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COOPERATIVE RURAL HEALTH WORK OF THE PUBLIC HEALTH SERVICE IN THE FISCAL YEAR 1923.[1]

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In the fiscal year ended June 30, 1923, the Public Health Service cooperated in demonstration projects in rural health work in 60 counties, or districts comparable to counties, in 17 States, as follows:

Alabama.—Colbert, Lauderdale, Madison, Marion, Talladega, and Walker Counties.

California.—San Joaquin County.

Georgia.—Clarke, Floyd, Glynn, Laurens, and Walker Counties.

Iowa.—Dubuque County.

Kansas.—Cherokee County.

Kentucky.—Mason County.

Louisiana.—Washington Parish.

Massachusetts.—Cape Cod district.

Mississippi.—Harrison County.

Missouri.—Cape Girardeau, Dunklin, Gentry, Greene, Jasper, Monroe, New Madrid, Nodaway, Pettis, Polk, and St. Francois Counties.

Montana.—Cascade and Lewis and Clark Counties.

New Mexico.—Santa Fe and Union Counties.

North Carolina.—Cumberland, Edgecombe, Sampson, and Surry Counties.

Oklahoma.—Ottawa County.

Vermont.—Eighth sanitary district.

Virginia.—Arlington, Carroll, Charlotte, Chesterfield, Grayson, Greensville, Henry, Mathews, Nansemond, Prince Edward, Pulaski, Roanoke, Smyth, Wise, and Wythe Counties.

West Virginia.—Hancock, Logan, Marion, Mingo, Preston, and Taylor Counties.

The results were entirely in support of the conclusions in the reports on this activity in the fiscal years 1920,[2] 1921,[3] and 1922.[4]

[1] This report applies to work in rural sanitation, which is conducted in support of and as a part of whole-time local official health service. It does not include all cooperative activities of the Public Health Service in rural communities.

[2] Reprint No. 615, from Public Health Reports of Oct. 1, 1920, p. 15.

[3] Reprint No. 699, from Public Health Reports of Oct. 7, 1921, p. 17.

[4] Reprint No. 788, from Public Health Reports of Sept. 29, 1922, p. 22.

Plan of Work.

The plan of the work was the same as that followed in each of the three preceding fiscal years and is described in previous reports. (Reprints Nos. 615 and 699.) The appropriation for the support of this activity is "for special studies of and demonstration work in rural sanitation." In each demonstration project the rural sanitation work is made a part of a well-balanced, comprehensive program of health work and is conducted in cooperation with the State and local health authorities. The cooperation is offered upon the condition that whole-time local (county or district) health service be established. Part of the money (usually over 50 per cent) for the support of the work must be furnished from local governmental sources. The whole-time local (county or district) health officer, or sanitary officer, is given a status of field agent in the Public Health Service, and in some of the States a status of deputy State health officer, and serves as director of the demonstration project. He must present qualifications for the work acceptable to each of the cooperating agencies. The sanitary inspectors, health nurses, and any other assistants in the county health service, work under his direction. By having the work conducted on such cooperative basis unnecessary overhead expense, friction, and lost motion are prevented. The average project presents a remarkable example of economy with efficiency in public business. All salient branches of health work, such as acute communicable disease-control measures, general sanitation of private homes and public places, malaria prevention, tuberculosis control, goiter prevention, infant and maternity hygiene, venereal-disease prevention, school hygiene, etc., are carried out. Attention is concentrated upon the different branches of the work in what appears to be the most advantageous sequence. The various activities are dovetailed with one another so that every dollar invested and every unit of energy expended may yield the biggest possible dividend in disease prevention and health promotion. By having the different branches of health work needed in the locality carried out under one director, with only one overhead expense, the cost is only a fraction of what it would be for equally effective work if performed by specialized field forces operating separately in each of the branches. The plan followed during the last four years was evolved in the course of field experience. It has proved economical and effective under a range of conditions sufficiently wide to indicate that it might be applied with advantage to all rural communities in the United States. No radical change in it appears advisable; but a wide extension of it, as soon as practicable, appears exceedingly important.

Expenditures.

The appropriation for the rural health work of the Public Health Service in the fiscal year 1923 was again only $50,000. At the termination of the fiscal year 1922, $13,308.42 unexpended under contracts made during that year remained. Thus, $63,308.42 was available for the support of the activity in the fiscal year 1923. Of this sum, $46,371.14 was expended in allotments for cooperative projects in counties, and $4,277.78 was expended for administration, supervision of local projects, and special studies of the problem of rural sanitation. The unexpended balance of the total sum available was included in allotments to some of the cooperative projects which, because of various local circumstances, could not be completed by the end of the fiscal year. With the existing differences between the Federal fiscal year and the fiscal years of some of the States and localities in which the work is done, it would not be practicable, without lessening the degree of economy striven for, to arrange contracts so that the allotment of Federal funds to every project would be expended exactly by the end of the Federal fiscal year.

The total expenditure for the support of the 60 local projects was $453,339.86 in the fiscal year 1923. Of this sum, an aggregate of $336,973.45 was provided from State, county, and municipal governmental sources; $69,995.27 came from civic sources, such as local health associations, local Red Cross chapters, and the International Health Board; and $46,371.14 came from the rural sanitation funds of the Public Health Service. Thus, this investment of Federal funds was met with odds of nearly 9 to 1. The proportion of the expenses covered with funds from local sources is significant; it gives some idea of the stimulating effect of the cooperation of the Federal Government and suggests what might be accomplished in this vitally important, nation-wide field if sufficient funds were made available to permit the Federal Government to extend this plan of cooperation.

The money expended from the different sources for the support of the projects, the scope, and some of the results of the work are presented in the accompanying tabular statement.

Compilation of data, by counties, on cooperative demonstration work in rural sanitation in the fiscal year 1923.

Counties (or districts)	Arlington, Va.	Cape Cod Health District, Mass.	Cape Girardeau, Mo.	Cascade, Mont.	Cherokee, Kans.	Clarke, Ga.	Colbert, Ala.	Cumberland, N. C.	Dubuque, Iowa.	Dunklin, Mo.
Period of work in fiscal year 1923	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to Feb. 28, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.
Expenditures:										
(*a*) Rural sanitation fund (P. H. S.)	$2,399.92	$2,499.96	$800.00	$2,039.77	$300.00	$1,699.97	$300.00	$999.96	$300.00	$600.00
(*b*) State	374.94	.....	700.00	.....	.....	.....	2,315.00	1,000.00	315.00	2,550.00
(*c*) County	19,324.50	.....	1,050.00	8,039.40	5,931.80	6,493.94	4,951.17	7,902.00	7,981.17	2,353.01
(*d*) Municipalities	.....	6,705.76	420.00	8,039.39	.....	4,722.19	.....	.....	9,306.17	.....
(*e*) Other agencies	.....	.....	1,330.00	195.85	6,182.32	357.94	600.00	200.00	.....	1,800.00
Total	22,099.36	9,205.72	4,300.00	18,314.41	12,414.12	13,274.04	8,166.17	10,101.96	17,882.34	7,303.01
1. Educational:										
(*a*) Number of lectures	8	69	109	29	19	144	125	215	34	262
(*b*) Attendance at lectures	920	1,979	4,453	1,564	1,050	5,099	7,696	18,100	5,309	10,312
(*c*) Bulletins distributed	1,317	2,701	1,707	1,261	9,895	12,904	11,168	4,700	32,612	991
(*d*) Newspaper articles	57	20	91	73	60	17	35	10	275	430
2. Sanitary inspections:										
(*a*) Private premises	4,053	159	66	.....	74	7,553	1,321	4,737	1,319	2
(*b*) Schools, churches, stores	722	172	61	460	419	677	101	780	1,694	53
3. Special inspections:										
(*a*) Food product places	1,227	2,743	34	113	268	229	574	2,981	678	.....
4. Life extension examinations	36	.....	48	55	6,077	.....	164	52	.....	.....
5. Communicable disease control:										
(*a*) Visits to cases, contacts, and suspects	3,305	196	325	336	44	602	389	590	1,788	158
(*b*) Cases quarantined	2,818	183	138	221	1,098	176	60	654	283	39
6. Venereal disease prevention:										
(*a*) Suspects examined	8	.....	12	38	.....	7	5	476	330	32
(*b*) Prophylactic treatments	15	.....	.....	.....	5	.....	.....	.....	.....	.....
(*c*) Curative treatments	17	1	26	130	21	.....	.....	1,064	688	2
7. Persons treated for removal of hookworm	5	.....	.....	.....	.....	.....	.....	.....	.....	.....
8. Schick tests	.....	275	.....	863	.....	395	.....	.....	.....	.....
9. Cows tuberculin tested	1,085	312	2	.....	1,020	41	.....	2,572	3,365	.....
10. Immunization:										
(*a*) Complete antityphoid inoculations	62	.....	43	40	65	1,246	1,642	1,125	.....	78
(*b*) Antismallpox vaccinations	388	.....	41	394	195	1,019	.....	1,627	.....	13
(*c*) Complete diphtheria toxin-antitoxin inoculations	.....	29	.....	2,484	.....	175	.....	14	.....	.....
11. Antimalaria work	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)

12. Child hygiene:										
Prenatal—										
(a) Cases given advice	98	.....	31	1	274	48	133	37	155	17
(b) Examinations	40	.....	12	.....	.....	25	.....	.....	.....	.....
(c) Office consultations	19	.....	62	2	363	.....	7	6	.....	.....
(d) Home visits	38	.....	86	4	362	104	1,203	167	587	3
Infant and preschool—										
(a) Babies and children examined	1,773	22	355	653	261	116	355	.....	.....	15
(b) Examinations	3,440	29	375	698	261	115	355	.....	.....	18
(c) Office consultations, mothers	1,338	.....	103	33	22	.....	24	26	.....	9
(d) Group conferences with mothers	134	10	60	9	15	5	143	.....	.....	1
(e) Home visits	905	20	152	545	1,204	311	1,297	1,144	478	10
School—										
(a) Children examined	1,838	2,001	1,063	5,189	7,791	2,959	3,604	1,891	13,608	5,514
(b) Found defective	1,075	1,184	587	3,532	6,258	1,746	1,790	1,230	7,920	4,080
(c) Defects found	3,620	1,657	2,066	6,165	6,283	3,181	2,475	.....	10,465	7,049
(d) Consultations, parents (office and school)	31	93	78	.....	527	.....	136	242	3,960	35
(e) Home visits	1,928	245	225	.....	626	153	1,221	138	2,005	93
Nutritional classes—										
(a) Cases attending	514	60	1	1,475	10	236	.....	.....	129	.....
13. Laboratory examinations:										
Positive	101	26	4	178	17	371	46	448	471	26
Negative	177	160	21	800	32	574	143	875	2,488	372
Total	278	186	25	978	49	945	189	1,323	2,959	398
14. Results:										
(a) Sanitary privies installed—										
Septic or L. R. S.	.....	6	1	.....	8	.....	1	4	6	.....
Water-tight vault	.....	10	.....	.....	17	.....	.....	.....	3	.....
Bucket and box	429	.....	.....	.....	58	20	23	.....	.....	.....
Pit	61	.....	19	.....	127	246	107	28	20	.....
Total	490	16	20	.....	210	266	131	32	29	.....
(b) Privies restored to sanitary type	482	.....	.....	.....	116	77	2	1,477	89	.....
(c) Septic tanks installed	224	3	.....	.....	.....	5	.....	1	13	1
(d) New sewer connections	374	1	30	91	.....	169	8	3	322	.....
(e) New water connections	344	1	2	74	.....	166	.....	4	439	.....
(f) Wells improved	73	2	1	.....	119	2	8	2	21	.....
(g) Springs improved	9	.....	.....	.....	.....	.....	.....	.....	.....	.....
(h) Public milk supplies radically improved	22	149	7	.....	.....	2	43	12	50	.....
(i) Treatments induced for correction physical defects school children	2,766	1,528	263	873	1,110	558	231	.....	2,562	384
(j) Nutritional cases improved	237	.....	2	83	.....	170	176	.....	183	2
(k) Convictions for violation sanitary laws	170	.....	.....	.....	.....	16	30	21	17	.....
(l) Nuisances corrected	377	14	51	.....	272	261	166	387	339	1

[1] None. [2] Considerable. [3] Little.

Compilation of data, by counties, on cooperative demonstration work in rural sanitation in the fiscal year 1923—Continued.

Counties (or districts)	Edgecombe, N. C.	Eighth Sanitary District of Vermont.	Floyd, Ga.	Gentry, Mo.	Glynn, Ga.	Greene, Mo.	Hancock, W. Va.	Harrison, Miss.	Jasper, Mo.	Lauderdale, Ala.
Period of work in fiscal year 1923	July 1, 1922, to June 30, 1923.	July 1, 1922, to Mar. 15, 1923.	June 1, to June 30, 1923.	Oct. 1, 1922, to June 30, 1923.	July 1 to Dec. 31, 1922, and June 16-30, 1923.	July 1, 1922, to June 30, 1923.	May 1, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, to Dec. 31, 1922.	July 1, 1922, to June 30, 1923.
Expenditures:										
(*a*) Rural sanitation fund (P. H. S.)	$758.33	$1,760.00	$25.00	$450.00	$162.50	$502.46	$216.66	$1,200.00	$931.68	$1,174.92
(*b*) State	1,504.11	2,951.54	.....	900.00	.....	750.00	166.66	3,001.08	.....	1,200.00
(*c*) County	4,066.18	.....	609.40	2,583.53	6,489.08	3,600.00	589.93	13,022.47	850.99	4,495.46
(*d*) Municipalities	.....	.....	.....	.....	1,221.66	.....	.....	577.83	.....	.....
(*e*) Other agencies	489.99	110.00	200.00	1,350.00	.....	9,845.31	166.66	389.17	4,724.56	2,193.52
Total	6,818.61	4,821.54	834.40	5,283.53	7,873.24	14,697.77	1,139.91	18,190.55	6,507.23	9,063.90
1. Educational:										
(*a*) Number of lectures	12	18	6	114	18	315	11	166	22	134
(*b*) Attendance at lectures	1,050	725	170	2,885	420	9,565	408	18,221	887	9,183
(*c*) Bulletins distributed	1,275	7,795	157	42	731	7,675	47	7,702	1,506	9,979
(*d*) Newspaper articles	1	1	4	77	13	244	62	181	.....	13
2. Sanitary inspections:										
(*a*) Private premises	1,275	18	4	4	53	56	76	6,406	91	11,006
(*b*) Schools, churches, stores	68	463	4	82	16	166	4	1,544	83	296
3. Special inspections:										
(*a*) Food product places	.....	189	6	.....	598	9	6	256	53	275
4. Life extension examinations	8	.....	.....	.....	.....	33	.....	.....	.....	455
5. Communicable disease control:										
(*a*) Visits to cases, contacts, and suspects	594	10	25	144	61	2,001	32	327	.....	697
(*b*) Cases quarantined	1,513	52	34	105	7	229	81	212	.....	412
6. Venereal disease prevention:										
(*a*) Suspects examined	.....	1	55	.....	138	386	1	163	161	30
(*b*) Prophylactic treatments	.....	27	2	.....	.....	.....	.....	.....	.....	.....
(*c*) Curative treatments	201	.....	94	.....	250	4,742	.....	104	127	12
7. Persons treated for removal of hookworm	2	.....	.....	.....	48	.....	.....	251	.....	1
8. Schick tests	.....	1,071	.....	.....	.....	.....	.....	323	.....	.....
9. Cows tuberculin tested	71	.....	.....	.....	132	.....	.....	344	223	185
10. Immunization:										
(*a*) Complete antityphoid inoculations	518	.....	539	2	432	19	.....	18	79	4,331
(*b*) Antismallpox vaccinations	205	.....	22	.....	428	27	.....	41	27	1
(*c*) Complete diphtheria toxin-antitoxin inoculations	7	346	1	.....	5	16	.....	22	.....	7
11. Antimalaria work	(1)	(1)	(1)	(1)	(2)	(2)	(1)	(2)	(1)	(2)

