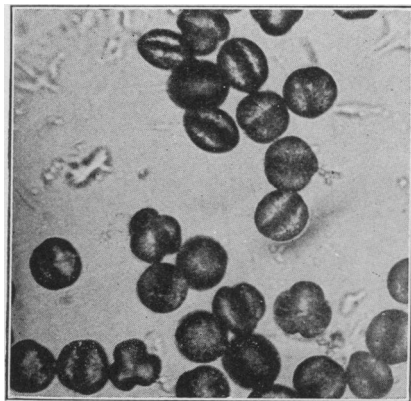


Fig. 16.—Pollen of mugwort (*Artemisia heterophylla*). One of the most important hay-fever pollens of the West. Grows in low soil from Southern California to British Columbia and Nevada.

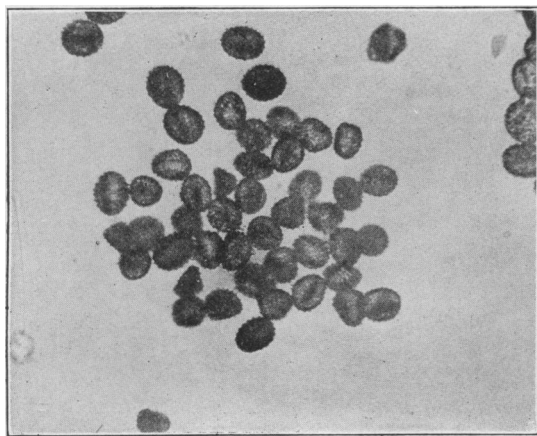


Fig. 17.—Pollen of bur marsh elder (*Iva xanthifolia*). Important cause of hay fever. Moist soil from Ontario to Assiniboia and south to Wisconsin, Nebraska, New Mexico, and Utah.

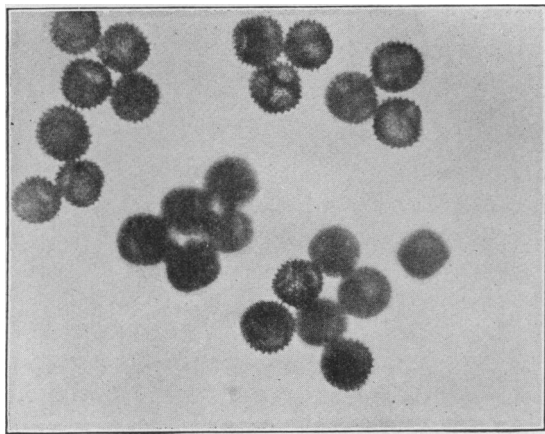


Fig. 18.—Pollen of western ragweed (*Ambrosia psilostachya*). Its larger size (25 microns) gives it only one-sixth of the potential area of the common ragweed (*Ambrosia elatior*, 15 microns).

microns, fig. 14) reduces its potential area to a short distance from the plant. The other extreme is the pollen of the common ragweed (*Ambrosia elatior*), whose pollen measures 15 microns (fig. 2) and whose buoyancy is so great that a wind velocity of 20 miles or more will carry it several miles.

Most of the grasses have pollen of considerable size (35 to 55 microns, fig. 15), so that their pollen is not carried to a great distance. On this account, municipal efforts for the control of the early hay fever due to these grasses have been attended with considerable success.

While the pollen of the *Artemisias* (fig. 16) gives a severe reaction, their potential radius is reduced by the size of their pollens (average 24 microns) to about one-sixth of that of the common ragweed (15 microns). Their pollen also, although produced in great quantities, is many times less abundant than that generated by the ragweeds, and the resulting infection of the air is, therefore, proportionately less.

The bur marsh elder, *Iva xanthiifolia*, has spiculated pollen (fig. 17) which gives a reaction similar to the *Ambrosias*. Its pollen which is ovoid, measures only 15 by 20 microns, which gives it a considerable potential area. The western ragweed, *Ambrosia psilostachya*, has a pollen (fig. 18) similar to the common and great ragweeds (*Ambrosia elatior* and *trifida*), but as the pollen is larger (25 microns) it has a much more restricted potential area.

The *Gærtnerias* give a reaction similar to the ragweeds (*Ambrosias*). The pollen is also spiculated and their small size (average 17 microns) gives them a considerable potential area.

#### Prevention.

The prevention of hay fever by the eradication of the weeds that produce the noxious pollen is a more complicated problem in the Pacific and Rocky Mountain States than in the Eastern States. This is due to the fact that the fall hay fever is caused by the pollen of a larger number of plants.

In the early (vernal) form of hay fever, which in all the States is due principally to the pollen of the grasses (*Gramineæ*), this presents no great difficulty. The potential area of the grass pollens is not great and the enforcement of suitable grass-weeds ordinances should be sufficient practically to eliminate grasses as a factor.<sup>1</sup>

The fall hay fever, however, which is due principally to the pollen of the *Artemisias*, *Ivas*, and *Gærtnerias*, presents greater difficulty both on account of the larger number of these plants and the greater buoyancy of their pollen.

While the fall hay fever of the eastern States is due almost entirely (85 per cent) to the pollen of the common ragweed (*Ambrosia elatior*),

<sup>1</sup> The New Orleans grass-weeds ordinance, adopted Jan. 25, 1916, was published in the Public Health Reports of Aug. 25, 1916, p. 2310.

the fall hay fever of the Pacific and Rocky Mountain States is due to many varieties of the *Artemisias*, as well as of several of the *Ivas* and *Gærtnerias* and also to the western ragweed (*Ambrosia psilostachya*).

The larger number of plants, however, is offset by the far greater buoyancy of the pollen of the common ragweed of the Eastern States. Measuring only 15 microns in diameter and having a spiculated surface, which adds almost 50 per cent to its buoyancy, the potential area of the common ragweed pollen is so great that it will traverse several miles in a wind of 20 miles per hour, as has been frequently demonstrated by atmospheric-pollen plates.

The *Artemisias*, however, on account of the size of their pollen, which average about 24 microns, will traverse only about one-sixth of the area of the common ragweed, this area being still more reduced by the fact that their surface is smooth instead of spiculated, as in the ragweeds. In spite of the great prevalence of these plants, therefore, legislative measures for their eradication from the vicinity of municipalities should prove quite effective. This also applies to the western ragweed (*Ambrosia psilostachya*) whose pollen measures 25 microns, which also restricts its potential area of distribution.

The *Gærtnerias*, however, which bear a resemblance to the ragweeds both in the spiculated pollen and in their hay-fever reaction, also have a light buoyant pollen (average 17 microns) which give them an extended potential area. On this account special efforts should be made to eliminate them from the neighborhoods of communities.

The education of the public in the noxiousness of these weeds from a hay-fever standpoint is of the greatest importance. When this has been accomplished, suitable legislation will be enacted. When we observe the stringent laws enacted by various States for the exclusion of parasites injurious to their agricultural interests, suitable legislation for the protection of the large number of hay-fever sufferers should present no great difficulty.

# 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 STATE SUMMARIES.

#### California Report for the Week Ended July 14, 1917.

The California State Board of Health reported concerning the status of preventable diseases in California for the week ended July 14, 1917, as follows: The prevalence of cerebrospinal meningitis increased. Six cases were reported in San Diego County, one case each in Oakland, San Francisco, and in Alameda County. There was a sharp increase in typhoid fever. A total of 53 cases was reported, well scattered over the State. Of measles, mumps, and chicken pox, the numbers of cases continued to decrease. Diphtheria cases were slightly reduced.

The details of notifiable disease cases reported in the State during the week ended July 7 are as follows:

Cerebrospinal meningitis.....	4	Mumps.....	101
Chicken pox.....	50	Pellagra.....	1
Diphtheria.....	27	Pneumonia.....	22
Dengue.....	1	Scarlet fever.....	57
Erysipelas.....	7	Smallpox.....	2
German measles.....	35	Syphilis.....	32
Gonococcus infection.....	23	Tuberculosis.....	87
Malaria.....	4	Typhoid fever.....	21
Measles.....	184	Whooping cough.....	38

### ANTHRAX.

#### Massachusetts.

During the month of June, 1917, 9 cases of anthrax were notified in the State of Massachusetts.

### CEREBROSPINAL MENINGITIS.

#### Kansas.

During the period of two weeks ended July 14, 1917, cases of cerebrospinal meningitis were notified in Kansas as follows: Two at Kansas City, one each at Independence and Leeds.



## CEREBROSPINAL MENINGITIS—Continued.

## State Reports for June, 1917.

Place.	New cases reported.	Place.	New cases reported.
District of Columbia.....	3	Massachusetts—Continued.	
Maryland:		Suffolk County—	
Baltimore City.....	23	Boston.....	6
Baltimore County—		Chelsea.....	2
Gardenville.....	2	Worcester County—	
Sparrows Point.....	1	Templeton.....	1
Total.....	26	Worcester.....	2
Massachusetts:		Total.....	36
Berkshire County—		West Virginia:	
Pittsfield.....	6	Marshall County—	
Essex County—		Moundsville.....	1
Beverly.....	4	Wisconsin:	
Gloucester.....	1	Bayfield County.....	1
Lawrence.....	1	Douglas County.....	1
Hampden County—		Kenosha County.....	1
Chicopee.....	1	Manitowoc County.....	3
Springfield.....	7	Milwaukee County.....	9
Palmer.....	1	Racine County.....	1
Middlesex County—		Sheboygan County.....	1
Dracut.....	1	Traverseau County.....	1
Lowell.....	1	Winnebago County.....	1
Maynard.....	1	Total.....	19
Watertown.....	1		

## Virginia Report for May, 1917.

Place.	New cases reported.	Place.	New cases reported.
Virginia:		Virginia—Continued.	
Appomattox County.....	1	Orange County.....	2
Buchanan County.....	1	Fulaski County.....	1
Charlotte County.....	1	Rockbridge County—	
Franklin County.....	1	Buena Vista.....	1
Grayson County.....	1	Russell County.....	2
Greene County.....	1	Warren County.....	1
Hanover County.....	2	Total.....	16
Lunenburg County.....	1		

## City Reports for Week Ended June 30, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Akron, Ohio.....	1		Nashville, Tenn.....	1	1
Albany, N. Y.....	1		Newark, N. J.....	1	
Altoona, Pa.....	1		New Britain, Conn.....	1	2
Baltimore, Md.....	3		New London, Conn.....		1
Boston, Mass.....	4	2	Newport, R. I.....		1
Buffalo, N. Y.....	1		New York, N. Y.....	5	4
Chicago, Ill.....	6	3	Philadelphia, Pa.....	7	2
Cleveland, Ohio.....	4		Pittsburgh, Pa.....	5	5
Dayton, Ohio.....		1	Pittsfield, Mass.....	1	
Dubuque, Iowa.....	1		Plainfield, N. J.....	1	1
Duluth, Minn.....		2	Providence, R. I.....	3	1
El Paso, Tex.....	1		Quincy, Ill.....		1
Hartford, Conn.....	3	2	Rochester, N. Y.....		1
Kansas City, Mo.....	3		St. Louis, Mo.....	3	3
Kokomo, Ind.....	1		San Diego, Cal.....	1	1
Lincoln, Nebr.....	1		San Francisco, Cal.....	3	2
Madison, Wis.....		1	Springfield, Mass.....	3	1
McKeesport, Pa.....	1		Wilkes-Barre, Pa.....	1	
Minneapolis, Minn.....	10				

**DIPHTHERIA.**

See Diphtheria, measles, scarlet fever, and tuberculosis, page 1165.

**DYSENTERY.****Arkansas, Missouri, and Tennessee.**

Passed Asst. Surg. Ridlon reported July 13 and 17, 1917, concerning the outbreak of dysentery in Mississippi County, Ark., and vicinity as follows: The epidemic of dysentery is rapidly decreasing in this vicinity. The virulence of the infection is much lessened, and it is difficult to find acute cases. There are no official records of cases or deaths. Have epidemiological histories of 75 cases, and 300 case reports from six physicians. The disease is most prevalent in outlying districts, and has also been reported prevalent in southern Missouri and western Tennessee. The disease has been reported prevalent in Mississippi County, and adjacent counties in Arkansas, and in Dunklin, New Madrid, Scott, and Stoddard Counties, Mo.

**ERYSIPELAS.****City Reports for Week Ended June 30, 1917.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Baltimore, Md.....		1	Lynchburg, Va.....		1
Birmingham, Ala.....	1		McKeesport, Pa.....	1	
Boston, Mass.....		2	Milwaukee, Wis.....	3	
Buffalo, N. Y.....	1		Newark, N. J.....	6	
Cambridge, Mass.....		1	New York, N. Y.....		6
Chicago, Ill.....	13	6	Northampton, Mass.....		1
Cincinnati, Ohio.....	2		Oakland, Cal.....	1	
Cleveland, Ohio.....	5	3	Orange, N. J.....		1
Dayton, Ohio.....	2		Philadelphia, Pa.....	1	
Denver, Colo.....	2		Pittsburgh, Pa.....	3	
Detroit, Mich.....	5		Racine, Wis.....		1
Duluth, Minn.....	1		Rochester, N. Y.....	3	1
Harrisburg, Pa.....	1		St. Louis, Mo.....	13	1
Jackson, Mich.....	1		San Francisco, Cal.....	1	
Kalamazoo, Mich.....	1		Seattle, Wash.....	1	
Lancaster, Pa.....	1		Wilkesburg, Pa.....	1	
Los Angeles, Cal.....	5				

**LEPROSY.****California—Los Angeles.**

A case of leprosy was reported July 13, 1917, in a Japanese woman at Los Angeles, Cal., where the patient has resided one year.

## MALARIA.

## State Reports for June, 1917.

Place.	New cases reported.	Place.	New cases reported.
<b>Maryland:</b>		<b>Massachusetts:</b>	
Charles County—		Bristol County—	
Bel Alton, R. D. ....	1	Fall River .....	1
La Plata .....	1	Norfolk County—	
Port Tobacco .....	1	Brookline .....	1
White Plains, R. D. ....	1	Dedham .....	3
Harford County—		Plymouth County—	
Abingdon .....	1	Brookton .....	1
Prince Georges County—		Suffolk County—	
Acookeek, R. D. ....	1	Boston .....	5
Piscataway, R. D. ....	1	Franklin County—	
Wicomico County—		Erving .....	4
Clara .....	1	Montague .....	1
Rockawalking .....	1		
Salisbury .....	2	Total .....	16
Total .....	11		

## Virginia Report for May, 1917.

Place.	New cases reported.	Place.	New cases reported.
<b>Virginia:</b>		<b>Virginia—Continued.</b>	
Accomac County.....	6	Loudoun County.....	1
Chincoteague.....	10	Leesburg.....	3
Greenbackville.....	1	Louisa County.....	4
Albemarle County.....	3	Lunenburg County.....	6
Alexandria County.....	2	Victoria.....	2
Alleghany County—		Mathews County.....	1
Clifton Forge.....	1	Mecklenburg County.....	9
Amelia County.....	1	Clarksville.....	1
Appomattox County.....	1	Middlesex County.....	3
Augusta County.....	2	Montgomery County.....	2
Bedford County.....	1	Christiansburg.....	1
Brunswick County.....	20	Nansemond County.....	8
Buckingham County.....	1	Suffolk.....	22
Campbell County.....	1	Nelson County.....	1
Altavista.....	2	New Kent County.....	6
Brookneal.....	1	Norfolk County.....	21
Caroline County.....	19	Northampton County.....	16
Carroll County.....	1	Cape Charles.....	1
Charles City County.....	2	Northumberland County.....	7
Chesterfield County.....	1	Nottoway County.....	1
Winterpock.....	3	Blackstone.....	1
Clarke County.....	1	Orange County.....	1
Cumberland County.....	4	Page County.....	2
Dinwiddie County.....	12	Pittsylvania County.....	35
Elizabeth City County.....	1	Powhatan County.....	12
Phoebe.....	2	Princess Anne County.....	28
Essex County.....	4	Prince Edward County.....	4
Fairfax County.....	1	Farmville.....	3
Floyd County.....	1	Prince George County.....	12
Fluvanna County.....	1	Prince William County.....	3
Gloucester County.....	6	Richmond County.....	1
Greensville County.....	11	Rockingham County.....	1
Emporia.....	13	Dayton.....	1
North Emporia.....	5	Russell County.....	2
Halifax County.....	16	Scott County.....	3
Houston.....	2	Southernham County.....	23
South Boston.....	10	Franklin.....	3
Hanover County.....	9	Spottsylvania County.....	4
Henrico County.....	14	Fredericksburg.....	2
Richmond.....	1	Stafford County.....	1
Isle of Wight County.....	22	Surry County.....	14
Smithfield.....	4	Sussex County.....	12
James City County.....	2	Warwick County.....	10
Williamsburg.....	1	Washington County—	
King and Queen County.....	4	Damascus.....	1
King William County.....	1	Westmoreland County.....	2
West Point.....	2	York County.....	8
Lancaster County.....	2		
Irvington.....	11	Total.....	548
Lee County.....	1		

## MALARIA—Continued.

## City Reports for Week Ended June 30, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Berkeley, Cal.....	1	.....	New Orleans, La.....	1	.....
Birmingham, Ala.....	19	.....	Orange, N. J.....	1	.....
Charleston, S. C.....	.....	1	San Francisco, Cal.....	1	.....
Kansas City, Mo.....	.....	1	Sacramento, Cal.....	2	.....
Memphis, Tenn.....	.....	1	Savannah, Ga.....	5	1
Newark, N. J.....	1	.....			

<sup>1</sup> The reason that Birmingham had so many more cases of malaria reported than any other city is not that the disease is more prevalent in Birmingham than in other cities of Alabama and neighboring States, but undoubtedly because of the successful efforts the health department has made in securing the cooperation of the practicing physicians in reporting cases.