12. Child hygiene:										
Prenatal—										
(a) Cases given advice	37	10	.....	1	18	74	3	190	32	
(b) Examinations	.....	.....	.....	.....	18	2	.....	115	.....	18
(c) Office consultations	.....	.....	1	.....	.....	33	.....	19	25	19
(d) Home visits	57	10	9	.....	28	96	3	183	37	243
Infant and preschool—										
(a) Babies and children examined	.....	51	73	57	.....	1,133	38	946	115	622
(b) Examinations	.....	51	73	62	.....	1,146	38	946	144	626
(c) Office consultations, mothers	8	20	.....	43	.....	936	.....	75	.....	27
(d) Group conferences with mothers	.....	.....	5	.....	.....	108	.....	24	31	36
(e) Home visits	454	72	10	.....	2	638	30	1,079	56	680
School—										
(a) Children examined	191	1,597	46	2,378	939	3,993	1,735	1,395	203	5,189
(b) Found defective	.....	1,169	15	997	395	3,698	993	867	155	3,330
(c) Defects found	.....	1,764	26	1,687	476	8,795	1,650	1,341	284	5,70
(d) Consultations, parents (office and school)	.....	54	.....	19	52	342	62	272	3	63
(e) Home visits	45	195	.....	.....	1,091	763	179	1,406	86	301
Nutritional classes—										
(a) Cases attending	.....	.....	.....	.....	.....	.....	.....	92	.....	13
13. Laboratory examinations:										
Positive	233	36	33	7	110	90	.....	502	.....	368
Negative	372	556	6	31	286	115	.....	568	.....	936
Total	605	592	39	38	396	205	.....	1,070	.....	1,304
14. Results:										
(a) Sanitary privies installed—										
Septic or L. R. S	.....	.....	.....	.....	.....	.....	.....	5	17	.....
Water-tight vault	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Bucket and box	4	.....	.....	.....	.....	.....	.....	.....	.....	80
Pit	23	.....	.....	.....	.....	12	.....	54	10	75
Total	27	.....	.....	.....	.....	12	.....	60	27	155
(b) Privies restored to sanitary type	771	12	.....	5	.....	.....	.....	790	.....	96
(c) Septic tanks installed	.....	.....	3	.....	.....	.....	2	89	.....	21
(d) New sewer connections	10	.....	.....	1	.....	.....	.....	12	37	99
(e) New water connections	6	.....	.....	.....	.....	.....	.....	39	53	69
(f) Wells improved	.....	.....	.....	.....	.....	10	.....	43	14	18
(g) Springs improved	.....	.....	.....	.....	.....	.....	.....	3	4	2
(h) Public milk supplies radically improved	.....	.....	.....	.....	13	.....	.....	18	6	1
(i) Treatments induced for correction physical defects school children	2	544	91	17	191	833	36	483	11	34
(j) Nutritional cases improved	.....	.....	.....	1	16	4	.....	92	.....	.....
(k) Convictions for violation sanitary laws	6	.....	.....	.....	.....	.....	2	27	.....	.....
(l) Nuisances corrected	1	35	15	3	.....	82	33	7	16	180

[1] None. [2] Considerable. [3] Little.

Compilation of data, by counties, on cooperative demonstration work in rural sanitation in the fiscal year 1923—Continued.

Counties (or districts)	Laurens, Ga.	Lewis and Clark, Mont.	Logan, W. Va.	Madison, Ala.	Marion, Ala.	Marion, W. Va.	Mason, Ky.	Mingo, W. Va.	Monroe, Mo.	Nansemond, Va.
Period of work in fiscal year 1923	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to Mar. 15, 1923.	Jan. 1, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, to Dec. 31, 1922.	July 1, to Dec. 31, 1922.	Nov. 1, 1922, to June 30, 1923.
Expenditures:										
(*a*) Rural sanitation fund (P. H. S.)	$300.00	$2,639.77	$417.50	$2,203.30	$80.00	$150.00	$1,620.00	$150.00	$600.00	$200.00
(*b*) State	.....	1,800.00	2,319.55	999.96	690.00	.....	1,797.13	1,012.37	600.00	1,574.04
(*c*) County	3,900.00	1,806.70	6,505.93	6,416.13	739.25	3,202.61	3,594.26	2,719.66	1,738.73	3,148.10
(*d*) Municipalities	.....	1,806.69	.....	3,208.32	.....	.....	.....	.....	.....	1,574.05
(*e*) Other agencies	.....	.....	986.22	3,928.41	.....	.....	1,977.13	1,012.36	600.00	1,574.07
Total	4,200.00	8,053.16	10,229.20	16,756.12	1,509.25	3,352.61	8,988.52	4,894.39	3,538.73	8,070.26
1. Educational:										
(*a*) Number of lectures	281	26	28	113	33	40	275	81	20	54
(*b*) Attendance at lectures	18,826	332	2,478	9,080	4,390	2,751	6,627	4,457	230	2,587
(*c*) Bulletins distributed	4,478	1,099	9,489	9,418	645	5,088	1,849	4,180	684	4,343
(*d*) Newspaper articles	161	117	17	276	20	23	230	22	4	76
2. Sanitary inspections:										
(*a*) Private premises	354	390	3,546	11,906	335	49	229	512	29	1,547
(*b*) Schools, churches, stores	194	211	51	228	127	48	213	10	93	1,511
3. Special inspections:										
(*a*) Food product places	390	613	79	840	91	3	2,321	.....	.....	179
4. Life extension examinations	24	.....	.....	257	.....	15	.....	23	21	.....
5. Communicable disease control:										
(*a*) Visits to cases, contacts, and suspects	141	238	312	1,240	.....	120	187	394	37	325
(*b*) Cases quarantined	42	67	5	246	.....	152	47	106	30	130
6. Venereal disease prevention:										
(*a*) Suspects examined	154	11	9	457	.....	23	74	.....	1	3
(*b*) Prophylactic treatments	30	4	.....	.....	.....	.....	.....	.....	.....	.....
(*c*) Curative treatments	132	.....	31	3,336	.....	66	579	.....	.....	.....
7. Persons treated for removal of hookworm	291	.....	.....	.....	182	.....	.....	.....	.....	12
8. Schick tests	30	.....	.....	109	.....	.....	.....	165	.....	.....
9. Cows tuberculin tested	52	.....	.....	369	.....	.....	4,449	.....	.....	43
10. Immunization:										
(*a*) Complete antityphoid inoculations	1,294	.....	1,014	389	160	.....	.....	14	20	.....
(*b*) Antismallpox vaccinations	363	40	566	1,065	.....	5	.....	3	.....	1,724
(*c*) Complete diphtheria toxin-antitoxin inoculations	114	.....	12	112	.....	.....	.....	81	.....	139
11. Antimalaria work	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)

12. Child hygiene:										
Prenatal—										
(a) Cases given advice	276	27	126	386	.....	17	140	16	.....	10
(b) Examinations	207	.....	.....	.....	.....	3	165	.....	.....	.....
(c) Office consultations	143	.....	.....	.....	.....	22	103	1	.....	.....
(d) Home visits	93	29	141	422	.....	5	166	14	.....	10
Infant and preschool—										
(a) Babies and children examined	124	477	990	1,527	.....	30	331	67	137	30
(b) Examinations	140	785	990	1,581	.....	30	454	67	147	30
(c) Office consultations, mothers	67	753	13	101	.....	41	148	.....	49	.....
(d) Group conferences with mothers	14	14	44	45	.....	.....	31	.....	205	.....
(e) Home visits	47	197	1,818	1,700	.....	.....	452	88	97	30
School—										
(a) Children examined	1,859	2,433	4,858	6,573	5	2,499	3,862	299	1,274	3,826
(b) Found defective	1,046	1,992	2,420	3,820	5	1,294	1,666	266	987	1,007
(c) Defects found	1,086	4,497	4,651	5,796	4	1,606	2,711	630	1,840	1,330
(d) Consultations, parents (office and school)	79	150	.....	.....	3	301	272	25	44	.....
(e) Home visits	70	253	3,670	107	3	66	642	50	48	737
Nutritional classes—										
(a) Cases attending	64	.....	.....	433	.....	.....	.....	.....	.....	17
13. Laboratory examinations:										
Positive	448	59	96	865	218	29	104	44	.....	66
Negative	532	204	120	2,432	147	8	734	44	.....	133
Total	980	263	216	3,297	365	37	838	88	.....	199
14. Results:										
(a) Sanitary privies installed—										
Septic or L. R. S	9	54	.....	67	1	.....	8	48	38	.....
Water-tight vault	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bucket and box	6	.....	.....	341	.....	14	.....	.....	4	79
Pit	102	.....	20	193	144	27	.....	.....	.....	373
Total	118	54	20	601	145	41	8	48	42	452
(b) Privies restored to sanitary type	88	.....	206	814	31	.....	79	55	.....	2,290
(c) Septic tanks installed	4	.....	.....	2	3	5	.....	.....	.....	6
(d) New sewer connections	41	29	2	422	.....	.....	55	10	.....	13
(e) New water connections	50	24	50	72	.....	.....	24	.....	.....	.....
(f) Wells improved	39	.....	29	71	15	13	17	.....	.....	4
(g) Springs improved	9	.....	.....	6	.....	.....	.....	.....	.....	.....
(h) Public milk supplies radically improved	24	171	.....	58	.....	1	16	.....	.....	13
(i) Treatments induced for correction physical defects school children	345	137	241	1,148	.....	.....	932	.....	42	1,008
(j) Nutritional cases improved	111	.....	.....	.....	.....	.....	.....	.....	.....	17
(k) Convictions for violation sanitary laws	6	1	.....	136	.....	.....	.....	8	.....	4
(l) Nuisances corrected	50	273	378	741	14	69	353	55	3	289

[1] None. [2] Considerable. [3] Little.

Compilation of data, by counties, on cooperative demonstration work in rural sanitation in the fiscal year 1923—Continued.

Counties (or districts)	New Madrid, Mo.	Nodaway, Mo.	Ottawa, Okla.	Pettis, Mo.	Polk, Mo.	Preston, W. Va.	St. Francois, Mo.	Sampson, N. C.	San Joaquin, Calif.	Santa Fe, N. Nex.
Period of work in fiscal year 1923	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	Jan. 1 to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	May 1 to June 30, 1923.	Oct. 1, 1922, to June 30, 1923.
Expenditures:										
(*a*) Rural sanitation fund (P. H. S.)	$1,200.00	$1,500.00	$300.00	$300.00	$1,200.00	$412.50	$600.00	$300.00	$50.00	$825.00
(*b*) State	1,200.00	1,437.50	.....	2,450.00	1,200.00	3,335.76	2,700.00	2,499.96	.....	.....
(*c*) County	3,600.00	5,216.99	2,841.63	3,240.05	3,255.63	3,142.33	5,886.79	3,085.90	11,933.28	3,327.04
(*d*) Municipalities	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
(*e*) Other agencies	1,200.00	1,800.00	3,137.65	7,922.43	3,177.55	.....	5,069.25	.....	.....	402.00
Total	7,200.00	9,954.49	6,279.28	13,912.48	8,833.18	6,890.59	14,256.04	5,885.86	11,983.28	4,554.04
1. Educational:										
(*a*) Number of lectures	101	394	26	169	398	66	210	87	110	54
(*b*) Attendance at lectures	3,588	8,441	580	4,211	11,146	2,490	16,114	6,555	2,839	3,756
(*c*) Bulletins distributed	646	6,127	1,535	6,865	8,345	715	6,380	1,164	1,700	754
(*d*) Newspaper articles	91	461	10	98	151	10	134	13	68	85
2. Sanitary inspections:										
(*a*) Private premises	4	61	195	37	430	91	844	5	145	1,421
(*b*) Schools, churches, stores	165	226	106	171	245	34	109	23	86	171
3. Special inspections:										
(*a*) Food product places	.....	5	70	12	102	35	81	6	1,763	267
4. Life extension examinations	46	.....	.....	31	344	4	17	14	.....	.....
5. Communicable disease control:										
(*a*) Visits to cases, contacts, and suspects	389	269	129	379	526	492	887	295	1,895	275
(*b*) Cases quarantined	18	160	89	87	164	582	350	899	53	433
6. Venereal disease prevention:										
(*a*) Suspects examined	92	.....	114	461	3	15	45	132	32	34
(*b*) Prophylactic treatments	8	.....	.....	.....	.....	.....	1	3	.....	.....
(*c*) Curative treatments	109	.....	206	1,234	1	32	167	491	383	28
7. Persons treated for removal of hookworm	.....	.....	.....	.....	.....	.....	.....	49	.....	.....
8. Schick tests	.....	.....	.....	5	.....	.....	.....	.....	11	.....
9. Cows tuberculin tested	.....	17,111	1,995	.....	19,102	.....	4	.....	.....	252
10. Immunization:										
(*a*) Complete antityphoid inoculations	39	21	187	9	295	1	449	4,509	2	10
(*b*) Antismallpox vaccinations	5	2	100	20	51	.....	1,806	97	484	898
(*c*) Complete diphtheria toxin-antitoxin inoculations	5	.....	.....	.....	66	.....	.....	298	751	37
11. Antimalaria work	(2)	(1)	(1)	(1)	(1)	(1)	(1)	(2)	(2)	(1)

12. Child hygiene:										
Prenatal—										
(a) Cases given advice	31	2	150	72	27	8	4	60	10	7
(b) Examinations	10	.....	176	5	.....	.....	.....	18	2	3
(c) Office consultations	15	5	82	6	2	.....	3	16	2	6
(d) Home visits	22	8	160	135	22	2	8	17	17	.....
Infant and preschool—										
(a) Babies and children examined	155	498	220	575	729	29	407	134	761	73
(b) Examinations	155	518	330	771	806	29	468	134	761	73
(c) Office consultations, mothers	59	342	123	264	238	.....	40	61	.....	27
(d) Group conferences with mothers	3	.....	14	395	258	.....	418	9	.....	.....
(e) Home visits	124	154	140	1,085	258	55	89	22	817	146
School—										
(a) Children examined	4,550	1,424	885	3,842	4,416	3,405	4,813	114	2,496	982
(b) Found defective	3,918	1,106	448	2,351	2,076	397	3,509	107	.....	354
(c) Defects found	8,433	2,383	685	4,784	5,231	931	5,834	117	.....	436
(d) Consultations, parents (office and school)	197	367	185	226	501	.....	31	197	.....	95
(e) Home visits	122	529	307	676	272	.....	128	47	1,212	393
Nutritional classes—										
(a) Cases attending	25	.....	.....	.....	.....	.....	44	8	.....	31
13. Laboratory examinations:										
Positive	4	25	73	56	21	28	19	190	183	64
Negative	2	51	51	133	86	99	74	358	196	197
Total	6	76	124	189	107	127	93	548	379	261
14. Results:										
(a) Sanitary privies installed—										
Septic or L. R. S	.....	.....	2	4	9	2	5	.....	.....	.....
Water-tight vault	.....	.....	.....	.....	2	.....	1	.....	.....	.....
Bucket and box	4	.....	33	.....	.....	.....	.....	.....	.....	.....
Pit	136	74	.....	2	49	.....	29	675	.....	393
Total	140	74	35	6	60	2	35	675	.....	393
(b) Privies restored to sanitary type	.....	18	634	5	2	.....	20	161	.....	649
(c) Septic tanks installed	.....	.....	.....	.....	19	.....	1	1	.....	14
(d) New sewer connections	2	.....	18	1	3	.....	2	31	14	158
(e) New water connections	5	.....	29	.....	1	.....	.....	26	.....	112
(f) Wells improved	.....	19	.....	13	12	1	10	1	.....	7
(g) Springs improved	.....	.....	.....	10	.....	.....	1	.....	.....	.....
(h) Public milk supplies radically improved	.....	.....	37	.....	2	.....	9	.....	.....	6
(i) Treatments induced for correction physical defects school children	762	476	1	625	219	.....	1,891	38	23	91
(j) Nutritional cases improved	14	.....	.....	260	63	.....	.....	8	.....	51
(k) Convictions for violation sanitary laws	.....	.....	15	.....	.....	3	17	12	3	7
(l) Nuisances corrected	7	.....	144	13	133	12	40	7	45	1,026

[1] None. [2] Little.