## MEASLES.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 1165.

## PELLAGRA.

## State Reports for June, 1917.

Place.	New cases reported.	Places.	New cases reported.
District of Columbia.....	3	Massachusetts—Continued.	
Maryland:		Essex County—	
Allegany County—		Danvers.....	1
Western Maryland Hospital	1	Lynn.....	1
Charles County—		Middlesex County—	
Bolton, R. D.....	1	Somerville.....	1
Dorchester County—		Suffolk County—	
Fishing Creek.....	1	Chelsea.....	1
Washington County—		Worcester County—	
Hagerstown.....	1	Worcester.....	1
Wicomico County—		Total.....	7
Nanticoke.....	1	West Virginia:	
Total.....	5	Lewis County—	
Massachusetts:		State Insane Hospital.....	2
Bristol County—			
Taunton.....	2		

## Virginia Report for May, 1917.

Place.	New cases reported.	Place.	New cases reported.
Virginia:		Virginia—Continued.	
Accomac County.....	1	Hanover County.....	2
Albemarle County.....	1	Henry County.....	2
Amelia County.....	1	James City County.....	2
Amherst County.....	1	Williamsburg.....	1
Amherst.....	1	King and Queen County.....	1
Augusta County.....	2	Mecklenburg County.....	2
Campbell County.....	1	Pittsylvania County.....	1
Carroll County.....	2	Rockbridge County—	
Charlotte County.....	2	Buena Vista.....	1
Chesterfield County.....	4	Russell County.....	1
Culpeper County.....	1	Scott County.....	1
Dinwiddie County.....	4	Smyth County.....	3
Greene County.....	1	Washington County—	
Greensville County—		Damascus.....	1
Emporia.....	1	Wise County.....	1
North Emporia.....	1	York County.....	1
Halifax County.....	2	Total.....	48
South Boston.....	2		

## PELLAGRA—Continued.

## City Reports for Week Ended June 30, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Birmingham, Ala.....	18	.....	Mobile, Ala.....	2	2
Galveston, Tex.....	.....	1	Nashville, Tenn.....	1	1
Kalamazoo, Mich.....	1	1	New Orleans, La.....	1	.....
Kansas City, Mo.....	1	.....	Savannah, Ga.....	.....	3
Memphis, Tenn.....	.....	2			

<sup>1</sup> The reason that Birmingham had so many more cases of pellagra reported than any other city is not that the disease is more prevalent in Birmingham than in other cities of Alabama and neighboring States, but undoubtedly because of the successful efforts the health department has made in securing the cooperation of the practicing physicians in reporting cases.

## PLAGUE.

## California—Alameda County—Plague-Infected Squirrels Found.

On June 29, 1917, a plague-infected ground squirrel was found on the H. B. Goechen ranch, 3 miles west of Altamont, Alameda County, Cal.

## California—San Benito County—Plague-Infected Squirrel Found.

During the period from June 22 to 28, 1917, plague-infected ground squirrels were found in San Benito County, Cal., as follows: Two on the Blanchard & Whitman ranch, 3 miles south of Hollister, and one on Dooling brothers' ranch, 7 miles northeast of Hollister.

## PNEUMONIA.

## City Reports for Week Ended June 30, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Atlantic City, N. J.....	1	3	Lexington, Ky.....	2	1
Baltimore, Md.....	2	12	Los Angeles, Cal.....	4	3
Boston, Mass.....	4	7	McKeesport, Pa.....	1	1
Cambridge, Mass.....	1	.....	Morristown, N. J.....	1	1
Chicago, Ill.....	61	51	Newark, N. J.....	11	3
Cleveland, Ohio.....	22	17	New Bedford, Mass.....	1	2
Detroit, Mich.....	1	14	Oakland, Cal.....	1	1
Duluth, Minn.....	1	.....	Philadelphia, Pa.....	30	22
Everett, Mass.....	1	1	Pittsburgh, Pa.....	12	14
Fall River, Mass.....	1	1	Rochester, N. Y.....	5	.....
Flint, Mich.....	3	1	San Diego, Cal.....	2	2
Grand Rapids, Mich.....	3	.....	San Francisco, Cal.....	17	7
Haverhill, Mass.....	2	.....	Somerville, Mass.....	1	3
Kalamazoo, Mich.....	1	1	Toledo, Ohio.....	1	3
Lawrence, Mass.....	1	.....			

## POLIOMYELITIS (INFANTILE PARALYSIS.)

## Kansas—Kansas City.

During the week ended July 14, 1917, one case of poliomyelitis was notified at Kansas City, Kans.

## Massachusetts—Haverhill.

At Haverhill, Mass., cases of poliomyelitis were notified as follows: One case each on July 10 and 11, two cases July 17.

**POLIOMYELITIS (INFANTILE PARALYSIS)—Continued.****Missouri—Columbia.**

On July 13, 1917, three cases of poliomyelitis were notified from Columbia, Mo.

**Vermont.**

During the week ended July 14, 1917, cases of poliomyelitis were notified in Vermont as follows: Montpelier 8, Waterbury 2, Barre (town) 1, East Montpelier 1, Worcester 2, Duxbury 1, Rochester 2.

**Virginia—Theological Seminary.**

On July 14, 1917, a case of poliomyelitis was reported from Theological Seminary, Alexandria County, Va.

**West Virginia.**

During the week ended July 14, 1917, four cases of poliomyelitis were notified in the State of West Virginia, two of which were in Marion County, one in Jackson County, and one in Ohio County.

**Wisconsin—Cottage Grove.**

On July 1, 1917, one case of poliomyelitis was notified at Cottage Grove, Dane County, Wis.

**State Reports for June, 1917.**

Place.	New cases reported.	Place.	New cases reported.
<b>Maryland:</b>		<b>Vermont:</b>	
Garrett County—		Orange County.....	2
Deer Park.....	1	Washington County.....	31
Jennings.....	1	Total.....	33
Total.....	2		
<b>Massachusetts:</b>		<b>West Virginia:</b>	
Essex County—		Tucker County—	
Amesbury.....	1	Benbush.....	1
Haverhill.....	5		
Hampden County—		<b>Wisconsin:</b>	
Springfield.....	1	Juneau County.....	1
Middlesex County—		La Crosse County.....	1
Cambridge.....	2	Manitowoc County.....	1
Suffolk County—		Milwaukee County.....	1
Boston.....	2	Shawano County.....	1
Worcester County—		Total.....	5
Sutton.....	1		
Worcester.....	3		
Total.....	15		

**Idaho Reports for January and February, 1917.**

During the month of January, 1917, 1 case of poliomyelitis was reported at Twin Falls, Twin Falls County, Idaho, and in February 2 cases were reported at Payette, Canyon County, Idaho.

**POLIOMYELITIS (INFANTILE PARALYSIS)—Continued.****Virginia Report for May, 1917.**

During the month of May, 1917, cases of poliomyelitis were notified in Virginia as follows: One case each in Bath, Campbell, and Craig Counties.

**City Reports for Week Ended June 30, 1917.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Akron, Ohio.....	3	.....	Los Angeles, Cal.....	1	.....
Boston, Mass.....	1	.....	Newark, N. J.....	2	.....
East Orange, N. J.....	1	.....	New York, N. Y.....	9	2
Haverhill, Mass.....	1	.....	Philadelphia, Pa.....	1	.....
Jersey City, N. J.....	2	.....	Wheeling, W. Va.....	1	1
Kansas City, Kans.....	1	.....			

**RABIES IN MAN.****Tennessee—Memphis.**

During the week ended June 23, 1917, a fatal case of rabies was notified at Memphis, Tenn. The health officer of Memphis was unable to secure a history of the case as to the manner of infection or the attendant circumstances prior to the development of the disease.

**City Report for Week Ended June 30, 1917.**

During the week ended June 30, 1917, 1 case of rabies in man was reported at Cincinnati, Ohio.

**RABIES IN ANIMALS.****City Reports for Week Ended June 30, 1917.**

During the week ended June 30, 1917, one case of rabies in animals was reported at Detroit, Mich., and two cases at Kansas City, Mo.

**SCARLET FEVER.**

See Diphtheria, measles, scarlet fever, and tuberculosis, page 1165.

**SMALLPOX.****Minnesota.**

During the week ended July 14, 1917, four new foci of smallpox infection were reported in Minnesota, cases of the disease having been notified as follows: Carver County, Chanhassen Township, 2; Kittson County, Karlstad, 1; Mower County, Lyle Township, 9; Scott County, Glendale Township, 1.

## SMALLPOX—Continued.

## State Reports for June, 1917.

Place.	New cases reported.	Deaths.	Vaccination history of cases.			
			Number vaccinated within 7 years preceding attack.	Number last vaccinated more than 7 years preceding attack.	Number never successfully vaccinated.	Vaccination history not obtained or uncertain.
<b>Maryland:</b>						
Baltimore County—						
Baltimore.....	1				1	
<b>Massachusetts:</b>						
Worcester County—						
Blackstone (Town) .....	1			1		
Fitchburg.....	2			2		
Shrewsbury.....	2		2			
Webster.....	1		1			
Worcester.....	4	2	1	1	2	
<b>Total.....</b>	<b>10</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>2</b>	

## Miscellaneous State Reports.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
<b>Idaho (May 1-31):</b>			<b>Virginia—Continued.</b>		
Bannock County—			Isle of Wight County.....	27	
Pocatello.....	5		Northampton County.....	9	
<b>Vermont (June 1-30):</b>			Prince George County.....	4	
Chittenden County.....	1		Richmond County.....	1	
Rutland County.....	1		Stafford County.....	3	
Washington County.....	6		<b>Total.....</b>	<b>105</b>	
<b>Total.....</b>	<b>8</b>		<b>Wisconsin (June 1-30):</b>		
<b>West Virginia (June 1-30):</b>			Barron County.....	6	
Barbour County.....	1		Brown County.....	1	
Hancock County.....	1		Chippewa County.....	1	
Kanawha County.....	1		Clark County.....	1	
McDowell County.....	2		Dane County.....	14	
Marshall County.....	2		Douglas County.....	1	
Marion County.....	2		Green County.....	2	
Mason County.....	1		Jackson County.....	1	
Mingo County.....	1		Juneau County.....	2	
Ohio County.....	2		Kenosha County.....	6	
Putnam County.....	1		La Crosse County.....	4	
Wood County.....	8		Manitowoc County.....	1	
<b>Total.....</b>	<b>22</b>		Marathon County.....	7	
<b>Virginia (May 1-31):</b>			Milwaukee County.....	23	
Accomac County.....	6		Portage County.....	3	
Botetourt County—			Racine County.....	1	
Troutville.....	1		Rock County.....	12	
Carroll County.....	40		St. Croix County.....	5	
Grayson County.....	13		Sawyer County.....	1	
Halifax County—			Wood County.....	2	
Houston.....	1		<b>Total.....</b>	<b>94</b>	



## SMALLPOX—Continued.

## City Reports for Week Ended June 30, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Akron, Ohio.....	3	.....	Memphis, Tenn.....	3	.....
Alton, Ill.....	1	.....	Minneapolis, Minn.....	22	.....
Butte, Mont.....	1	.....	Muscatine, Iowa.....	1	.....
Chicago, Ill.....	13	.....	New Britain, Conn.....	1	.....
Cleveland, Ohio.....	5	.....	New Orleans, La.....	1	.....
Coffeyville, Kans.....	2	.....	New York, N. Y.....	1	.....
Columbus, Ohio.....	1	.....	Norfolk, Va.....	1	.....
Danville, Ill.....	2	.....	Oakland, Cal.....	1	.....
Denver, Colo.....	1	.....	Oklahoma City, Okla.....	7	.....
Detroit, Mich.....	5	.....	Omaha, Nebr.....	12	.....
Dubuque, Iowa.....	1	.....	Pontiac, Mich.....	4	.....
Duluth, Minn.....	3	.....	Quincy, Ill.....	5	.....
Flint, Mich.....	6	.....	Racine, Wis.....	1	.....
Fort Worth, Tex.....	2	.....	St. Louis, Mo.....	9	.....
Galesburg, Ill.....	1	.....	Salt Lake City, Utah.....	6	.....
Grand Rapids, Mich.....	1	.....	Sioux City, Iowa.....	9	.....
Indianapolis, Ind.....	12	.....	Springfield, Ohio.....	2	.....
Jackson, Mich.....	2	.....	Tacoma, Wash.....	6	.....
Kansas City, Kans.....	3	.....	Toledo, Ohio.....	2	.....
Kansas City, Mo.....	20	.....	Topeka, Kans.....	1	.....
La Crosse, Wis.....	2	.....	Wichita, Kans.....	3	.....
Lincoln, Nebr.....	2	.....	Zanesville, Ohio.....	1	.....
Los Angeles, Cal.....	1	.....			

## TETANUS.

## City Reports for Week Ended June 30, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Birmingham, Ala.....	1	1	Mobile, Ala.....	.....	2
Charleston, S. C.....	.....	1	Omaha, Nebr.....	.....	1
Chicago, Ill.....	2	1	Philadelphia, Pa.....	1	.....
Dayton, Ohio.....	.....	.....	Pittsburgh, Pa.....	.....	1
Kansas City, Mo.....	.....	1	Savannah, Ga.....	.....	1

## TUBERCULOSIS.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 1165.

## TYPHOID FEVER.

## State Reports for June, 1917.

Place.	New cases reported.	Place.	New cases reported.
District of Columbia.....	15	Maryland—Continued.	
Maryland:		Baltimore County—Continued.	
Allegany County—		Roland Park.....	1
Morantown.....	1	Relay Sanitarium.....	1
Barton.....	1	Cecil County—	
Western Maryland Hospital.....	1	Rising Sun, R. D.....	1
Allegany Hospital.....	1	Charles County—	
Anne Arundel County—		Pomfret, R. D.....	1
McKendree.....	1	White Plains.....	1
Sudley.....	1	Hughesville, R. D.....	1
Glenburnie.....	1	Dorchester County—	
Baltimore City.....	17	Lakesville, R. D.....	1
Baltimore County—		Toddville.....	1
Woodlawn.....	1	Hurlock, R. D.....	1
Highlandtown.....	1	Frederick County—	
Hillsdale.....	1	Middletown.....	1
Fullerton.....	1	Maryland School for the Deaf..	1
Sheppard Pratt Hospital.....	1	Garrett County—	
Lutherville.....	1	Bloomington.....	1
Towson.....	1	Harford County—	
Hoffmansville, R. D.....	1	Joppa, R. D.....	1

## TYPHOID FEVER—Continued.

## State Reports for June, 1917—Continued.

Place.	New cases reported.	Place.	New cases reported.
<b>Maryland—Continued.</b>		<b>Massachusetts—Continued.</b>	
Howard County—		Hampden County—	
Ellicott City.....	1	Brimfield.....	1
Simpsonville.....	1	Holyoke.....	1
Kent County—		Ludlow.....	1
Betterton, R. D.....	1	Russell.....	1
Galena, R. D.....	1	Springfield.....	3
Montgomery County—		Middlesex County—	
Bethesda.....	2	Cambridge.....	6
Takoma Park.....	1	Chelmsford.....	1
Cabin John, R. D.....	1	Everett.....	3
Brighton.....	1	Lowell.....	4
Friendship Heights.....	1	Malden.....	1
Prince George County—		Somerville.....	1
House of Reformation.....	1	Waltham.....	1
Landover.....	1	Watertown.....	1
Croom Station.....	1	Norfolk County—	
Bladensburg.....	1	Braintree.....	1
Bucna Vista, R. D.....	1	Brookline.....	1
Piscataway, R. D.....	1	Quincy.....	1
Seat Pleasant.....	1	Stoughton.....	2
Queen Annes County—		Plymouth County—	
Hayden, R. D.....	1	Brockton.....	1
Somerset County—		Wareham.....	1
Pocomoke City, R. D.....	1	Suffolk County—	
St. Marys County—		Boston.....	11
Chaptico.....	1	Chelsea.....	2
Washington County—		Revere.....	3
Hancock.....	2	Worcester County—	
Hagerstown.....	4	Southbridge.....	5
Hancock, R. D.....	1	Sterling.....	1
Dargan.....	1	Total.....	105
Wicomico County—		Vermont:	
Fruitland.....	1	Addison County.....	1
Worcester County—		Franklin County.....	1
Girdletree.....	1	Orleans County.....	1
Snow Hill R. D.....	2	Rutland County.....	3
Stockton.....	5	Total.....	6
Snow Hill.....	2	West Virginia:	
Berlin, R. D.....	1	Kanawha County—	
Welbourne.....	2	Charleston.....	79
Total.....	87	Dunbar.....	10
Massachusetts:		Lewis County.....	2
Berkshire County—		McDowell County.....	1
Adams.....	1	Marion County.....	3
Hinsdale.....	2	Raleigh County.....	1
North Adams.....	1	Randolph County.....	1
Pittsfield.....	1	Total.....	97
Bristol County.....		Wisconsin:	
Attleborough.....	1	Dane County.....	1
Fall River.....	24	Dodge County.....	1
Taunton.....	2	Douglas County.....	5
Essex County—		Fond du Lac County.....	1
Andover.....	1	Juneau County.....	1
Beverly.....	2	Kenosha County.....	1
Danvers.....	1	Marinette County.....	1
Gloucester.....	1	Milwaukee County.....	9
Haverhill.....	1	Sheboygan County.....	1
Ipswich.....	1	Waukesha County.....	1
Lawrence.....	2	Waupaca County.....	1
Lynn.....	3	Total.....	23
Marblehead.....	3		
Middleton.....	1		
Peabody.....	1		
Salem.....	1		
Franklin County—			
Ashfield.....	1		

## Idaho.

During the month of January, 1917, 1 case of typhoid fever was reported at Wallace; in March, 8 cases at Harrison; in April, 17 cases at Harrison; and in May, 1 case at Pocatello.