Compilation of data, by counties, on cooperative demonstration work in rural sanitation in the fiscal year 1923—Continued.

Counties (or districts)	Surry, N. C.	Talladega, Ala.	Taylor, W. Va.	Union, N. Mex.	Walker, Ala.	Walker, Ga.	Washington Parish, La.	Wise, Va.	12 Virginia counties.	Total.
Period of work in fiscal year 1923	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	Mar. 16, to Apr. 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	July 1, 1922, to June 30, 1923.	
Expenditures:										
(*a*) Rural sanitation fund (P. H. S.)	$300.00	$2,000.02	$66.67	$614.75	$900.00	$1,500.00	$1,790.00	$300.00	$4,730.50	$46,371.14
(*b*) State	1,000.00	1,849.92	300.00	.....	300.00	.....	2,000.66	2,987.51	11,915.62	63,698.31
(*c*) County	6,374.29	4,891.69	249.82	6,131.72	5,299.92	4,314.73	3,051.26	8,963.66	16,231.11	235,123.24
(*d*) Municipalities	.....	.....	.....	.....	.....	.....	569.84	.....	.....	38,151.90
(*e*) Other agencies	97.40	3,719.50	588.48	750.00	1,577.50	240.00	100.00	.....	.....	69,995.27
Total	7,771.69	12,461.13	1,204.97	7,496.47	8,077.42	6,054.73	7,511.76	12,251.17	32,877.23	453,339.86
1. Educational:										
(*a*) Number of lectures	204	62	10	198	203	131	88	54	458	5,804
(*b*) Attendance at lectures	12,242	3,626	400	4,724	8,504	7,959	8,190	7,005	27,119	291,243
(*c*) Bulletins distributed	3,578	2,571	230	7,423	7,875	615	5,982	7,814	45,379	273,136
(*d*) Newspaper articles	5	14	3	99	18	50	29	206	.....	4,184
2. Sanitary inspections:										
(*a*) Private premises	17	1,773	.....	325	1,137	1,722	893	2,670	23,203	92,143
(*b*) Schools, churches, stores	.....	165	14	49	244	293	48	81	815	13,536
3. Special inspections:										
(*a*) Food product places	.....	317	.....	7	24	55	322	126	1,141	19,088
4. Life extension examinations	200	74	.....	.....	34	.....	20	.....	.....	8,052
5. Communicable disease control:										
(*a*) Visits to cases, contacts, and suspects	300	441	40	4,014	269	107	53	32	.....	25,410
(*b*) Cases quarantined	787	61	40	293	96	72	9	62	1,366	14,761
6. Venereal disease prevention:										
(*a*) Suspects examined	.....	305	.....	4	.....	5	.....	396	.....	4,193
(*b*) Prophylactic treatments	2	5	.....	.....	.....	.....	.....	.....	.....	102
(*c*) Curative treatments	.....	2,041	.....	2	.....	14	.....	4,231	.....	20,562
7. Persons treated for removal of hookworm	682	63	.....	.....	78	.....	147	22	.....	1,833
8. Schick tests	.....	229	.....	.....	.....	1,185	.....	5	.....	4,666
9. Cows tuberculin tested	24	389	.....	70	300	10	904	.....	.....	54,426
10. Immunization:										
(*a*) Complete antityphoid inoculations	3,479	857	5	35	2,539	677	1,040	11	291	27,586
(*b*) Antismallpox vaccinations	673	1	.....	26	105	42	1	227	1,077	13,809
(*c*) Complete diphtheria toxin-antitoxin inoculations	1,122	52	.....	112	.....	386	.....	.....	.....	6,393
11. Antimalaria work	(1)	(2)	(1)	(1)	(2)	(3)	(2)	(1)	(2)	.....

12. Child hygiene:										
Prenatal—										
(a) Cases given advice	303	53	.....	16	49	.....	18	23	.....	3,079
(b) Examinations	.....	.....	.....	.....	15	.....	.....	.....	.....	828
(c) Office consultations	7	9	.....	34	25	.....	.....	.....	.....	1,037
(d) Home visits	181	46	.....	42	49	.....	22	13	.....	4,844
Infant and preschool—										
(a) Babies and children examined	.....	1,249	.....	345	99	3	90	4	.....	15,719
(b) Examinations	.....	1,655	.....	345	105	3	90	4	.....	18,849
(c) Office consultations, mothers	28	53	.....	156	30	3	4	.....	.....	5,264
(d) Group conferences with mothers	37	18	.....	15	25	.....	12	.....	.....	2,138
(e) Home visits	713	888	.....	22	39	3	109	20	.....	18,200
School—										
(a) Children examined	7,022	5,260	354	2,293	6,960	2,017	1,121	4,144	.....	146,701
(b) Found defective	3,677	2,994	301	1,288	5,604	1,395	936	3,039	.....	89,024
(c) Defects found	4,179	5,133	472	1,804	18,812	2,106	1,877	3,416	.....	155,476
(d) Consultations, parents (office and school)	15	45	.....	198	40	6	24	179	.....	9,149
(e) Home visits	.....	150	.....	62	4	.....	537	1,466	.....	22,251
Nutritional classes—										
(a) Cases attending	.....	103	.....	38	2	.....	8	.....	.....	3,303
13. Laboratory examinations:										
Positive	.....	432	.....	71	221	54	293	223	.....	6,953
Negative	.....	1,345	.....	487	272	70	202	326	.....	16,815
Total	.....	1,777	.....	558	493	124	495	549	.....	23,76
14. Results:										
(a) Sanitary privies installed—										
Septic or L. R. S.	11	7	.....	1	26	36	10	219	32	637
Water-tight vault	.....	.....	.....	.....	.....	1	.....	.....	262	298
Bucket and box	.....	84	.....	.....	230	367	2	24	228	2,030
Pit	1,777	233	.....	11	594	59	482	244	5,213	11,712
Total	1,788	324	.....	12	850	463	494	487	5,835	14,677
(b) Privies restored to sanitary type	350	20	.....	30	291	16	16	868	803	11,363
(c) Septic tanks installed	.....	8	.....	2	9	14	4	34	289	777
(d) New sewer connections	.....	47	.....	.....	57	29	.....	221	350	2,662
(e) New water connections	.....	47	.....	.....	90	22	.....	149	.....	1,898
(f) Wells improved	.....	10	.....	5	71	7	11	22	118	801
(g) Springs improved	1	.....	.....	.....	43	1	3	5	95	192
(h) Public milk supplies radically improved	.....	7	.....	.....	.....	33	84	5	.....	789
(i) Treatments induced for correction physical defects school children	119	345	.....	272	448	.....	251	1,084	35	22,990
(j) Nutritional cases improved	.....	243	.....	63	2	.....	6	.....	.....	1,804
(k) Convictions for violation sanitary laws	.....	4	.....	.....	17	1	1	.....	.....	524
(l) Nuisances corrected	.....	530	1	212	141	84	7	42	.....	6,909

[1] None. [2] Considerable. [3] Little.

The Cape Cod Project.

The cooperative rural health work begun in May, 1921, under the direction of a whole-time district health officer, in 10 of the 14 towns (townships) in Cape Cod, Mass.,[5] has been continued satisfactorily. The funds provided from the 11 towns participating in the project and expended for the support of the work in the fiscal year 1923 aggregated $6,705.76 as against $5,100 provided from town sources in the first year of the activity. This project has furnished probably the severest test of the cooperative rural health work system. Cape Cod is one of our oldest and most conservative communities. The town is a distinct and zealously guarded political unit. Under the town system of government an appropriation, such as that for the health work, can be made only under a practically unanimous consent agreement of the citizens. For 10 or more of these towns to remain in partnership, pooling their appropriations for the support of a unified district health service for a period of as much as three years, is indicative of the soundness of the plan of the cooperative rural health work and the popular approval which may be secured by a proper execution of the details.

Special Demonstration Work in Virginia Counties.

The plan of special demonstration work in rural sanitation which was carried out in Virginia in 11 counties in the fiscal year 1920, in 10 counties in the fiscal year 1921, and in 14 counties in the fiscal year 1922, was carried out in 12 counties [6] in that State in the fiscal year 1923. This plan, which has been described in previous reports,[7] continues to prove highly successful. After four years' trial it appears to meet better than could any other plan yet proposed the situations in rural counties in which effective health work, if begun at all, must be started on a low-cost basis; and in which outdoor sanitary measures, such as control of soil pollution, protection of domestic water supplies, and control of mosquito breeding, are especially indicated in the beginning of the local program of rural health work. In the average of the 12 county projects in the fiscal year 1923 the total cost of the services of the county sanitary officer was about $2,740. Based on very conservative estimates the saving to the county in dollars and cents as a result of the services of the sanitary officer amounts as a rule to more than ten times the cost of the services.

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[5] Reprint No. 699, from Public Health Reports of Oct. 7, 1921, pp. 11, 12, and Reprint No. 788, from Public Health Reports of Sept. 29, 1922, p. 14.

[6] Carroll, Charlotte, Chesterfield, Grayson, Greensville, Henry, Mathews, Prince Edward, Pulaski, Roanoke, Smyth, and Wythe.

[7] Reprint No. 615, from Public Health Reports of Oct. 1, 1920, pp. 10, 12; Reprint No. 699, from Public Health Reports of Oct. 7, 1921, pp. 12, 14; and Reprint No. 788, from Public Health Reports of Sept. 29, 1922, pp. 14–17.

The sanitary progress made in the average county in which a whole-time sanitary officer has been engaged for a year or more is remarkable. By the end of the fiscal year 1923 sanitary toilets had been installed at all of the public schools in 3 of the counties, and at over 75 per cent of the public schools in 4 other of the 12 counties in which cooperative projects with the county sanitary officer were conducted during that year. Practically all of these public schools were either without toilets of any kind or were provided with grossly insanitary privies before the advent of the county sanitary officer. In each of 8 of the 12 counties more than 1,000 sanitary privies or septic tanks have been installed at private homes as a result of the strictly educational, persuasive, and practically helpful activities of the sanitary officer. In some of the counties in which typhoid fever and dysentery were veritable scourges every year before the establishment of the sanitary service the prevalence of these diseases has been so reduced that the occurrence of one case in a neighborhood now causes an acute and widespread interest in the possible source of the infection, quick action to secure needed sanitary improvements at the afflicted and near-by homes, and hurry calls for antityphoid inoculation of persons in the vicinity. In one of the larger counties (Chesterfield) in which a sanitary officer has been engaged since 1919, not a case of typhoid fever was reported in the calendar year 1922. In another county (Greensville) a sanitary officer has been engaged since July, 1919, and good sanitary progress has been made. A hookworm survey made in that county in the summer of 1910 showed an infection of 65 per cent of the persons examined. A similar survey made in the summer of 1923 showed an infection of only 8.5 per cent. In four of the counties (Carroll, Greensville, Henry, and Pulaski) the death rate in 1922 from diarrhea and dysentery in children under 2 years of age was less than one-half of the rate for the State as a whole.

Since the inauguration of the plan of sanitary officer demonstration work in rural sanitation in Virginia (February, 1919) there has been no difficulty in finding in that State counties whose authorities are willing to make appropriations of county money to secure the cooperation of the State board of health and the United States Public Health Service in carrying out the demonstration projects. The boards of supervisors in a number of the counties, though compelled by economic conditions during the last two years to reduce or eliminate other expenditures, have voted unhesitatingly to continue the appropriations for the county sanitary officer service. Whenever the work has been discontinued in one county, one or more counties have been ready with county appropriations to take the place of that county on the cooperative list. Thus the funds available to the State board of health and the United States Public Health

Service for the cooperative demonstration projects in rural sanitation in Virginia are always spread as far as they will go. If the combined funds of the State and Federal cooperating agencies were adequate to meet as much as two-fifths of the total cost, it is probable that whole-time county health service could be developed within a short time in a large majority of the counties in the State which are not now provided with such service. An offer from the central health agencies to supervise and financially assist in the support of the work is a potent factor in the persuasion of the average county board of supervisors to make an appropriation for whole-time county health service. Without such cooperation from the State and Federal health agencies satisfactory progress in county health work is not to be expected in Virginia or in any of the other States.

GENERAL PROGRESS IN RURAL HEALTH WORK.

Substantial progress was made in the development of whole-time rural (county) health service in the United States during the fiscal year. According to data [8] collected by the Rural Sanitation Office from the State health departments, the number of counties, or equivalent divisions, provided with local health service reaching all rural sections thereof, under the direction of whole-time county or district health officers, was 231 at the beginning of the calendar year 1923, as against 203 at the beginning of the calendar year 1922, 161 at the beginning of the calendar year 1921, and 109 at the beginning of the calendar year 1920. The gain of 122 within this three-year period signifies that the cooperative demonstrations in rural health work, though as yet lamentably small in number, are making some impression upon the general situation.

Among the States in which whole-time county health service has been inaugurated within the last few years and in which good progress has been made are West Virginia and Missouri. In each of these States an officer of the Public Health Service is detailed to cooperate with the State board of health in the development, study, and supervision of whole-time county health service.

In West Virginia, during the fiscal year 1923, whole-time county health service was established in four additional counties, Hancock, Marion, Preston, and Taylor; and appropriations were made for such service by the county authorities in two others, Gilmer and Harrison, in which the work is to be started as soon as suitable personnel can be found for the positions.

The following statement prepared by Passed Asst. Surg. Thomas Parran, jr., who has been detailed since November, 1919, to cooperate with the State board of health in the development and supervision

[8] Reprint No. 833, from Public Health Reports of Apr. 27, 1923.

of cooperative county health projects in Missouri, presents an account of progress in that State and some details illustrative of frequent occurrences in the course of rural health work generally.

STATEMENT OF RURAL SANITATION ACTIVITIES, STATE OF MISSOURI, FISCAL YEAR ENDING JUNE 30, 1923.

HISTORICAL.

The United States Public Health Service undertook cooperative rural sanitation work in Jasper and Greene Counties in 1920. Prior to that time there was no whole-time health service in any county of the State.

In April, 1921, the State legislature made an appropriation to the State board of health for rural sanitation service of $20,000. In June of that year a rural sanitation division was created, an officer of the Public Health Service was appointed director, funds were allotted from the Public Health Service and the International Health Board, and the organization of additional county health departments was begun. During the fiscal year 1922 health departments were organized in six additional counties (Nodaway, Pettis, Polk, Cape Girardeau, Monroe, and New Madrid). These were supported to the extent of at least one-half of their budgets by the county, the remainder being contributed by the State, the Public Health Service, and the International Health Board.

ACTIVITIES DURING FISCAL YEAR 1923.

During the fiscal year just ended additional health departments were organized in four counties (St. Francois, Dunklin, Gentry, and St. Louis), and operations were terminated in three because of unsatisfactory local conditions. The reasons for termination of the work in these counties may be given. In one county the health officer, who previously was the part-time county physician, proved to be incompetent, and the county authorities refused to allow the State to select a trained man from outside the county.

In another county the opposition of influential members of the local medical profession led to a refusal of the county authorities to renew appropriations, in spite of very efficient work on the part of the health department. This opposition was based upon fear that this work was "an entering wedge for State medicine," and "usurpation of authority" by the health officer in enforcing State regulations for the control of communicable diseases—a function previously performed largely by individual practitioners to suit their own or their patient's whims.