## TYPHOID FEVER—Continued.

## Virginia Report for May, 1917.

Place.	Newcases reported.	Place.	New cases reported.
Virginia:		Virginia—Continued.	
Accomac County.....	2	Lee County.....	2
Chincoteague.....	1	Lunenburg County.....	2
Greenbackville.....	1	Middlesex County.....	1
Albemarle County.....	1	Nansemond County—	
Alleghany County—		Suffolk.....	1
Clifton Forge.....	1	Norfolk County—	
Amelia County.....	1	Norfolk.....	1
Augusta County.....	1	Orange County.....	1
Basic City.....	1	Page County.....	1
Bedford County.....	1	Shenandoah.....	1
Bedford City.....	2	Powhatan County.....	1
Botetourt County.....	2	Prince George County.....	2
Buchanan County.....	2	Prince William County—	
Campbell County.....	3	Potomac.....	1
Lynchburg.....	1	Roanoke County—	
Carroll County.....	2	Roanoke.....	1
Clarke County.....	1	Vinton.....	1
Culpeper County.....	2	Rockingham County.....	2
Culpeper.....	1	Russell County.....	2
Dickenson County.....	1	Honaker.....	1
Elizabeth City County—		Scott County.....	1
Phoebe.....	4	Shenandoah County.....	3
Essex County.....	1	Southampton County.....	2
Tappahannock.....	1	Tazewell County.....	1
Floyd County.....	2	Graham.....	4
Fluvanna County.....	2	Warren County.....	1
Franklin County.....	1	Wise County—	
Halifax County.....	2	Appalachia.....	2
South Boston.....	2	St. Paul.....	2
Hanover County.....	1	Wythe County.....	1
Isle of Wight County.....	2		
Lancaster County.....	1	Total.....	84

## City Reports for Week Ended June 30, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Baltimore, Md.....	3	1	Nashville, Tenn.....	9	
Birmingham, Ala.....	21	2	Newark, N. J.....	2	
Brookline, Mass.....	1		New Orleans, La.....	13	6
Buffalo, N. Y.....	2	2	New York, N. Y.....	20	4
Cambridge, Mass.....	3		Niagara Falls, N. Y.....	1	
Camden, N. J.....	1		Pasadena, Cal.....		1
Charleston, S. C.....	14	1	Philadelphia, Pa.....	10	6
Chicago, Ill.....	7		Pittsburgh, Pa.....	6	1
Cincinnati, Ohio.....	2		Pittsfield, Mass.....	1	
Cleveland, Ohio.....	4	1	Plainfield, N. J.....	2	
Columbus, Ohio.....	2		Pontiac, Mich.....	1	
Dayton, Ohio.....	2	2	Portsmouth, Va.....	1	
Denver, Colo.....	2		Providence, R. I.....	8	1
Detroit, Mich.....	18	1	Richmond, Va.....	1	
Duluth, Minn.....	3		Roanoke, Va.....	1	
Elgin, Ill.....	1		Rocky Mount, N. C.....	1	
El Paso, Tex.....	1	2	St. Louis, Mo.....	8	
Evansville, Ind.....	2		Salt Lake City, Utah.....	6	
Fall River, Mass.....	6	1	San Diego, Cal.....	1	
Flint, Mich.....	2	1	San Francisco, Cal.....	5	
Fort Wayne, Ind.....	2	1	Sacramento, Cal.....	1	
Galveston, Tex.....	1		Saratoga Springs, N. Y.....	1	
Grand Rapids, Mich.....	1	1	Savannah, Ga.....		1
Hartford, Conn.....	3		Seattle, Wash.....	2	1
Indianapolis, Ind.....	2		South Bend, Ind.....	3	
Kenosha, Wis.....	1	1	Springfield, Mass.....	1	
Lexington, Ky.....	2		Springfield, Ohio.....	1	
Lincoln, Nebr.....		1	Steubenville, Ohio.....	2	
Little Rock, Ark.....	1		Toledo, Ohio.....	3	1
Long Branch, N. J.....	2		Topeka, Kans.....	1	1
Los Angeles, Cal.....	1		Troy, N. Y.....	1	
Lynchburg, Va.....	4	1	Wheeling, W. Va.....	1	
Memphis, Tenn.....	8	1	Wilkinsburg, Pa.....	1	
Milwaukee, Wis.....	4	1	Wilmington, Del.....	1	
Minneapolis, Minn.....	3		Winston-Salem, N. C.....	10	1
Mobile, Ala.....	5	1	Zanesville, Ohio.....	1	

**TYPHUS FEVER.****Utah—Ogden.**

During the week ended June 30, 1917, 2 cases of typhus fever, with 2 deaths, were reported at Ogden, Utah.

**DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.****State Reports for June, 1917.**

State.	Cases reported.			State.	Cases reported.		
	Diphtheria.	Measles.	Scarlet fever.		Diphtheria.	Measles.	Scarlet fever.
Dist. of Columbia..	18	572	28	Vermont.....	26	905	37
Maryland.....	55	1,648	66	West Virginia.....	16	115	7
Massachusetts.....	793	3,786	413	Wisconsin.....	159	1,143	472

**Idaho.**

Two hundred and nineteen cases of measles and 2 cases of scarlet fever were reported in Idaho in January, 1917; 1 case of diphtheria, 63 cases of measles, and 30 cases of scarlet fever in February; 1 case of diphtheria, 30 cases of measles, and 6 cases of scarlet fever in March; 2 cases of diphtheria, 19 cases of measles, and 13 cases of scarlet fever in April; and 2 cases of diphtheria, 15 cases of measles, and 4 cases of scarlet fever in May.

**Virginia Report for May, 1917.**

During the month of May, 1917, 81 cases of diphtheria, 2,206 cases of measles, and 33 cases of scarlet fever were reported in Virginia.

**City Reports for Week Ended June 30, 1917.**

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.		
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Over 500,000 inhabitants:											
Baltimore, Md.	589,621	196	5	.....	115	5	7	.....	21	24	
Boston, Mass.	756,476	242	70	8	183	8	29	2	146	27	
Chicago, Ill.	2,497,722	664	176	19	447	8	165	11	251	84	
Cleveland, Ohio.	674,073	182	25	1	46	.....	13	.....	39	24	
Detroit, Mich.	571,784	190	74	9	25	.....	62	2	77	24	
Los Angeles, Cal.	503,812	.....	12	2	55	.....	14	.....	61	18	
New York, N. Y.	5,602,841	1,266	282	23	665	18	100	3	354	201	
Philadelphia, Pa.	1,709,518	497	49	6	158	3	15	.....	112	63	
Pittsburgh, Pa.	579,090	1,176	19	.....	150	1	5	1	25	11	
St. Louis, Mo.	757,309	216	47	3	49	1	45	1	55	17	
From 300,000 to 500,000 inhabit- ants:											
Buffalo, N. Y.	468,558	142	20	1	26	.....	7	1	14	15	
Cincinnati, Ohio.	410,476	.....	21	1	10	1	3	.....	37	16	
Jersey City, N. J.	306,345	84	9	1	28	1	10	.....	23	10	
Milwaukee, Wis.	436,535	98	19	1	66	.....	41	2	16	6	
Minneapolis, Minn.	363,454	.....	9	.....	20	.....	1	.....	.....	.....	
Newark, N. J.	408,894	76	20	.....	55	.....	16	.....	41	9	
New Orleans, La.	371,747	153	4	.....	.....	.....	2	.....	26	30	
San Francisco, Cal.	463,516	136	7	1	26	.....	13	.....	29	17	
Seattle, Wash.	348,639	40	6	1	33	.....	6	.....	25	3	

**DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—**  
Continued.

**City Reports for Week Ended June 30, 1917—Continued.**

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.		
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
From 200,000 to 300,000 inhabit- ants:											
Columbus, Ohio.....	214, 878	63	3	1	3		14		7	4	
Denver, Colo.....	260, 800	44	4		17		2			13	
Indianapolis, Ind.....	271, 708		16		56		13		16		
Kansas City, Mo.....	297, 847	84	3		5		6			7	
Portland, Oreg.....	295, 463	70	3		5		7		10	2	
Providence, R. I.....	254, 960	45	9	1	2				2	9	
Rochester, N. Y.....	256, 417	63	6		107	2	15		9	3	
From 100,000 to 200,000 inhabit- ants:											
Albany, N. Y.....	104, 199				19		8		7		
Birmingham, Ala.....	181, 762	96			21		2		107	6	
Bridgeport, Conn.....	121, 579	38	2		6	1	3		5	2	
Cambridge, Mass.....	112, 981		9	1	20	1	2		7	4	
Camden, N. J.....	106, 233		3		13		1		1		
Dayton, Ohio.....	127, 224	52	4		19		2		5	4	
Fall River, Mass.....	128, 366	35	1	1	24	1	2		6	3	
Fort Worth, Tex.....	104, 562	30	2				1		1		
Grand Rapids, Mich.....	128, 291	29	8	1	21		2		9	1	
Hartford, Conn.....	110, 900	48	9		11		3		5	3	
Lawrence, Mass.....	100, 560	15	4				1		4	2	
Lowell, Mass.....	113, 245	20	24		1		2		8	2	
Lynn, Mass.....	102, 425	17							3	3	
Memphis, Tenn.....	148, 995	59	1		7		1		19	10	
Nashville, Tenn.....	117, 057	56				1			5	5	
New Bedford, Mass.....	118, 158	15	2		39				10	2	
New Haven, Conn.....	149, 685		3		20	1			5	3	
Oakland, Cal.....	198, 604	34	1				4		2	1	
Omaha, Nebr.....	165, 470	44	1		23		9			5	
Reading, Pa.....	109, 381	23	6		2		7		9	3	
Richmond, Va.....	156, 687	68	1		5		2		8	3	
Salt Lake City, Utah.....	117, 399	21			4		15	1		4	
Springfield, Mass.....	105, 942	43	2		7		8		3	4	
Syracuse, N. Y.....	155, 624	40	1		40		13		2	2	
Tacoma, Wash.....	112, 770						1				
Toledo, Ohio.....	191, 554	76	5	1	7		18			10	
Trenton, N. J.....	111, 593	32	3		1				9	1	
Worcester, Mass.....	163, 314	55	4		12		4		11	3	
From 50,000 to 100,000 inhabit- ants:											
Akron, Ohio.....	85, 625		19		8		2				
Allentown, Pa.....	63, 505		3				1				
Altoona, Pa.....	58, 659	14	2		3						
Atlantic City, N. J.....	57, 660		1		17				4		
Bayonne, N. J.....	69, 893						2		4		
Berkeley, Cal.....	57, 653	11			4		2			1	
Binghamton, N. Y.....	53, 973	24	5	3	23		2		4	1	
Brockton, Mass.....	67, 449	8					4		4	1	
Canton, Ohio.....	60, 852	19	1				2		1	1	
Charleston, S. C.....	60, 734	23	1	1						2	
Covington, Ky.....	57, 144	19	2		2		1	1	7	1	
Duluth, Minn.....	94, 495	13	3		28		5		5		
Elizabeth, N. J.....	86, 690	23	11	1			2		5	1	
El Paso, Tex.....	63, 705	70	1		3	5				6	
Erie, Pa.....	75, 195		1		3					1	
Evansville, Ind.....	76, 078	23			5		11		7	29	
Flint, Mich.....	54, 772	17			13		13		1	1	
Fort Wayne, Ind.....	76, 183	15	1		5		1		5	2	
Harrisburg, Pa.....	72, 015	19			2		7		3		
Hoboken, N. J.....	77, 214	12	3		4		2		3		
Johnstown, Pa.....	68, 529	21			13		2	1		1	
Kansas City, Kans.....	99, 437		2		2		1		3	1	
Lancaster, Pa.....	50, 853				17				5		
Little Rock, Ark.....	57, 343	16									
Malden, Mass.....	51, 155	10	3	2	27		1		1		
Manchester, N. H.....	78, 283	19									
Mobile, Ala.....	58, 221	23	1		4				1	2	
New Britain, Conn.....	53, 794	8			1		1				
Norfolk, Va.....	89, 612		1		2						
Oklahoma City, Okla.....	92, 943	25									

# DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS— Continued.

City Reports for Week Ended June 30, 1917—Continued.

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	*Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.		
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
From 50,000 to 100,000 inhabit- ants—Continued.											
Passaic, N. J.	71,744	20	34	.....	1	.....	.....	.....	5	3	
Pawtucket, R. I.	59,411	20	3	.....	.....	.....	.....	.....	.....	.....	
Sacramento, Cal.	66,895	15	4	.....	8	.....	.....	.....	2	.....	
San Diego, Cal.	53,330	20	.....	.....	22	.....	1	.....	2	2	
Savannah, Ga.	68,805	36	.....	.....	.....	.....	.....	.....	.....	5	
Sioux City, Iowa	57,078	.....	.....	.....	.....	.....	4	.....	.....	.....	
Somerville, Mass.	87,039	19	3	.....	17	.....	1	.....	8	.....	
South Bend, Ind.	68,946	17	1	1	10	.....	6	.....	1	.....	
Springfield, Ill.	61,120	13	2	.....	13	.....	.....	.....	.....	.....	
Springfield, Ohio	51,550	17	.....	.....	5	.....	3	.....	.....	1	
Terre Haute, Ind.	66,083	21	.....	.....	3	.....	.....	.....	.....	1	
Troy, N. Y.	77,916	.....	3	.....	5	.....	2	.....	1	4	
Wichita, Kans.	70,722	.....	1	.....	2	.....	.....	.....	.....	.....	
Wilkes-Barre, Pa.	76,776	14	.....	.....	36	.....	1	.....	11	.....	
Wilmington, Del.	94,265	36	.....	.....	2	.....	.....	.....	.....	.....	
York, Pa.	51,656	.....	.....	.....	.....	.....	.....	.....	2	.....	
From 25,000 to 50,000 inhabit- ants:											
Alameda, Cal.	27,732	5	.....	.....	1	.....	4	.....	2	.....	
Auburn, N. Y.	37,385	10	.....	.....	.....	.....	1	.....	2	.....	
Brookline, Mass.	32,730	6	1	.....	11	.....	.....	.....	1	.....	
Butler, Pa.	27,632	3	2	.....	1	.....	.....	.....	.....	.....	
Butte, Mont.	43,425	.....	3	.....	.....	.....	3	.....	.....	.....	
Chelsea, Mass.	46,192	11	2	.....	8	.....	1	.....	2	.....	
Chicopee, Mass.	29,319	7	1	.....	.....	.....	.....	.....	.....	2	
Cumberland, Md.	26,074	4	.....	.....	9	.....	1	.....	1	.....	
Danville, Ill.	32,261	6	.....	.....	.....	.....	.....	.....	2	1	
Davenport, Iowa	48,811	.....	.....	.....	16	.....	1	.....	.....	.....	
Dubuque, Iowa	39,873	.....	.....	.....	1	.....	2	.....	1	.....	
East Orange, N. J.	42,458	6	3	.....	18	.....	.....	.....	2	3	
Elgin, Ill.	28,203	8	.....	.....	4	.....	.....	.....	.....	.....	
Everett, Mass.	39,233	9	2	1	9	.....	.....	.....	.....	.....	
Everett, Wash.	35,486	4	1	.....	3	.....	4	.....	.....	1	
Fitchburg, Mass.	41,781	10	6	.....	13	.....	.....	.....	4	.....	
Galveston, Tex.	41,863	14	.....	.....	.....	.....	.....	.....	.....	1	
Green Bay, Wis.	29,333	10	.....	.....	.....	.....	.....	.....	.....	.....	
Haverhill, Mass.	48,477	10	1	1	.....	.....	2	.....	6	1	
Jackson, Mich.	35,363	14	2	.....	16	.....	.....	.....	1	1	
Kalamazoo, Mich.	48,886	15	1	.....	67	.....	1	.....	2	.....	
Kenosha, Wis.	31,576	7	.....	.....	8	.....	.....	.....	2	.....	
Kingston, N. Y.	26,771	9	.....	.....	2	.....	.....	.....	.....	.....	
Knoxville, Tenn.	38,676	.....	.....	.....	2	.....	.....	.....	1	.....	
La Crosse, Wis.	31,677	7	3	.....	.....	.....	.....	.....	2	.....	
Lexington, Ky.	41,097	18	.....	.....	3	.....	.....	.....	.....	2	
Lincoln, Nebr.	46,515	11	2	.....	1	.....	2	.....	1	1	
Long Beach, Cal.	27,587	8	.....	.....	4	.....	.....	.....	.....	.....	
Lynchburg, Va.	32,940	17	.....	.....	1	.....	1	.....	1	2	
Madison, Wis.	30,699	1	.....	.....	2	.....	5	.....	.....	.....	
McKeesport, Pa.	47,521	22	.....	.....	.....	.....	.....	.....	1	.....	
Medford, Mass.	26,234	3	.....	.....	5	.....	.....	.....	.....	.....	
Montclair, N. J.	26,318	3	.....	.....	3	.....	.....	.....	1	.....	
Nashua, N. H.	27,327	7	.....	.....	.....	.....	.....	.....	.....	.....	
Newburgh, N. Y.	29,603	8	1	.....	8	.....	.....	.....	.....	1	
New Castle, Pa.	41,133	.....	1	.....	.....	.....	1	.....	.....	.....	
Newport, Ky.	31,927	8	.....	.....	.....	.....	.....	.....	1	1	
Newport, R. I.	30,103	9	.....	.....	.....	.....	.....	.....	.....	.....	
Newton, Mass.	43,715	3	1	.....	2	.....	2	.....	.....	.....	
Niagara Falls, N. Y.	37,353	7	1	.....	3	.....	.....	.....	.....	.....	
Norristown, Pa.	31,401	7	.....	.....	.....	.....	.....	.....	.....	.....	
Ogden, Utah	31,404	10	.....	.....	.....	.....	.....	.....	.....	.....	
Orange, N. J.	33,080	7	.....	.....	.....	.....	3	.....	2	3	
Pasadena, Cal.	46,450	13	.....	.....	6	.....	.....	.....	.....	.....	
Perth Amboy, N. J.	41,185	4	.....	.....	1	.....	.....	.....	.....	.....	
Pittsfield, Mass.	38,629	4	.....	.....	9	.....	.....	.....	3	.....	
Portsmouth, Va.	39,651	15	.....	.....	1	.....	2	.....	.....	2	
Quincy, Ill.	36,798	6	.....	.....	2	.....	.....	.....	.....	.....	
Quincy, Mass.	38,136	6	1	.....	.....	.....	.....	.....	1	.....	
Racine, Wis.	46,486	14	1	.....	1	.....	1	.....	2	2	
Roanoke, Va.	43,284	14	.....	.....	2	.....	.....	.....	3	1	

# DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS— Continued.

City Reports for Week Ended June 30, 1917—Continued.

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
From 25,000 to 50,000 inhabit- ants—Continued.										
Rock Island, Ill.	28,926	13	1		2					
San Jose, Cal.	38,902				5		5			
Steubenville, Ohio.	27,445	10							1	
Superior, Wis.	46,226	8	1		1					
Taunton, Mass.	36,283	11					3			1
Topeka, Kans.	48,726	10	2		3				1	1
Waltham, Mass.	30,570	4	1		15				1	1
Watertown, N. Y.	29,894				12		1			
West Hoboken, N. J.	43,139	7	1		5		2		3	1
Wheeling, W. Va.	43,377	16			1				1	1
Williamsport, Pa.	33,809		1		3					
Wilmington, N. C.	29,892	19								
Winston-Salem, N. C.	31,155	15							5	1
Zanesville, Ohio.	30,863	5	1		3				1	
From 10,000 to 25,000 inhabitants:										
Alton, Ill.	22,874	8			1					
Ann Arbor, Mich.	15,010	15			17		1			
Braddock, Pa.	21,685				2				1	
Brownsville, Tex.	13,163	3								
Cairo, Ill.	15,794	6	1							
Clinton, Mass.	13,075	2								1
Concord, N. H.	22,669	10	2		20					
Dunkirk, N. Y.	20,743				4				1	2
Galesburg, Ill.	24,276	2	2							1
Harrison, N. J.	16,950				4					
Kearny, N. J.	23,539	7			1				2	
Kokomo, Ind.	20,930	8			1				5	
Long Branch, N. J.	15,395	9			5				2	1
Marinette, Wis.	14,610	10					1			
Melrose, Mass.	17,445	4	3		3					1
Morristown, N. J.	13,284	5					1		1	1
Muscatine, Iowa.	17,500				1		1			
Nanticoke, Pa.	23,126	9								
Newburyport, Mass.	15,243	4			4					
New London, Conn.	20,985	4			7				3	1
North Adams, Mass.	12,019	7			40		2		1	
Northampton, Mass.	19,926	6			10		1		1	
Plainfield, N. J.	23,805	3							2	
Pontiac, Mich.	17,524				6		6		1	1
Portsmouth, N. H.	11,666				1		2			
Rocky Mount, N. C.	12,067	7							1	
Rutland, Vt.	14,831	4	1		2		1			
Sandusky, Ohio.	20,193	7								
Saratoga Springs, N. Y.	13,821	5							2	
Steelton, Pa.	15,548	5			3				2	
Wilkinsburg, Pa.	23,228	6			2		1		1	
Woburn, Mass.	15,969	6								

<sup>1</sup> Population Apr. 15, 1910; no estimate made.

# FOREIGN.

## ARABIA.

### Further Relative to Plague—Aden.<sup>1</sup>

From May 3 to 14, 1917, 24 cases of plague were notified at Aden, Arabia, making a total from the beginning of the outbreak, April 8, 1917, of 69 cases.

## AUSTRIA-HUNGARY.

### Typhus Fever.

The following information relative to the occurrence of typhus fever in Austria-Hungary was taken from the Bulletin of the International Office of Public Hygiene for May, 1917:

*Austria.*—During the period from October 22 to December 17, 1916, 2,371 cases of typhus fever were reported in Austria, the greatest prevalence being in the Province of Galicia with 809 cases, Bohemia with 634 cases, and Styria with 243 cases.

*Hungary.*—From February 19 to March 25, 1917, there were notified in Hungary 1,381 cases of typhus fever, of which 83 occurred at Budapest and 12 in seven other urban communities, the remainder being distributed in 11 counties.

## CUBA.

### Communicable Diseases—Habana.

Communicable diseases have been notified at Habana as follows:

Disease.	June 11-20, 1917.		Remain- ing under treat- ment June 20, 1917.
	New cases.	Deaths.	
Diphtheria.....	8	.....	11
Leprosy.....	.....	.....	10
Malaria.....	18	.....	15
Measles.....	19	.....	19
Paratyphoid fever.....	.....	.....	1
Scarlet fever.....	1	.....	.....
Typhoid fever.....	13	3	33
Varicella.....	1	.....	1

<sup>1</sup> Public Health Reports, May 25, 1917, p. 822, and June 15, 1917, p. 961.



## GERMANY.

## Smallpox—Typhus Fever.

The following information relative to the occurrence of smallpox in Germany, was taken from the Bulletin of the International Office of Public Hygiene for May, 1917:

*Smallpox.*—During the period from March 18 to April 28, 1917, 715 cases of smallpox were reported in Germany. Of these, 241 were urban cases, the greatest prevalence being at Berlin with 106 cases, Hamburg with 50 cases, Leipzig with 20 cases, Charlottenburg with 18 and Bremen with 16 cases. The cases occurring outside of cities were reported from 32 government districts and other divisions of the empire.

*Typhus fever.*—From March 18 to April 28, 1917, 40 cases of typhus fever were notified in Germany. Of these, 13 occurred among the civil population, mainly in the district of Oppeln, and 27 in prison camps.

## PERU.

## Plague.

During the period from May 16 to 31, 1917, 15 cases of plague were notified in Peru. The cases were distributed according to departments as follows: Arequipa, 4 cases occurring at Mollendo; Callao, 1 case at city of Callao; Lambayeque, 2 cases at Chiclayo; Libertad, 7 cases at Salaverry, San Pedro, and Trujillo; Lima, 1 case at the city of Lima.

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

Reports Received During the Week Ended July 20, 1917.<sup>1</sup>

## CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India:				
Calcutta.....	Apr. 15-28.....	.....	97	
Java:				
East Java.....	Apr. 2-8.....	1	.....	
West Java.....	.....	.....	.....	Apr. 13-19, 1917: 1 case.
Batavia.....	Apr. 13-19.....	1	.....	
Philippine Islands:				
Provinces.....				May 27-June 2, 1917: Cases, 166; deaths, 116.
Albay.....	May 27-June 2..	22	14	
Bohol.....	..do.....	37	26	
Cebu.....	..do.....	56	33	
Sorsogon.....	..do.....	46	40	
Tayabas.....	..do.....	5	3	

<sup>1</sup> From medical officers of the Public Health Service, American consuls, and other sources.

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—** Continued.

**Reports Received During the Week Ended July 20, 1917—Continued.**

## **PLAGUE.**

Place.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Aden.....	May 3-14.....	24		Apr. 8-May 14, 1917: Cases, 69; deaths, 51.
China:				
Hongkong.....	May 13-26.....	8	5	
India:				
Calcutta.....	Apr. 15-28.....		13	
Java:				
East Java.....				Apr. 2-22, 1917: Cases, 18; deaths 18.
Surabaya.....	Apr. 2-22.....	13	13	
Surakarta.....	do.....	5	5	
Peru.....				May 16-31, 1917: Cases, 15.
Departments—				
Arequipa.....	May 16-31.....	4		At Mollendo.
Callao.....	do.....	1		At Callao.
Lambayeque.....	do.....	2		At Chiclayo.
Libertad.....	do.....	7		At Salaverry, San Pedro, and Trujillo.
Lima.....	do.....	1		At Lima.