In the third county work had been carried on with a director having, because of local political conditions, an unsatisfactory status for nearly three years, and in January, 1923, the county authorities refused to renew appropriations. This refusal was due primarily, it is believed, to the fact that the director of the unit was not the county health officer, and as a result the work could not be made as effective as has been possible in other counties.

In the remainder of the counties reappropriations were secured and budgets equal to, or greater than, those previously available were provided. In several of them the county authorities have stated that they would, if necessary, try to appropriate enough money to bear the entire expense of the work.

The general conclusions drawn by this office, both from the successful and the unsuccessful demonstrations, is that a county health unit should not be started unless the director of the unit is appointed as the county health officer, and unless the county itself makes an appropriation for the work. If for any reason active cooperation of the county authorities and the public is not continued, operations should cease and a more favorable county should be selected for demonstration.

The activities conducted in the several health departments have been in accordance with the general plan in effect in other States, varied to suit local circumstances in the particular county. In some antimalaria work has been featured; in others, tuberculosis control; and in all a fairly comprehensive program for the control of contagion and in several the phases of child hygiene has been conducted.

Striking instances of accomplishment are too numerous to be fully reported. A few, however, may be of interest.

Greene County.—A reduction in the infant mortality rate in Springfield from 105 in 1918 to 61 in 1922 was recorded. Among other causes contributing to this were 1,146 examinations of infants and 1,638 home visits of the nurses to promote infant hygiene. Four thousand seven hundred and forty-one treatments were given for venereal disease. One hundred and twenty-three tuberculosis cases were discovered and supervised and 37 placed in sanitariums.

Pettis County.—One thousand two hundred and thirty-four treatments were given for venereal disease; regular baby clinics were held throughout the year, at which 771 infant examinations were made; defects of 625 school children were corrected.

Nodaway County.—A regular course in public health was given by the health officer to the students at the State teachers' college, with particular reference to the teacher's part in protecting and promoting the health of the school child. Marked reduction in prevalence of scarlet fever, a disease which had been highly prevalent in the county for a number of years.

New Madrid County.—Corrective clinics were held, at which 125 children were operated upon for tonsils, adenoids, and other defects, and a total of 762 defects were corrected. This is especially remarkable in a county where there is not a hospital or a specialist to perform a tonsillectomy or examine for glasses. Sanitary privies were installed at 90 per cent of all rural schools.

St. Francois County.—Discovery was made of seven diphtheria carriers and several actual or incipient epidemics of diphtheria were terminated. Four hundred and forty-nine persons received antityphoid inoculations; 1,806 persons were vaccinated against smallpox, as a result of which, plus efficient quarantine, not a single secondary focus of smallpox occurred, whereas outbreaks of the disease occurred during every previous year for which records are available. Forty-three cases of tuberculosis were discovered and supervised.

Polk County.—This county offers a striking example of cooperation from the general public. It has been districted with local health committees, fostering the health movement in their respective communities. The child-hygiene program is complete and balanced. Every school child has been examined, and 806 children of infant and preschool age have come under the care of the health department. Immunization clinics were started during the summer and up to date 295 have received typhoid immunization. Fifty-one smallpox vaccinations were made and 86 diphtheria toxin-antitoxin doses administered. All towns have recently passed a sanitary code, and, with the existing health machinery functions, a complete program of sanitation should be put in effect before the end of the coming year.

Dunklin County.—This county presented an unusual problem—malaria control. The county had for the past several years been carrying on a drainage project for agricultural purposes, so little further along this line could be urged. The solution of the problem seemed one primarily of education; secondly, of better protection from *Anopheles;* and lastly, adequate fumigation. A plan of education was instituted in all the schools, using the Carter Primer as a textbook and having the health officer or nurse supplement this instruction by actual field or classroom demonstration regarding the life habits of mosquitoes. Many of the educators have said that the children could pass a better examination on the mosquito and malaria than on most of the subjects in the ordinary school curriculum.

The amounts expended in counties for health department support from State and county sources, including the International Health Board contributions to the State, during the past several years have been as follows:

Year:	Amount.
1920	$1,500.00
1921	21,840.54
1922	48,427.49
1923	93,448.13

The State appropriation of $20,000 for rural sanitation for the biennial period 1921–22 has been increased to $60,000 for 1923–24. A part of this fund is not now available; but $34,500 has been released and the balance is expected to be available within a few months. Other activities of the State board of health have expanded greatly as a result of increased appropriations. For the last three biennial periods State board of health appropriations have been as follows:

Fiscal year:	
1919–20	$40,000
1921–22	136,000
1923–24	291,800

Need of Expansion.

With only 231 counties, comprising about 11.5 per cent of the rural population of the United States, provided, as of January 1, 1923, with whole-time local health service approaching adequacy, there is evidently critical need of some additional or augmented factors to enhance progress in this important, Nation-wide field. Owing to the lack of such service scores of thousands of postponable deaths, hundreds of thousands of cases of preventable, incapacitating illness, an incalculable extent of lowered physical and mental efficiency, and a loss of hundreds of millions of dollars in economic resources occur among the people of this country every year. Unhealthful conditions in our rural districts and in our cities react upon one another. With modern transportation facilities unhygienic conditions, especially with respect to communicable infections, in one State are a menace to the health of the people of all the States. The general welfare of our people in time of peace and the power of our Nation for defense in time of war depend essentially upon the health of our men, women, and children. Therefore, promotion of whole-time, well-balanced, economical, local, reasonably adequate, official health service for our rural districts is of personal importance to every citizen of the United States and should be a matter of keen concern to the local, the State, and the National Government. There are more pressing practical reasons for State and Federal governmental aid in rural health service than in any other fields of activity, such as education, agriculture, highway and river and harbor improvements, to which such aid is extended. Owing in large part to the lack of businesslike rural health service under the direction of whole-time local health officers, an opportunity is afforded for the

introduction of overspecialized, lopsided, extravagant, and bizarre programs of so-called health work, creating an erroneous popular opinion of the cost and value of well-balanced and well-managed public health service.

Progress made in rural health service within the last few years has been due mainly to increasing constructive interest (manifested by increasing appropriations for rural health service) taken by our State and local governments. The Federal Government's investment has been fixed at $50,000 for each fiscal year since and inclusive of 1920. Demonstrations participated in by the Public Health Service in only 50 or 60 of our 2,850 counties wholly or in large part rural, no matter how good the average demonstration may be, are too few and far between to make the seriously needed impression upon the general situation. Every effort has been made, including the practice of rigid economy in overhead, to make the $50,000 go as far as it would; but such a sum can not be distributed effectively to more than 50 or 60 counties or districts.

The economy and effectiveness of the plan of cooperative rural health work which the Public Health Service has inaugurated and participated in have been demonstrated definitely but not to a sufficient extent. In view of the results obtained, any unnecessary delay in reasonably expanding this activity of our Federal health service would seem unfortunate.

The results of the cooperative demonstration project in Madison County, Ala., may be used to illustrate the economic advantages of the work. That county has a population of about 50,000. The average annual death rate per thousand of population for the five-year period before the whole-time county health service was started (in 1918) was about 19; in the last three years it has been about 12. This means about 350 less deaths a year in the county. The lowering of the number of deaths by 350 means the prevention of about 3,500 cases of incapacitating illness. The average case of such illness costs about $100 in wage loss and attendance upon the sick. Thus the saving to the citizens of Madison County is about $350,000 a year. The whole-time county health service has been maintained at a cost of about $14,000 a year. If the dividend yield on an investment for whole-time health service in our average rural county should be only one-fourth of this—and the evidence is that it would be at least that much—the appropriation of adequate sums to establish such service as soon as possible throughout our rural communities would be true economy.

Local, State, and Federal health officials who have studied the situation intensively and extensively estimate that reasonably adequate, whole-time, rural (county) health service could be maintained throughout the United States at a cost of about $20,000,000

a year. It would take at least 10 years to get the full program into operation. The Federal Government's part of the expenses probably would never have to be over $2,000,000 in any year. In the first year of the work, on the cooperative basis, the Federal Government could expend $250,000 to entire advantage; in the second year $500,000; in the third year $1,000,000; and in each year thereafter between $1,000,000 and $2,000,000. If the Federal Government, through the Public Health Service, would initiate such a program, contingent upon the State and local governments doing their proportionate parts, all the evidence is that tremendous progress could be made within the next five years in whole-time rural health service with all the benefits to the nation to accrue therefrom. Without due and reasonable participation by the Federal Government in this field, satisfactory progress is not to be expected.

Results.

The cooperative projects in the fiscal year ended June 30, 1923, yielded results exceeding in value manyfold the cost of the work. Among the activities and results presented in the tabular statement (pp. 2932 to 2941), to which especial consideration may be given, are—

1. Public lectures presenting the principles and details of sanitation to over 291,000 persons.

2. Over 124,000 sanitary inspections of premises, with explanation of findings to occupants (or owners) of the properties.

3. Physical examination of over 146,000 school children of whom over 89,000 were found to have incapacitating physical defects, with notification of parents, or guardians, of defects found.

4. Twenty-two thousand nine hundred and ninety recorded treatments effecting correction of incapacitating physical defects among school children, brought about by written notification to parents or guardians, follow-up visits to homes of the children, making available proper clinical facilities, and other activities of the county or district health departments.

5. Twenty-five thousand four hundred and ten visits to homes of cases of communicable disease to advise and show the afflicted households how to prevent spread of the infections.

6. Four thousand eight hundred and forty-four visits by health nurses to prenatal cases to advise with and assist expectant mothers in carrying out hygienic and physiological measures making for healthy mothers and healthy babies.

7. Fifteen thousand seven hundred and nineteen infants and preschool children examined, and over 18,000 home visits by health nurses or health officers to demonstrate hygienic measures for the promotion of the health and the protection of the lives of infants.

8. Twenty-seven thousand five hundred and eighty-six persons inoculated for protection against typhoid fever.

9. Thirteen thousand eight hundred and nine persons vaccinated against smallpox.

10. Six thousand three hundred and ninety-three children inoculated with toxin-antitoxin mixture for immunization against diphtheria.

11. Fifty-four thousand four hundred and twenty-six cows tuberculin tested, with elimination of reactors from herds, to prevent communication of bovine tuberculosis to persons through the medium of milk.

12. One thousand eight hundred and thirty-three persons treated effectively for relief from hookworm disease and for the prevention of the spread of the infection.

13. Marked reduction in the spread of malaria in hundreds of localities, with an aggregate population of several hundred thousand.

14. Twenty thousand six hundred and sixty-four treatments to rid persons of venereal disease infection and prevent the spread of the infection.

15. Fourteen thousand seven hundred and sixty-one cases of dangerous communicable diseases quarantined to prevent spread of infection in the local community, the State, and throughout the country.

16. The installation of 14,677 sanitary privies and 777 septic tanks at dwellings where previously there had been either grossly insanitary privies or no toilets of any sort.

17. Eleven thousand three hundred and sixty-three privies repaired so as again to be of sanitary type.

18. Two thousand six hundred and sixty-two homes connected for the first time with sanitary sewers.

19. Two thousand eight hundred and ninety-one homes provided with clean water supplies in place of contaminated water supplies.

20. Radical improvement of 789 public milk supplies, the milk from which was being distributed to a considerable extent through the channels of interstate commerce, to prevent the spread, through milk and milk products, of such infections as those of typhoid fever, scarlet fever, diphtheria, tuberculosis, septic sore throat, and infant diarrhea.

21. Eight thousand and fifty-two citizens over 40 years of age examined and advised about measures to conserve their vital capital.

Such results indicate that the plan of the work is both comprehensive and effective. They mean prevention of premature human death, prevention of human illness, promotion of human health, conservation of economic resources. They stand in importance to our national welfare second to no other results obtainable from equivalent investment of public funds.

Conclusion.

The demonstration work of the Public Health Service in rural sanitation should be put on a specific basis of cooperative rural health work, and progressively expanded to meet the Federal Government's responsibility and opportunity to promote to a reasonably adequate degree, and help in due proportion to maintain, whole-time, well-balanced health service in the rural districts of the United States.

STUDIES ON THE PERMEABILITY OF LIVING AND DEAD CELLS.

IV. THE PENETRATION OF TRIVALENT AND PENTAVALENT ARSENIC INTO LIVING AND DEAD CELLS.

By MATILDA MOLDENHAUER BROOKS, Assistant Biologist, Hygienic Laboratory, United States Public Health Service.

The differences in the biological effects of trivalent and pentavalent arsenic have led many investigators to search for an explanation. It is well known that trivalent arsenic is much more toxic than pentavalent. But why is this the case? Voegtlin and Thompson (1) have shown that the rate of excretion of arsenicals is a factor in governing toxicity and parasiticidal action. Voegtlin and Smith (2) explain the difference in toxicity between pentavalent and trivalent arsenic when injected into the body by the supposition that pentavalent forms must be reduced to trivalent oxides before they are capable of producing a toxic action upon the cells of the host. Since Voegtlin and Thompson had found that pentavalent arsenic is eliminated with great rapidity as compared with the corresponding trivalent arsenicals, these authors conclude that only a small proportion of the former arsenicals can be changed into the toxic modification, hence the lower toxicity. Further proof for this assumption was furnished by the work of Voegtlin, Dyer, and Miller (3), which showed that pentavalent arsenicals were much more toxic in animals in which the main path of excretion, namely, the kidney, had been blocked by ligation of both ureters.

It would be desirable to obtain a comparison of the amount of arsenic penetrating into a cell from trivalent and from pentavalent forms by directly analyzing the cell contents. This method is obviously not possible in the case of body cells because they are microscopic in themselves; but by making use of a large single-celled plant the sap of which can be easily expressed it was thought that some conclusions of general application to living protoplasm might be reached. For this reason the marine alga, *Valonia*, which is particularly favorable for making direct observations on the penetration of substances into cells, was selected for further study of these differ-

ences in therapeutic action of arsenicals. This plant consists of a single large, spherical cell, made up of a thin but tough cell-wall, inside of which is a thin delicate layer of protoplasm. The center of the cell is a vacuole filled with sap. The size of the cells varies from embryonic forms to old cells holding as much as 50 c. c. of sap. The most-used sizes contained about 2 to 10 c. c. of sap. It is possible to obtain the sap without contamination and subject it to chemical analysis. This affords a direct method of determining to what extent different substances penetrate through the protoplasm. It is also possible to analyze the protoplasm and the wall separately, thereby determining how much of the different substances is held by the wall and by the protoplasm.

METHODS.

The arsenic compounds were dissolved in distilled water, and this solution was then added to sea water. The concentration of the solutions used was about 0.002 M in respect to arsenic. It was necessary to use solutions made up in sea water because the plants died rapidly in artificial sea water or in any of the other substitutes tried. The volume of the solution in which the cells were placed (210 c. c.) was the same in all the experiments, and its temperature was the same as that of running sea water at Miami (about 24° C). The plants were allowed to remain in the solutions for from 4 to 24 hours, depending upon the nature of the experiment. In the experiments illustrated by Figures 4, 5, and 6 they remained in the arsenic solution 20 hours; in those of Figure 7 one hour.

The H ion concentration was varied in two ways, namely, by using phosphate buffers and by adding traces of acid (HCl). Phosphate buffers could not be used for solutions more alkaline than pH 7.0, as a heavy precipitate formed in the sea water in which they were dissolved.

It is difficult to maintain a constant H ion concentration for any period of time without the use of buffers. The only other methods, such as frequent addition of traces of acid or alkali to or constant renewal of the medium, are open to the objection, particularly cogent in the case of microscopic organisms, that the area immediately surrounding the organism has, owing to substances secreted by the organism, a different pH from the remainder of the solution. Constant stirring of the solution minimizes this error but may result in harm to the microscopic organism. In the case of *Valonia* the error was of minor importance because of the large size of the organism and the large quantity of solution in which the plants were placed.

When phosphate buffers were used the salts were dissolved in distilled water in a concentration of 0.6 M, and these solutions were added to sea water in such amounts that the final concentration of buffer salts was 0.0028 M.

The presence of arsenic was determined by the Gutzeit method because of the delicacy of the method. Very minute amounts of arsenic, as small as 1 micromilligram (1×10^{-6} gm.), can be accurately measured. The substance to be tested was ashed according to the method of Gautier (4). Instead of using a muffle oven, however, the crucibles were placed on a hot plate heated to red heat. The dishes never assumed a greater heat than that indicated by a dull cherry red. It is important to determine this because at higher temperatures arsenic volatilizes. The ash so obtained was washed several times with dilute arsenic-free HCl (one part of acid to two parts of water), and the washings were filtered and placed in wide-mouthed generator bottles of 100 c. c. capacity. About 10 grams of arsenic-free zinc and enough diluted HCl were added to make the total volume 100 c. c. Each generator was immediately stoppered and connected with a series of upright tubes, the first two loosely plugged with cotton soaked in 5 per cent lead acetate, and the third a tube of about 4 mm. diameter containing a narrow strip of drawing paper, cut to regulation size and saturated with an alcoholic solution of mercuric iodine and dried. The nascent H combines with any arsenic present, forming arsine, which, together with the hydrogen, passes through the attached upright tubes, one after the other. H_2S, if present, is absorbed by the lead acetate, and the arsine unites with the mercuric iodine on the test paper, producing a yellow-orange stain. The amount of arsenic is determined by comparing the height of the stain with that on a set of standard strips graduated from 1 to 60 micromilligrams.

All the reagents used were special arsenic-free preparations which were tested and found to contain no arsenic. One hundred c. c. of the water used contained no arsenic which could be detected by the Gutzeit method. Particular precautions were used to avoid contamination from atmospheric dust or the like. No arsenic was found in *Valonia* in the control experiments.

It was very important to ascertain whether the plants used were in good condition at the end of the experiment or whether they were injured. The ordinary method of judging a plant by its exterior appearance is not a sufficiently accurate criterion of its viability.

Some cells appear normal for only a few hours after having been transferred to sea water from a test solution and then cytolyze, while others live for many days. It is obvious, therefore, that cells must be under observation for a considerable time after they have been in the test solution in order to determine the toxicity of the solution for the plant and the degree of injury sustained.

All the cells used in these experiments appeared normal and in good condition after having been in the test solution, except those in solutions the pH of which was 3.6 (as is discussed later). These did

not live as long as normal cells. This point would have been overlooked if observations on the subsequent viability, as noted above, had not been made. The normal time of survival of *Valonia* in sea water under laboratory conditions—i. e., in shallow glass dishes with daily renewal of water—was from 10 days to one month or more.

COMPARISON OF RATE OF PENETRATION OF ARSENIC ACID INTO LIVING AND DEAD CELLS.

In order to ascertain the rate of penetration of arsenic into living as compared with dead cells, dead and living plants were placed in a solution of arsenic acid in sea water (having enough acid to produce a pH of 3.6). At intervals they were taken out and the sap was analyzed for arsenic content. The results are shown in Figures 1 and 2.

Figure 1 shows the rate of entrance into living *Valonia* of arsenic from a solution of arsenic acid in sea water containing enough acid

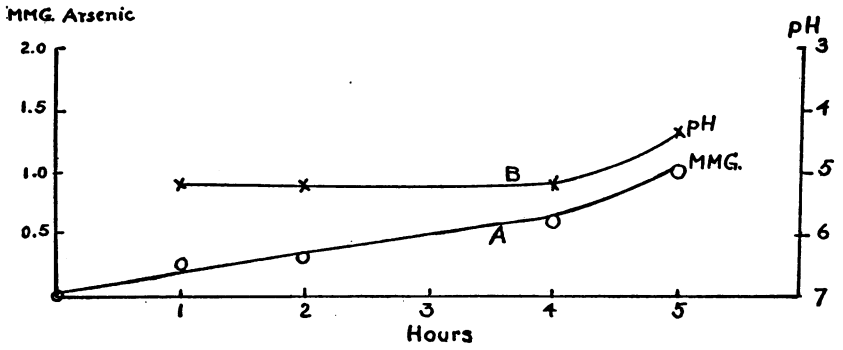

FIG. 1.

(arsenic acid) to produce a pH of 3.6. Curve A indicates the number of micromilligrams of arsenic in the sap at intervals up to five hours. Curve B shows the pH of the sap (containing all the free CO_2) during the same time.

It was shown by the writer in a previous paper on *Valonia* (6) that, after the plant had been kept four hours in a solution of arsenic acid in sea water the sap contained no more free CO_2; the pH of the sap then dropped below 5.0, and the time of survival of these plants when returned to sea water alone was less than that of the normal plant. Exposures of less than four hours did not shorten the subsequent length of life; at this time, therefore, irreversible injury begins. Reference to Figure 1 shows that at this time there commences a decided drop in the pH of the sap (curve B) and an increase in the amount of arsenic (curve A). In other words, all these observations suggest that injury occurs after four hours in this solution and that these phenomena are therefore criteria of injury.

Figure 2 shows the rate of penetration of arsenic into dead cells from a solution of arsenic acid in sea water; the pH of the suspension

fluid was 3.6 Penetration is much more rapid than in the case of living cells (fig. 1), although the arsenic content of the solution was the same (240 mmg. per 1 c. c.). It is evident that the concentration of arsenic inside the dead cell equals that of the outside solution not "instantly," but only after a considerable length of time, which is, however, much less than that in the case of living cells.

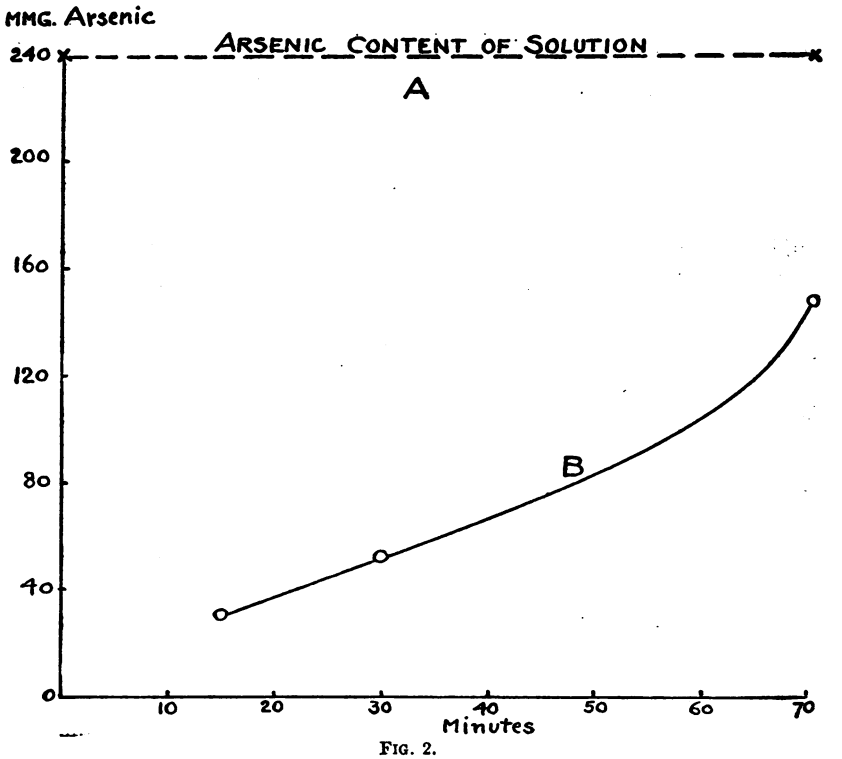

FIG. 2.

RATIO OF WEIGHTS OF SAP, PROTOPLASM, AND WALL.

It was possible in the case of *Valonia* to separate the three components of the cell, namely, sap, protoplasm, and wall, to weigh each, and to analyze each separately for arsenic content. In this way, therefore, an excellent opportunity was offered to demonstrate the fate of the arsenic.

In order to obtain comparable values of the amount of arsenic taken up by each of the three components of the cell—sap, protoplasm, and cell wall—the ratio of their weights to each other was determined. It was found that the sap was 164 times heavier than the protoplasm and 257 ± 13 times heavier than the cell wall.

The ratio of the volumes of the sap and protoplasm is approximate. The probable error was not determined, since the data were not considered refined enough to warrant absolute conclusions. It was very difficult to obtain the protoplasm completely free from sap, although every precaution was taken to keep the protoplasm intact until the

sap had been expressed; yet, upon the collapse of the wall, the delicate protoplasmic layer inevitably became loosened, and, as bits of protoplasm appeared in the remaining drop of sap, it was always included in the analyses. Since the concentration of arsenic was, in every case, considerably less in the sap than in the protoplasm, the amount obtained by including a drop of sap in the analyses of the protoplasm is within the limits of experimental error. Centrifugating the protoplasm free from the sap could not be relied upon on account of probable exosmosis of substances from the protoplasm into the sap, with consequent changes in the volume of the remaining substances. It is hoped that a more accurate method may be devised by further experimentation. Since the error will be the same in all cases, however, it can not, in any event, affect conclusions as to the relative

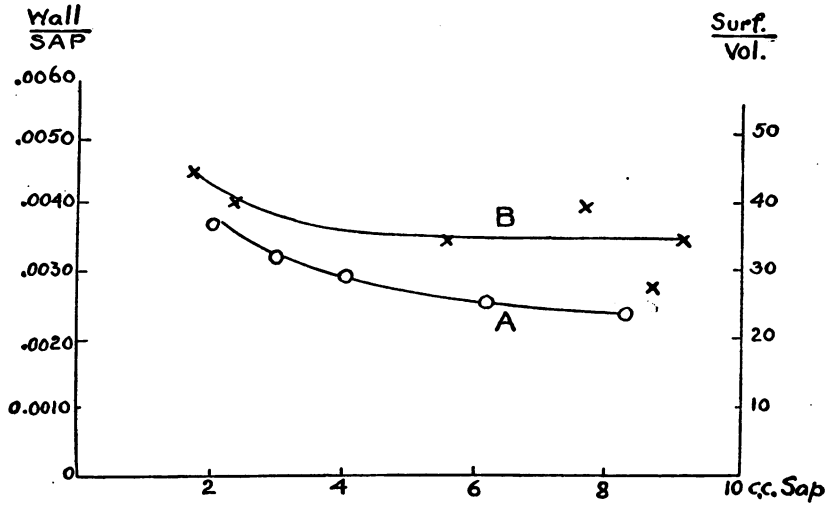

FIG. 3.

distribution of different arsenic compounds. In calculating the amount of arsenic in the wall and the protoplasm the experimental results were multiplied by the factors 257 for wall and 164 for protoplasm.

In connection with this problem on penetration of substances it was thought of interest to find out whether the wall becomes thicker with age, by comparing the ratio of the weights of wall and sap of various sized cells. In comparing the weights [1] of sap and wall it must be remembered that the volume of the sap increases as the cube, and the wall surface increases only as the square, of the diameter of the cell. If the wall remained of the same thickness, the ratio of cell wall to sap would differ with the size of the cell, as shown in Figure 3, curve A. Curve B shows the experimental results. There are slight systematic deviations from the theoretical curve, probably due to increasing thickness of the wall as the cell ages.

[1] The ash content of the sap was found to be 4.14±0.06 grams per 100 grams total weight of sap; that of the wall was 19.2± 0.55 grams per 100 grams total weight of wall.

THE PENETRATION OF TRIVALENT AND PENTAVALENT ARSENIC.

Figures 4, 5, and 6 show the penetration of arsenic from three arsenic compounds: As_2O_5 (pentavalent), As_2O_3 (trivalent), and atoxyl (sodium para arsanilate) (pentavalent). They also show the effect of the presence and absence of phosphate buffers in the surrounding solution upon the penetration of arsenic. In obtaining these values, the total amount of arsenic in each of the three com-

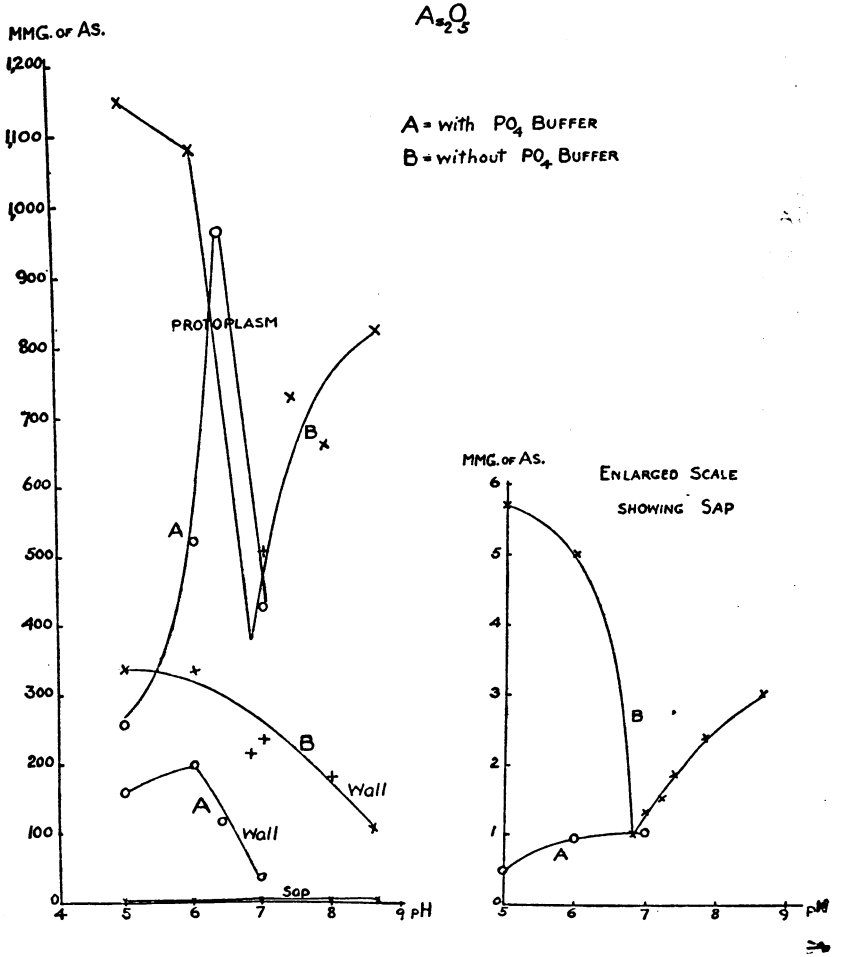

FIG. 4.

ponents of the plant—cell wall, protoplasm, and sap—was estimated, and from this the number of micromilligrams of As per gram of fresh substance was calculated. Thus, in order to make the figures for protoplasm comparable with those for sap (as explained previously), the amount of arsenic found in the protoplasm was multiplied by the factor 164, since the sap is about 164 times heavier than protoplasm. In the same way, the figures for the As content of the cell wall were multiplied by 257.