## **SMALLPOX.**

Brazil:				
Bahia.....	May 6-12.....	1		
Rio de Janeiro.....	May 13-26.....	35	8	
Canada:				
Nova Scotia—				
Port Hawkesbury.....	June 24-30.....			Present in district.
China:				
Amoy.....	May 13-19.....			Present.
Changsha.....	May 27-June 2.....	5		
Dairen.....	May 13-June 2.....	11	1	
Hongkong.....	May 20-26.....	6	5	
Tsingtao.....	May 30-June 9.....	4	1	
Germany.....				Mar. 18-Apr. 28, 1917: Cases, 715. In cities and 32 States and districts.
Berlin.....	Mar. 18-Apr. 28.....	106		
Bremen.....	do.....	16		
Charlottenburg.....	do.....	18		
Hamburg.....	do.....	50		
Leipzig.....	do.....	20		
Lübeck.....	do.....	2		
Munich.....	do.....	10		
Stuttgart.....	do.....	1		
India:				
Calcutta.....	Apr. 15-28.....		3	
Japan:				
Kobe.....	June 11-17.....	31	8	
Osaka.....	June 1-10.....	48	18	
Yokohama.....	May 21-27.....		1	
Java:				
East Java.....	Apr. 2-29.....	11	1	
Mid-Java.....	Apr. 1-21.....	16		
West Java.....				Apr. 13-May 10, 1917: Cases, 46; deaths, 7.
Batavia.....	Apr. 13-May 3.....	11	2	
Mexico:				
Mexico City.....	June 3-16.....	95		
Monterey.....	June 18-24.....		24	
Russia:				
Petrograd.....	Feb. 18-Mar. 10.....	186		
Vladivostok.....	Apr. 29-May 21.....	12	3	
Spain:				
Madrid.....	May 1-31.....		3	
Seville.....	do.....		5	
Valencia.....	June 3-16.....	2		
Tunisia:				
Tunis.....	June 2-8.....	2		

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—** Continued.

## **Reports Received During the Week Ended July 20, 1917—Continued.**

### **TYPHUS FEVER.**

Place.	Date.	Cases.	Deaths.	Remarks.
Austria-Hungary:				
Austria.....				Oct. 22-Dec. 17, 1917: Cases, 2,371.
Bohemia.....	Oct. 22-Dec. 17....	634		
Galicia.....	do.....	809		
Lower Austria.....	do.....	47		
Moravia.....	do.....	617		
Silesia.....	do.....	16		
Styria.....	do.....	243		
Upper Austria.....	do.....	5		
Hungary.....				Feb. 19-Mar. 25, 1917: Cases, 1,381.
Budapest.....	Feb. 19-Mar. 25....	83		
China:				
Tsingtao.....	May 30-June 9....	1		
Greece:				
Saloniki.....	May 13-19.....		3	
Java:				
Mid-Java.....	Apr. 1-30.....	7	2	
West Java.....				Apr. 13-May 10, 1917: Cases, 36.
Batavia.....	Apr. 13-May 10....	22		
Mexico:				
Mexico City.....	June 3-16.....	193		
Russia:				
Petrograd.....	Feb. 18-Mar. 10....	16	3	
Vladivostok.....	May 15-21.....	3		
Spain:				
Madrid.....	May 1-31.....		2	

## **Reports Received From June 30 to July 13, 1917.**

### **CHOLERA.**

Place.	Date.	Cases.	Deaths.	Remarks.
India:				
Bassein.....	Apr. 1-21.....		7	
Calcutta.....	Apr. 23-May 5....		56	
Madras.....	Apr. 22-23.....	1	1	
Rangoon.....	Apr. 21-May 5....	24	10	
Philippine Islands:				May 20-26, 1917: Cases, 191; deaths, 88.
Provinces.....				
Albay.....	May 20-26.....	19	10	
Bohol.....	do.....	86	42	
Cebu.....	do.....	43	20	
Sorsogon.....	do.....	42	15	
Tayabas.....	do.....	1	1	

### **PLAGUE.**

Place.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Aden.....	May 3-14.....		24	
Ceylon:				
Colombo.....	Apr. 8-May 14....	37	30	
China:				Present and in vicinity.
Amoy.....	Apr. 29-May 5....			
Kwangtung Province:				Present.
Ta-pu district.....	June 2.....			Jan. 1-May 17, 1917: Cases, 231; deaths, 116.
Egypt:				
Suez.....	May 12-17.....	4	2	
Provinces—				
Fayoum.....	May 11-17.....	12	6	
Girgeh.....	May 17.....		1	
Minieh.....	May 12-15.....	2	2	
Siout.....	May 12.....	3	1	
Great Britain:				
London.....	May 3-8.....	2		2 in hospital at port. From S. S. Sardinia from Australian and oriental ports.

# **CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—** Continued.

## **Reports Received From June 30 to July 13, 1917—Continued.**

### **PLAGUE—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
<b>India</b> .....				Apr. 15-May 5, 1917: Cases, 26,206; deaths, 21,469.
Bassein.....	Apr. 1-21.....		31	
Bombay.....	Apr. 22-28.....	115	96	
Calcutta.....	Apr. 29-May 5.....		10	
Henzada.....	Apr. 1-21.....		20	
Karachi.....	Apr. 22-May 5.....	229	214	
Madras Presidency.....	Apr. 22-May 12.....	153	126	
Mandalay.....	Apr. 8-14.....		1	
Moulmein.....	Apr. 1-21.....		41	
Myingyan.....	Apr. 1-7.....		1	
Rangoon.....	Apr. 15-May 5.....	75	72	
Toungoo.....	Apr. 8-14.....		2	
<b>Siam:</b> .....				
Bangkok.....	Apr. 22-May 12.....	8	8	

### **SMALLPOX.**

<b>Australia:</b> .....					Apr. 27-May 10, 1917: Cases, 6.
New South Wales.....					
Brewarrina.....	Apr. 27-May 10.....	4			
Quambone.....	do.....	2			
<b>Queensland—</b> .....					
Thursday Island Quarantine Station.....	May 9.....	1			From s. s. St. Albans from Kobe via Hongkong. Vessel proceeded to Townsville, Brisbane, and Sydney, in quarantine.
<b>Canada:</b> .....					
Manitoba—					
Winnipeg.....	June 10-16.....	1			
Nova Scotia—					
Halifax.....	June 18-23.....	2			
Port Hawkesbury.....	June 17-28.....				Present in district.
<b>Ceylon:</b> .....					
Colombo.....	May 6-12.....	1			
<b>China:</b> .....					
Amoy.....	Apr. 29-May 5.....				Present and in vicinity.
Antung.....	May 21-27.....	1			Present.
Chungking.....	May 6-26.....				Do.
Harbin.....	Apr. 23-May 6.....	7			On Chinese Eastern Railway.
Hongkong.....	May 6-12.....	1	1		
Manchuria Station.....	Apr. 23-29.....	1			Do.
Mukden.....	May 27-June 2.....				Present.
Shanghai.....	May 21-June 3.....	8	16		Cases foreign; deaths among natives.
Tientsin.....	May 13-26.....	5			
Tsitsihar Station.....	Apr. 16-22.....	1			On Chinese Eastern Railway.
Tsingtao.....	May 22-29.....	4			At another station on railway, 1 case.
<b>Egypt:</b> .....					
Alexandria.....	Apr. 30-May 27.....	20	6		
<b>India:</b> .....					
Bombay.....	Apr. 22-28.....	26	9		
Calcutta.....	Apr. 29-May 5.....		7		
Karachi.....	Apr. 22-May 5.....	4	2		
Madras.....	Apr. 22-May 12.....	30	20		
Rangoon.....	Apr. 15-May 5.....	17	4		
<b>Italy:</b> .....					
Turin.....	May 21-June 3.....	20	8		
<b>Japan:</b> .....					
Kobe.....	May 27-June 10.....	19	7		
Nagasaki.....	May 28-June 3.....	1			
Osaka.....	May 16-June 5.....	114	37		
<b>Philippine Islands:</b> .....					
Manila.....	May 13-19.....	5			Varioloid.
<b>Portugal:</b> .....					
Lisbon.....	May 13-26.....	4			
<b>Russia:</b> .....					
Riga.....	Mar. 11-May 5.....	2			Jan. 1-31, 1917: Cases, 7.
Vladivostok.....	Mar. 15-21.....	11	4		
<b>Straits Settlements:</b> .....					
Penang.....	Mar. 18-May 12.....	5	2		

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

**Reports Received From June 30 to July 13, 1917—Continued.**

**SMALLPOX—Continued.**

Place.	Date.	Cases.	Deaths.	Remarks.
Sweden: Stockholm .....	May 20-26 .....	1		
Turkey in Asia: Trebizond .....	Feb. 25-Apr. 13 .....		15	
Union of South Africa: Johannesburg .....	Mar. 12-24 .....	4		

**TYPHUS FEVER.**

China. Tsingtao .....	May 20-29 .....	1		
Egypt: Alexandria .....	Apr. 30-May 27 .....	830	232	
Greece: Saloniki .....	May 6-12 .....		12	
Russia: Riga .....				Jan. 1-31, 1917: Case, 1.
Vladivostok .....	Mar. 29-Apr. 4 .....	2		

**YELLOW FEVER.**

Mexico: Yucatan, State— Peto .....	June 23 .....	1	1	In person recently arrived from Mexico City.
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