These figures show that by far the greatest amount of arsenic is taken up by the protoplasm. This is of interest in the light of recent studies by Voegtlin, Dyer, and Leonard (6), who have shown that when glutathione is injected into animals in conjunction with 3 amino-4 hydroxyphenyl arsenious oxide (arsenoxide), detoxification of the arsenic occurs. This result suggests that the arsenic unites with the SH group of the glutathione of the protoplasm. The large amount

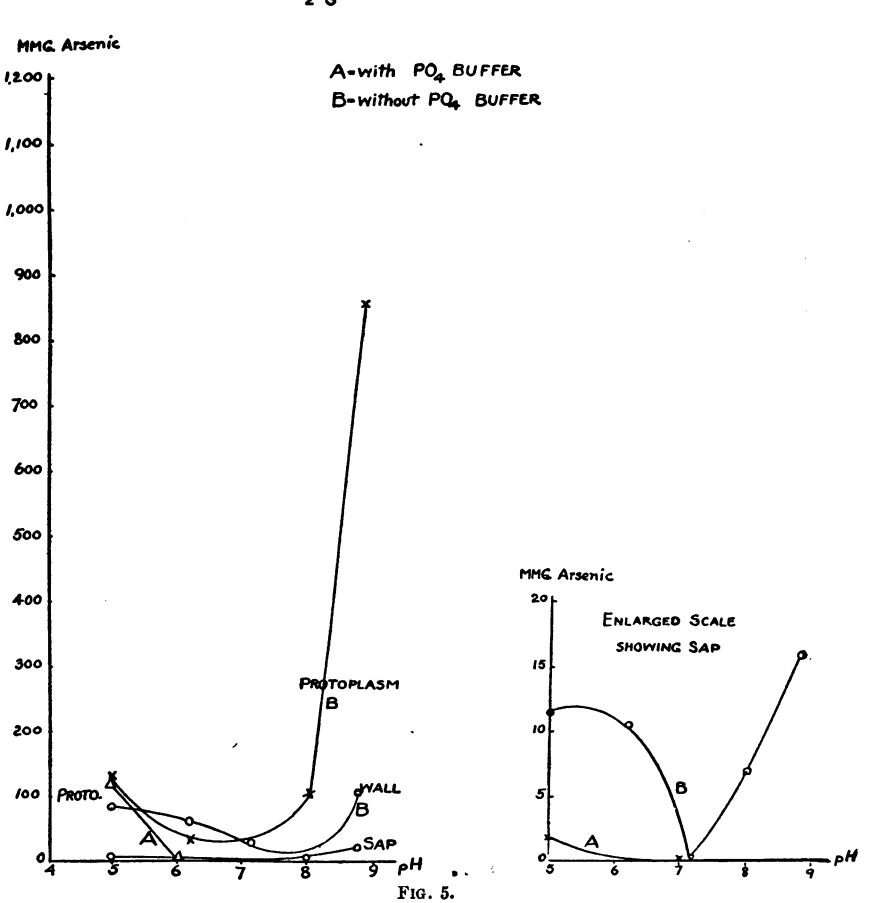

FIG. 5.

of arsenic accumulating in the protoplasm of *Valonia* as compared with that found in the cell wall and sap is in agreement with this explanation. Since the sap contains only a sight amount of organic matter in addition to the salts, it is reasonable to assume that the arsenic present does not exceed the concentration which is in diffusion equilibrium with the protoplasm.

In the writer's experiments on penetration of arsenic into *Nitella* it was also shown that the wall contained considerably more arsenic than the sap. The wall in this case included the protoplasm, which

could not be satisfactorily disconnected from it as in the case of *Valonia*. The results, therefore, were only qualitative.

Figures 4, 5, and 6 also show that the pentavalent form of arsenic is taken up and retained in greater amounts by the protoplasm and attains a lower concentration in the sap, although when the trivalent form is used, much less arsenic is found in the protoplasm and about twice as great a relative concentration is found in the sap.

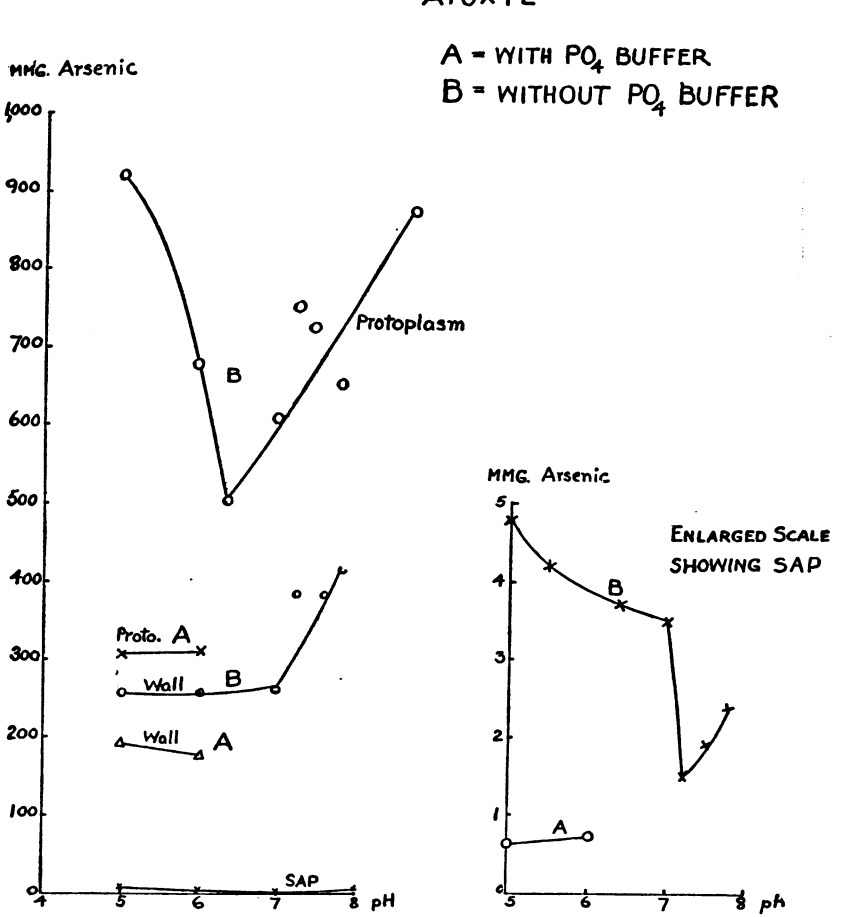

FIG. 6.

In the acid range, trivalent arsenic does not behave the same as pentavalent, but shows a general low level of penetration. The alkaline range, however, is similar to that of pentavalent arsenic, in that there is an increase in penetration with an increase in alkalinity. The arsenic contents of the sap are given on a separate scale, since it was impossible to represent them accurately on the smaller scale.

In animals, the largest part of pentavalent arsenic is rapidly excreted by the kidney, whereas most of the arsenic in the trivalent

form is retained by the tissues. This is the opposite of what occurs in the case of *Valonia*. The reaction of blood, however, is alkaline, while the reaction of the sap of *Valonia* is acid. In this connection it was thought that, since acidity favors reduction of substances,

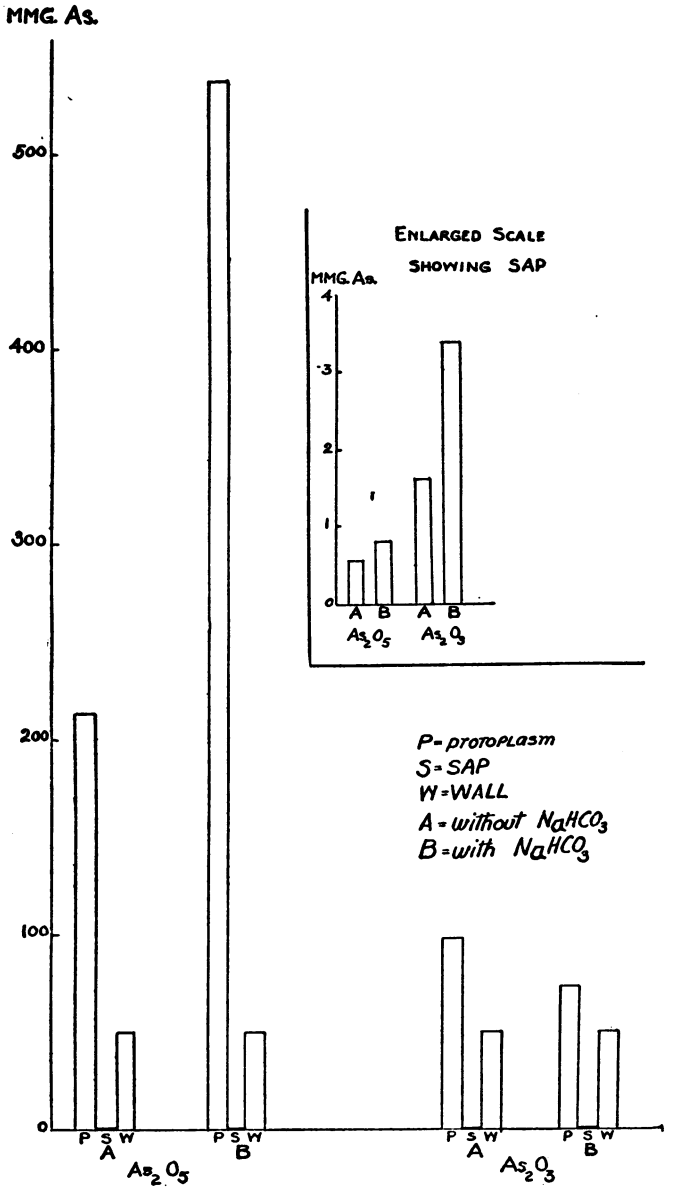

FIG. 7.

pentavalent arsenic is perhaps rapidly reduced to trivalent in the plant tissue, whereas trivalent is not oxidized in an acid reaction. In the body, however, the opposite may result, since alkalinity favors oxidation. Trivalent arsenic is rapidly oxidized to the pentavalent

form, and the pentavalent form is not reduced to a great extent because the alkaline reaction of the blood is less favorable to this process. This may be the reason why there is more trivalent arsenic in the sap of *Valonia* and less retained by the protoplasm, while the opposite is true in animals; namely, more pentavalent arsenic excreted and more trivalent retained. However, the two cases are not strictly comparable, since, in the animals investigated, the kidneys eliminated the arsenic, whereas in *Valonia* the arsenic diffusing through the protoplasm was held in the sap.

An interesting fact also shown by Figures 4, 5, and 6 is that the minimum amount of arsenic penetrates when the pH of the surrounding solution is near neutrality. As the reaction becomes either more acid or more alkaline, more arsenic is found inside the cell. Factors which may enter into these reactions are the greater rate of reduction of arsenic (pentavalent into trivalent) in the acid range and vice versa. Acidity favors the reduction, and alkalinity the oxidation of arsenic compounds. Differences in the solubility of the arsenic compounds in the sea water at various H ion concentrations could not be responsible for the differences in results, as no precipitate was formed in any of the solutions of the arsenical in sea water.

EFFECT OF PHOSPHATE BUFFERS.

The effect of the presence of phosphate buffers in the surrounding solution upon the penetration of arsenic is also evident in all the curves of Figures 4, 5, and 6. Those curves, which indicate penetration of arsenic in the presence of buffer, are, generally speaking, considerably lower in the acid range than those in which no buffer was used. In the case of the sap, in all these figures, there is considerably less arsenic in the acid range when buffers are used. At neutrality the curves coincide and approach a minimum concentration.

In the case of protoplasm, the arsenic of atoxyl penetrates in decidedly larger amount in the absence of buffer than when buffer is used. With As_2O_5 there is less arsenic penetrating at pH 5 and 6 when buffer is used, and with As_2O_3 there is also a slightly less amount of arsenic penetrating in the presence of buffers.

In the case of wall, less arsenic penetrates in every case when buffer is used than when no buffer is used. This shows the great influence of the presence of phosphates upon the penetration of arsenic. Such differences were observed in a large number of experiments. The difference in the case of trivalent arsenic is not so marked, owing probably to the small amount of arsenic penetrating from acid solutions.

Emphasis must therefore be placed on the fact that in studying the influence of the H ion concentration of the surrounding medium,

the nature of other ions present in the solution is of very great importance and can by no means be neglected.

Previous observations by the writer on the penetration of arsenic into *Nitella* (7) from solutions of atoxyl show that in the presence of phosphate buffers, the anion (arsenic) enters more readily from alkaline solutions than from acid ones. The possibility that the ions of the buffer salts may affect the rate of penetration of arsenic was also suggested by the writer in this paper. Taking into consideration the experiments of the writer on *Valonia*, it now seems as if the phosphate buffers added in the case of *Nitella* were responsible for the lack of penetration of arsenic in the acid range. As the quantity of sap obtainable from *Nitella* was very small, it is possible that its arsenic content was too low to be detected by the Gutzeit method. In the alkaline range there was increasing penetration of arsenic into *Nitella* with increasing alkalinity; but this was probably associated with an increase in the amount of injury. Further experiments on *Nitella*, involving shorter durations of time and larger amounts of sap, are necessary to settle this point.

In *Valonia* the amount of arsenic penetrating in the acid range was considerably less in the presence of buffer salts than when no buffer salts were used.

May not these effects of buffer salts be operative in the case of experiments reported by other writers? The results of an experiment may even be reversed by neglect of this factor, as might have happened in the case of *Valonia*. In the absence of control experiments to determine whether the buffer salts are responsible for any of the observed effects, conclusions as to the effect of H ion concentrations are unwarranted.

Hoagland and Davis (8), working with *Nitella*, used phosphate buffers to maintain a constant pH. They state that the penetration of the anion NO_3 into the cell sap from dilute solutions was definitely influenced by the H ion concentration, and that penetration was much more rapid from a slightly acid solution than from an alkaline one. Irwin (9) also used phosphate buffers in her experiments on the entrance and accumulation of chlorides as well as of the basic dye, brilliant cresyl blue in *Nitella*, and agrees with other observers that the entrance and accumulation of cations (except H) is favored by alkaline solutions, and that of anions (except OH) by acid solutions. In this case it would also be of interest to know how shortly after the period of the experiment irreversible injury occurred. It has already been noted that in the case of *Valonia* this point could not be determined merely by noting the appearance of the plant immediately after experimentation; but that observations had to be made for some time after the plant had been replaced in

its normal environment, and these had to be compared with observations on the viability of normal plants.

As stated before, the appearance of a cell immediately after it has been in a test solution is not a sufficient criterion for injury. In order to be sure that there is no injury, the plant must be returned to its normal environment and its length of survival compared with that of the control. It is frequently found, under these precautions, that a plant which appears in fine condition at the end of an experiment will rapidly die upon being returned to a normal environment. Certainly it can not be said of such a cell that it is not injured.

THE INFLUENCE OF N_aHCO_3 UPON THE PENETRATION OF THE ARSENIC OF AS_2O_5 AND AS_2O_3 INTO LIVING CELLS.

In a previous paper (10) on the influence of bicarbonates on changes in the CO_2 content and alkalinity of the sap of *Valonia*, the writer suggested that the permeability of the cell may have been increased by the large amount of bicarbonate in the surrounding solution.

It was shown that when cells of *Valonia* were placed in a bicarbonate solution an excess of CO_2 accumulated in the sap. After the cells had been one hour in sea water plus bicarbonate, the pH of the aerated sap[2] increased from 6.8 to 8.4. This showed that, in addition to the free CO_2, basic ions enter the sap. In further experiments reported in the same paper evidence was given which seemed to show that Na′ and K′ penetrated more rapidly from bicarbonate solutions in sea water than from similar solutions of the acetate, chloride, or citrate (Table I), but this was not conclusive evidence of a special rôle for the bicarbonate ion as a regulator of cellular permeability to other ions.

In a later paper (11) it was shown that Na′ and K′ hardly penetrated at all from solutions of their hydroxides.[3] Since in this experiment the solution used differed only in H′ and HCO_3' content from those used in the bicarbonate experiments, the penetration of bases into the sap in the latter case must have been due to one of these ions; but the relative influence of the two ions was still left unsettled.

It was therefore thought of interest, in connection with the studies on the penetration of arsenic, to find out whether previous exposure to bicarbonate solutions would affect the rate of penetration of some other substance, as, for example, arsenic, into the cell. If this were the case it would be important evidence of a special röle of HCO'_3 in regulating the permeability to other substances.

The plants were therefore placed for one hour in such a solution of $NaHCO_3$ made up to 0.6 M in distilled water, enough of this being

[2] Sap in equilibrium with CO_2-free air.

[3] The slight amount of penetration occurring may have been due to the bicarbonates formed in the solutions, since this always happens unless the solutions are especially protected.

added to sea water to give a bicarbonate concentration of 0.0024 M. The pH of this solution was the same as that of sea water (8.6). The cells were then transferred to solutions of arsenic in sea water (As_2O_3 and As_2O_5 in the same concentrations as were used in Figures 4, 5, and 6). Figure 6 shows the results after one hour in the arsenic solution. Upon analyzing the protoplasm of the cells which had been placed in a bicarbonate containing solution before treatment with the pentavalent arsenic, it was found that the amount of As was 150 per cent greater than in the cells which had not previously been exposed to the bicarbonate solution. There was also a slight increase of arsenic in the sap, amounting to about 25 per cent. In the case of trivalent arsenic, on the other hand, the amount of arsenic in the protoplasm of the cells was decreased about 25 per cent by previous treatment of the cell with bicarbonate solution, whereas the amount of arsenic in the sap was increased by about 100 per cent. Evidently, in the latter case, the permeability to arsenic diffusing into the sap was increased. It therefore appears as if the permeability of the protoplasm to both these substances was increased. Exposure of *Valonia* to pentavalent arsenic leads to a retention of arsenic by the protoplasm in much greater amounts, and it therefore reaches the sap at only slightly greater speed. In the case of trivalent form the rate of diffusion of arsenic into the sap is increased, even though no more arsenic is taken up by the protoplasm than when the cells have not been in bicarbonate solutions.

Previous observations show that no injury was produced by allowing the cells to remain in the bicarbonate solutions for one hour.

The penetration of arsenic into the cell wall remains about the same in all of the experiments.

Briefly, then, these experiments show that when the plants have been placed in a solution of $NaHCO_3$ and then transferred to a solution containing arsenic, certain changes take place in the cell by which a greater amount of pentavalent arsenic is taken up by the protoplasm and a greater amount of trivalent arsenic by the sap; whereas lesser amounts of arsenic are found in the protoplasm when the trivalent form is used, and only a slightly greater amount in the sap when the pentavalent form is used.

How $NaHCO_3$ operates in allowing more arsenic to enter the cell can not be explained definitely. There are several possibilities. It is theoretically possible that the increase of HCO'_3 or free CO_2 in the cell facilitates, in some unknown way, the formation of compounds of arsenic with protoplasmic constituents, thus leading to the accumulation of arsenic in the cell. It seems probable that the increase of either the bicarbonate ion or of free CO_2 is responsible for an increased permeability of the cell to arsenic.

SUMMARY.

1. The penetration of arsenic into the cell wall, protoplasm, and cell sap, respectively, has been determined.

2. By far the highest concentration of arsenic was found in the protoplasm. The great amount of arsenic taken up by the protoplasm points to a combination of arsenic with protoplasm.

3. The penetration of both pentavalent arsenic (in the form of As_2O_5 and atoxyl) and trivalent arsenic (As_2O_3) is least when the external solution is nearly neutral. As the H ion concentration of the suspension fluid diverges from neutrality, more arsenic enters, the amount increasing as the surrounding medium becomes either more acid or alkaline. This is true of sap and protoplasm but not of wall.

4. Trivalent arsenic does not penetrate so readily into protoplasm in the acid range as pentavalent arsenic; but it passes into the sap more readily, except in the range of neutrality.

5. The use of phosphate buffers to regulate the pH may lead to deceptive results, and experiments in which such buffers are used must be controlled by parallel experiments without buffers.

6. The relation of the rate of penetration of arsenic acid into living and dead cells to the changes in pH of the sap has been determined.

7. Previous exposure of *Valonia* for one hour in a solution of $NaHCO_3$ in sea water increases the accumulation of pentavalent arsenic in the protoplasm by 150 per cent; whereas the amount of trivalent arsenic accumulation in the protoplasm is reduced by 25 per cent. Under the same conditions the entrance of trivalent arsenic from the protoplasm into the sap is increased about 100 per cent, whereas that of pentavalent arsenic is increased only about 25 per cent.

8. It is suggested that either the bicarbonate ion or the presence of abnormal amounts of free CO_2 increases the permeability of the cell to arsenic.

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REFERENCES.

(1) Voegtlin, C., and Thompson, J. W.: Jour. Pharm. and Exp. Therap., xx, No. 2, 85; 1921.

(2) Voegtlin, C., and Smith, Homer W.: Jour. Pharm. and Exp. Therap., xv, No. 5; 1920.

(3) Voegtlin, C., Dyer, Helen, and Miller, D. W.: Jour. Pharm. and Exp. Therap., xx, No. 2; 1922.
(4) Gautier, A., and Clausmann, P.: Comptes Rendus, clxiii, No. 1, 11; 1917.
(5) Brooks, M. M., Pub. Health Rep., *38*, No. 26, 1449; 1923. (Reprint No. 845.)
(6) Voegtlin, C., Dyer, Helen A., and Leonard, C. S.: Pub. Health Rep., *38* No. 33, 1882; 1923. (Reprint No. 860.)
(7) Brooks, M. M.: Proc. Soc. Exp. Biol. and Med., xx, 39; 1922.
(8) Hoagland, D. R., and Davis, A. R.: Jour. Gen. Physiol., v. No. 5, 629; 1923.
(9) Irwin, M.: Jour. Gen. Physiol. v. No. 2, 223; 1922.
———, Ibid., v. No. 4, 427; 1923.
———, Ibid., v. No. 6, 727; 1923.
(10) Brooks, M. M.; Pub. Health Rep., *38*, No. 26, 1470; 1923. (Reprint No. 846.)
(11) Brooks, M. M.: Pub. Health Rept., *38*, No. 36, 2074; 1923; (Reprint No. 866.)

EFFICACY OF BOTULINUS ANTITOXIN.

Note on "Studies on Organisms Concerned as Causative Factors in Botulism" (Hygienic Laboratory Bulletin No. 136).

The discrepancies in the literature regarding the identification of the organisms concerned in the production of botulism and the isolation of a new type by the author prompted a more complete investigation of the so-called "botulinus" strains than has hitherto been attempted. The strains studied include representatives of different groups, particular attention being given to type C. The properties of toxin and antitoxin of organisms concerned in botulism are discussed at length, based on the author's experiments. As a result of these and prior investigations, an antitoxin has been elaborated and standardized. The author states that the curative effect of antitoxin in human cases has not been determined definitely, but that it seems reasonably certain that the antitoxin is effective prophylactically as is tetanus antitoxin. As to the effects produced when administered after symptoms develop, no certain statements can be made, owing to the fact that spontaneous recoveries of patients showing definite symptoms of botulism have been recorded. The curative properties are dependent upon the length of time elapsing between the consumption of the food and the administration of the antitoxin, and also on the amount of toxin which has been ingested.

The most promising field for the use of the antitoxin is in outbreaks of botulism in which persons who have consumed food containing the toxin have not developed symptoms, or only slight symptoms. In any case, the use of antitoxin is indicated, since it is the only known specific remedy and the possibility always exists that the results may be favorable.

GENERAL HEALTH CONDITIONS AS REPORTED BY THE HEALTH SECTION OF THE LEAGUE OF NATIONS.

The following general summary of health conditions is taken from data in the monthly Epidemiological Report of the Health Section of the League of Nations issued November 1, 1923:

PLAGUE.

The following information on the plague situation in India is credited to the "Epidemic diseases summary," issued by the British Health Commissioner with the Government of India for the weeks ended August 25 and September 1, 8, and 15:

"*Bombay Presidency.*—Freshly infected: Karachi district and west Khandesh; spreading in Sholapur, Satara, Poona, and Dharwar districts; prevalent in Belgaum and east Khandesh districts.

"*Bihar and Orissa.*—Gaya district freshly infected; steady in Mazaffarpur district.

"*Madras Presidency.*—Nilgiris district freshly infected; spreading in Bellary and Coimbatore districts; abating in Madura, Malabar, and Salem districts; south Kanara district declared free.

"*Burma.*—Spreading in Bassein and Mandalay towns and Yamethin district; Thaton district reinfected; sporadic in Moulmein town and Tharrawaddy, Prome, Myaungyma, Thayetmyo, and Pyapon districts; abating in Rangoon town and Insein, Maubin, and Bassein districts.

"*Central Provinces.*—Spreading in Yeotmal town, Amraoti and Akola districts; abating in Paradsinga village (Nagpur) and Arvi town (Wardha); mild in Jubbulpore and Buldana districts; two imported cases with one death in Nagpur town.

"*United Provinces.*—Mild in Benares, Ghazipur, Basti, and Meerut districts.

"*Punjab.*—Rohtak, Gurgaon, and Gujrat districts freshly infected; spreading in Jhelum and Rabalpindi districts.

"*Northwest Frontier Province.*—Spreading in Hazare district.

"*Mysore State.*—Present in all districts except Chitaldroog."

The plague situation in Siam, judging from reports for August, continues to improve, relatively few deaths being recorded.

For Madagascar, the decrease in the number of deaths from plague since March has continued.

The epidemic in Egypt, which began in March and reached its height in April and May, seems to have ended.

CHOLERA.

The renewed increase in cholera in certain sections of India reported in July was more marked during August.

SMALLPOX.

There is no evidence of any marked increase in smallpox in the reports received during October in any of the countries which furnish current information except Siam. During the first three months of the year only 10 cases were reported in Siam, and in the second quarter 137 cases with 59 deaths. In the seven weeks July 1 to August 18, however, 573 cases with 364 deaths were reported.

There has been a marked decrease of deaths from smallpox in India thus far during the third quarter of the year as compared with the second and first quarters.

In the European countries where the disease was unusually prevalent, especially in England and Wales, Spain, and Switzerland, the downward trend has continued, and no serious outbreaks were reported during the weeks immediately preceding the date of the report.

TYPHOID FEVER.

The seasonal increase in typhoid and paratyphoid fevers has occurred in most countries. In Uruguay the seasonal curve is peculiar. The peak was reached in March and April, and cases and deaths decreased in May and June.

The reports received during October show the situation of typhoid fever to be, with a few exceptions, favorable. In many countries there is no marked decrease over the corresponding period in 1922, but in these cases the reported incidence is relatively low. In some of the central European countries, where typhoid fever has been relatively prevalent for the past few years, the reports for the summer months of 1923 show a considerable decline. This is especially the case in Czechoslovakia, Poland, and Rumania. There is no marked change in Austria, but in Germany there is a significant increase over 1922.

DYSENTERY.

While the prevalence of dysentery is shown by the reports to be less this year than in 1922 in nearly all countries, the usual summer increase has occurred fairly generally. The diagnosis and the completeness of notification of dysentery varies widely in the different countries and figures are useful only as a general indication of the trend.

In Germany, where a higher prevalence of dysentery in 1923 than in 1922 is suggested by the reports, the increase over the preceding year began in the latter part of July and continued through August and September.

INFLUENZA.

In two countries for which September reports were available, Denmark and Sweden, some increase in influenza is shown. The reports for August from other countries show no upward tendency. No marked prevalence is shown in the reports for countries outside Europe.

LETHARGIC ENCEPHALITIS.

The reports on lethargic encephalitis, which do not go beyond September for those countries in which the disease is notifiable, indicate a marked and continuous decrease from the relatively high number of cases reported in the first months of the present year.

DEATH RATES IN REGISTRATION AREA: 1922.

The Department of Commerce announces that compilations made by the Bureau of the Census show that the mortality rate for the registration area was 11.8 in 1922 per 100,000 population against 11.6 in 1921. Six States, Michigan, Mississippi, Ohio, Pennsylvania, Virginia, and Wisconsin, show lower mortality rates for 1922 than for 1921. The lowest 1922 State rate (8.1) is shown for Idaho and the highest (14.7) for Maine and Vermont each. For cities which at the last census had populations of 100,000 or more, the lowest rate (7.5) is shown for Akron and the highest (17.8) for Memphis.

Crude death rates by no means tell the whole story regarding the healthfulness of different localities. Race stock, occupations of the inhabitants, the sex and age distribution of the population, and the relative number of deaths of nonresidents are factors which must be considered before it can be determined that one city or State is more healthful than another. For example, adjustments simply for differences in the sex and age distribution of the population in the States give Nebraska the lowest adjusted rate (9.1), and in the cities of 100,000 population give Akron the lowest adjusted rate (9.2), while in the States the highest adjusted rate (13.5) is for Colorado and in the cities the highest adjusted rate (19.3) is for Memphis.

Death rates from all causes (exclusive of stillbirths) per 1,000 population.

Area.	Adjusted rate.[1]			Crude rate.[2]		
	1922	1921	1920	1922	1921	1920
Registration area	([3])	([3])	([3])	11.8	11.6	13.1
Registration States (including District of Columbia) (1920)	11.6	11.3	12.7	11.9	11.6	13.0
California	12.8	12.0	12.4	14.1	13.2	13.6
Colorado	13.5	12.3	14.4	13.5	12.4	14.5
Connecticut	11.4	10.8	12.9	12.0	11.4	13.6
Delaware	12.4	12.4	13.7	13.2	13.1	14.6
Florida (total)	12.6	12.1	13.4	12.2	11.8	13.0
White	10.6	10.2	11.4	10.9	10.5	11.7
Colored	17.0	16.1	17.6	15.0	14.2	15.5
Georgia (total)	([3])	([4])	([4])	10.4	([4])	([4])
White	([3])	([4])	([4])	9.2	([4])	([4])
Colored	([3])	([4])	([4])	12.2	([4])	([4])
Idaho	([3])	([4])	([4])	8.1	([4])	([4])
Illinois	11.2	11.0	12.5	11.3	11.1	12.6
Indiana	10.8	10.7	12.1	11.9	11.9	13.4
Kansas	9.7	9.3	10.4	10.6	10.2	11.4
Kentucky (total)	10.7	10.5	11.7	10.8	10.5	11.8
White	9.9	9.7	10.9	10.0	9.8	11.0
Colored	18.4	18.0	19.5	18.4	17.9	19.4
Louisiana (total)	12.6	12.3	13.3	11.3	11.0	11.9
White	10.5	10.3	10.9	9.4	9.2	9.8
Colored	16.0	15.5	17.1	14.4	13.9	15.3
Maine	11.9	11.3	12.4	14.7	14.0	15.4
Maryland (total)	13.4	13.3	14.4	13.6	13.6	14.7
White	11.9	11.8	12.8	12.4	12.3	13.3
Colored	20.7	21.0	22.7	19.4	19.6	21.2
Massachusetts	12.0	11.4	12.9	12.8	12.2	13.8
Michigan	10.7	11.1	13.2	11.3	11.6	13.9
Minnesota	9.3	9.2	10.5	9.5	9.4	10.7
Mississippi (total)	11.8	12.1	13.4	10.8	11.1	12.3
White	9.1	9.0	9.7	8.7	8.6	9.2
Colored	14.2	15.0	16.8	12.8	13.5	15.1
Missouri	10.7	10.3	11.9	11.2	10.8	12.5
Montana	9.2	8.7	10.2	8.6	8.2	9.5
Nebraska	9.1	8.9	9.7	9.4	9.2	10.0
New Hampshire	11.7	10.9	12.2	14.6	13.7	15.2
New Jersey	12.3	11.8	13.1	12.2	11.7	13.0
New York	12.7	12.1	13.6	13.0	12.3	13.8
North Carolina (total)	12.3	11.9	13.4	11.6	11.3	12.7
White	10.6	10.3	11.6	10.3	9.9	11.2
Colored	16.4	15.9	17.7	14.8	14.4	16.0
Ohio	10.5	10.6	11.9	11.3	11.3	12.8
Oregon	10.7	9.6	10.9	11.5	10.4	11.7
Pennsylvania	12.1	12.2	13.6	12.3	12.4	13.8
Rhode Island	12.6	12.2	13.8	13.1	12.6	14.3
South Carolina (total)	13.3	13.2	15.6	12.0	11.9	14.0
White	10.5	10.5	12.3	9.7	9.8	11.4
Colored	16.3	16.0	18.9	14.2	14.0	16.5
Tennessee (total)	11.2	11.0	12.5	10.8	10.7	12.1
White	9.7	9.6	10.9	9.5	9.4	10.7
Colored	17.4	17.0	19.2	16.4	16.0	18.1
Utah	10.9	10.9	12.0	10.4	10.4	11.5
Vermont	11.5	11.1	12.3	14.7	14.2	15.7
Virginia (total)	12.5	12.6	13.6	12.1	12.2	13.1
White	10.4	10.5	11.4	10.3	10.4	11.3
Colored	17.7	17.6	18.9	16.4	16.3	17.6
Washington	10.0	9.5	11.0	10.1	9.5	11.1
Wisconsin	9.5	9.7	10.5	10.1	10.3	11.2
Wyoming	([3])	([4])	([4])	9.3	([4])	([4])
Registration cities of 100,000 population or more in 1920:						
Akron	9.2	9.1	13.8	7.5	7.5	11.3
Albany	14.3	13.8	14.3	15.7	15.1	15.7
Atlanta	17.7	16.7	19.3	15.7	14.8	17.2
Baltimore	14.4	14.0	15.6	14.2	13.8	15.4
Birmingham	16.0	17.1	19.2	13.7	14.6	16.5
Boston	15.0	13.6	15.5	14.9	13.5	15.4
Bridgeport	11.9	11.3	13.9	11.1	10.5	12.8
Buffalo	14.0	13.1	15.3	13.4	12.6	14.6

[1] The adjusted rate makes allowance for the differences in the age and sex composition of the populations in different States, and shows what the death rate would be if all States had the same proportion of males and females and the same proportion of the total population in each age group.

[2] The crude rate is based on total population and all deaths occurring within the given area.

[3] Rate not computed.

[4] Not added to registration area until a later date.

Death rates from all causes (exclusive of stillbirths) per 1,000 population—Continued.

Area.	Adjusted rate.[1]			Crude rate.[2]		
	1922	1921	1920	1922	1921	1920
Registration cities of 100,000 population or more in 1920—Continued.						
Cambridge	12.9	12.2	14.5	13.2	12.6	14.9
Camden	14.4	13.4	15.4	13.7	12.8	14.7
Chicago	12.2	12.1	13.9	11.2	11.1	12.8
Cincinnati	14.2	13.5	14.4	14.9	14.1	15.1
Cleveland	11.5	11.7	13.8	10.3	10.5	12.4
Columbus	13.0	12.7	14.6	13.2	12.8	14.8
Dallas	14.5	13.7	15.4	12.6	11.9	13.4
Dayton	11.1	11.0	12.2	11.0	11.0	12.2
Denver	15.7	13.8	17.0	16.0	14.1	17.3
Detroit	12.5	11.8	15.2	11.1	10.5	13.4
Fall River	16.5	14.7	15.1	16.0	14.2	14.7
Fort Worth	[3]	[4]	[4]	9.9	[4]	[4]
Grand Rapids	10.5	10.4	12.6	11.0	10.9	13.2
Hartford	14.5	13.7	16.9	14.0	13.2	16.4
Houston	15.4	14.5	15.7	13.6	12.7	13.9
Indianapolis	13.4	12.8	14.8	13.2	12.6	14.6
Jersey City	13.0	13.0	15.4	11.9	11.9	14.1
Kansas City, Kans	13.7	12.7	15.1	13.1	12.1	14.5
Kansas City, Mo	15.2	14.5	16.8	14.6	13.8	16.1
Los Angeles	14.2	13.1	13.1	15.2	14.0	14.1
Louisville	14.0	14.0	15.2	14.1	14.0	15.2
Lowell	13.5	13.0	15.8	13.4	12.9	15.7
Memphis	19.3	18.8	21.6	17.8	17.4	19.9
Milwaukee	10.4	10.3	12.4	9.9	9.8	11.7
Minneapolis	10.9	11.0	12.4	10.8	10.9	12.3
Nashville	17.2	16.8	18.8	16.6	16.2	18.1
New Bedford	12.8	11.6	14.9	12.3	11.1	14.2
New Haven	13.4	11.6	14.5	13.3	11.6	14.5
New Orleans	17.8	17.4	18.7	16.7	16.4	17.6
New York	13.3	12.4	14.4	12.0	11.2	13.0
Newark	12.8	11.9	14.0	11.7	10.9	12.9
Norfolk	13.8	14.7	17.3	12.1	12.9	15.2
Oakland	11.0	10.2	11.5	11.3	10.4	11.8
Omaha	14.0	14.0	15.2	13.1	13.2	14.3
Paterson	13.4	13.4	13.5	12.7	12.7	12.8
Philadelphia	13.5	12.9	14.6	13.2	12.7	14.4
Pittsburgh	15.3	15.0	17.5	14.3	14.1	16.4
Portland, Oreg	11.5	10.6	11.8	11.8	10.9	12.1
Providence	13.6	13.1	15.2	13.8	13.3	15.5
Reading	13.1	12.7	14.0	13.5	13.2	14.5
Richmond	15.9	15.7	17.7	14.8	14.6	16.5
Rochester	11.7	11.8	12.4	11.8	12.0	12.6
St. Louis	13.0	12.7	14.6	12.5	12.2	14.1
St. Paul	11.9	11.0	12.8	11.7	10.7	12.5
Salt Lake City	12.7	12.7	14.6	12.4	12.4	14.3
San Antonio	17.0	17.2	17.8	15.4	15.6	16.2
San Francisco	14.0	13.4	14.1	14.1	13.5	14.2
Scranton	14.8	15.2	16.2	13.6	14.0	14.9
Seattle	10.1	9.4	11.1	9.6	9.0	10.7
Spokane	13.5	12.5	14.1	13.5	12.6	14.2
Springfield, Mass	11.5	11.4	13.1	11.4	11.3	13.0
Syracuse	12.4	11.8	14.9	12.7	12.1	15.2
Toledo	12.0	12.3	14.1	11.7	12.0	13.8
Trenton	16.3	13.7	16.4	15.6	13.1	15.7
Washington, D. C	14.8	14.3	15.0	14.4	13.8	14.6
Wilmington, Del	12.3	12.2	14.3	12.1	12.0	14.1
Worcester	12.7	12.6	14.4	13.0	12.9	14.7
Yonkers	11.7	10.2	12.5	10.7	9.3	11.4
Youngstown	12.6	13.1	14.4	11.3	11.7	12.9

[3] Rate not computed.

[4] Not added to registration area until a later date.

DEATHS DURING WEEK ENDED DECEMBER 1, 1923.

Summary of information received by telegraph from industrial insurance companies for week ended December 1, 1923, and corresponding week of 1922. (From the Weekly Health Index, December 4, 1923, issued by the Bureau of the Census, Department of Commerce.)

	Week ended Dec. 1, 1923.	Corresponding week, 1922.
Policies in force	55,484.173	51,442,250
Number of death claims	8,585	7,487
Death claims per 1,000 policies in force, annual rate	8.1	7.6

Deaths from all causes in certain large cities of the United States during the week ended December 1, 1923, infant mortality, annual death rate, and comparison with corresponding week of 1922. (From the Weekly Health Index, December 4, 1923, issued by the Bureau of the Census, Department of Commerce.)

City.	Week ended Dec. 1, 1923.		Annual death rate per 1,000, corresponding week, 1922.	Deaths under 1 year.		Infant mortality rate, week ended Dec. 1, 1923.[2]
	Total deaths.	Death rate.[1]		Week ended Dec. 1, 1923.	Corresponding week, 1922.	
Total	6,786	12.1	12.3	877	859	.....
Akron, Ohio	25	6.3	9.3	2	7	24
Albany, N. Y.[3]	25	11.1	11.2	2	3	44
Atlanta, Ga	85	19.9	14.0	7	8	.....
Baltimore, Md.[3]	225	15.2	13.9	30	24	88
Birmingham, Ala	59	15.7	15.0	7	6	.....
Boston, Mass	183	12.4	16.0	31	34	89
Bridgeport, Conn	27	9.8	9.4	5	1	69
Buffalo, N. Y	103	10.0	13.1	15	16	63
Cambridge, Mass	32	15.0	13.6	9	3	160
Camden, N. J.[3]	28	11.8	13.3	2	4	33
Chicago, Ill.[3]	570	10.3	10.7	85	87	76
Cincinnati, Ohio	142	18.2	15.3	12	9	79
Cleveland, Ohio[3]	159	9.3	8.8	19	13	52
Columbus, Ohio	84	16.8	11.7	10	5	104
Dallas, Tex	29	8.5	12.7	9	7	.....
Dayton, Ohio	33	10.4	11.0	2	4	33
Denver, Colo	54	10.4	14.0	5	8	.....
Des Moines, Iowa	27	10.0	.....	1	.....	.....
Detroit, Mich	212	11.1	10.4	40	33	80
Duluth, Minn	27	13.2	5.5	2	1	46
Erie, Pa	25	11.6	8.1	4	2	81
Fall River, Mass.[3]	24	10.3	18.6	6	9	85
Fort Worth, Tex	21	7.6	10.0	0	3	.....
Grand Rapids, Mich	31	11.1	9.8	2	3	32
Houston, Tex	30	10.1	9.0	4	3	.....
Indianapolis, Ind	108	16.4	16.5	11	8	85
Jacksonville, Fla	41	21.4	16.6	7	5	.....
Jersey City, N. J	55	9.3	13.1	8	12	54
Kansas City, Kans	35	15.8	16.0	5	4	114
Kansas City, Mo	91	13.5	12.7	12	5	.....
Los Angeles, Calif	208	16.3	13.6	37	13	139
Louisville, Ky	64	13.0	16.8	7	8	76
Lowell, Mass	21	9.5	16.4	0	5	0
Lynn, Mass	20	10.2	8.2	3	2	79
Memphis, Tenn	53	16.2	22.1	8	7	.....
Milwaukee, Wis	66	7.1	8.8	13	6	65
Minneapolis, Minn	70	8.9	11.1	9	7	49
Nashville, Tenn.[3]	53	22.8	16.9	1	8	.....
New Bedford, Mass	20	8.0	13.5	5	7	78
New Haven, Conn	34	10.2	9.8	2	5	26
New Orleans, La	163	21.0	15.9	21	14	.....
New York, N. Y	1,183	10.4	11.1	156	151	62
Bronx Borough	149	9.2	9.3	12	13	42
Brooklyn Borough	396	9.6	11.0	52	55	55
Manhattan Borough	547	12.6	12.3	76	61	74
Queens Borough	72	7.0	8.3	13	17	70
Richmond Borough	19	7.8	14.7	3	5	55

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1922. Cities left blank are not in the registration area for births.
[3] Deaths for week ended Friday, Nov. 30, 1923.

Deaths from all causes in certain large cities of the United States during the week ended December 1, 1923, infant mortality, annual death rate, and comparison with corresponding week of 1922. (From the Weekly Health Index, December 4, 1923, issued by the Bureau of the Census, Department of Commerce)—Continued.

City.	Week ended Dec. 1, 1923.		Annual death rate per 1,000, corresponding week, 1922.	Deaths under 1 year.		Infant mortality rate, week ended Dec. 1, 1923.[2]
	Total deaths.	Death rate.[1]		Week ended Dec. 1, 1923.	Corresponding week, 1922.	
Newark, N. J.	99	11.8	11.2	15	23	70
Norfolk, Va.	32	10.5	12.1	4	7	71
Oakland, Calif.	60	13.0	9.8	4	7	51
Omaha, Nebr.	54	13.8	10.9	5	3	54
Paterson, N. J.	38	14.2	12.8	8	4	128
Philadelphia, Pa.	426	11.6	14.3	47	77	61
Pittsburgh, Pa.	196	16.7	12.9	26	26	90
Portland, Oreg.	58	11.1	15.5	4	12	40
Providence, R. I.	71	15.3	11.7	14	7	114
Richmond, Va.	59	17.0	20.8	6	11	74
Rochester, N. Y.	69	11.3	11.0	6	8	47
St. Louis, Mo.	198	12.8	12.1	16	14	.....
St. Paul, Minn.	57	12.3	10.2	5	5	46
Salt Lake City, Utah [3]	33	13.6	14.3	5	10	81
San Antonio, Tex.	43	12.1	14.6	10	14	.....
San Francisco, Calif.	135	13.1	13.7	15	12	90
Seattle, Wash.	64	10.6	7.8	4	3	35
Spokane, Wash.	25	12.5	7.0	2	1	44
Springfield, Mass.	27	9.8	13.8	2	3	29
Syracuse, N. Y.	46	13.0	11.8	10	3	130
Tacoma, Wash.	28	14.4	12.5	1	4	25
Toledo, Ohio.	63	12.2	11.0	8	6	81
Trenton, N. J.	31	12.7	15.0	2	7	34
Utica, N. Y.	35	17.6	.....	5	.....	106
Washington, D. C.	139	16.6	15.7	16	12	91
Wilmington, Del.	25	11.1	10.8	4	6	81
Worcester, Mass.	53	14.4	15.5	8	6	91
Yonkers, N. Y.	29	14.1	9.9	1	6	22
Youngstown, Ohio.	48	18.9	11.0	8	2	109

[3] Deaths for week ended Friday, Nov. 30, 1923.

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.

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

Reports for Week Ended December 8, 1923.

ALABAMA.	Cases.
Chicken pox	46
Diphtheria	43
Influenza	116
Malaria	48
Measles	266
Pellagra	8
Pneumonia	122
Scarlet fever	14
Smallpox	2
Tuberculosis	21
Typhoid fever	9
Whooping cough	40

ARIZONA.	
Chicken pox	15
Diphtheria	10
Measles	31
Mumps	2
Scarlet fever	24
Smallpox	2
Tuberculosis	1
Typhoid fever	4

ARKANSAS.	
Cerebrospinal meningitis	1
Chicken pox	11
Diphtheria	16
Influenza	63
Malaria	41
Measles	65
Ophthalmia neonatorum	1
Pellagra	2
Scarlet fever	4
Smallpox	15
Trachoma	47
Tuberculosis	7
Typhoid fever	20
Whooping cough	31

CALIFORNIA.	
Cerebrospinal meningitis—Sonoma County	1
Diphtheria	298
Influenza	39

CALIFORNIA—continued.	
Lethargic encephalitis:	Cases.
Los Angeles County	1
Stockton	1
Measles	326
Poliomyelitis:	
Contra Costa County	1
Fresno County	1
Los Angeles	4
Santa Clara County	1
Scarlet fever	213
Smallpox:	
Long Beach	13
Los Angeles	63
Los Angeles County	53
Orange County	12
Santa Paula	12
Scattering	11
Typhoid fever	18

COLORADO. (Exclusive of Denver.)	
Chicken pox	69
Diphtheria	29
Influenza	3
Measles	299
Mumps	19
Paratyphoid fever	1
Pneumonia	5
Scarlet fever	36
Smallpox	1
Tuberculosis	128
Typhoid fever	5
Whooping cough	2

CONNECTICUT.	
Cerebrospinal meningitis	1
Chicken pox	176
Diphtheria	83
German measles	3
Influenza	5
Measles	263
Mumps	66
Pneumonia (lobar)	20

CONNECTICUT—continued.

	Cases.
Poliomyelitis	3
Scarlet fever	111
Septic sore throat	1
Tetanus	3
Tuberculosis (all forms)	32
Typhoid fever	1
Whooping cough	41

DELAWARE.

Chicken pox	8
Diphtheria	7
Measles	1
Pneumonia	4
Scarlet fever:	
Wilmington	15
Scattering	10
Tuberculosis	1
Typhoid fever	3
Whooping cough	2

FLORIDA.

Cerebrospinal meningitis	1
Diphtheria	33
Influenza	7
Malaria	10
Pneumonia	2
Scarlet fever	7
Smallpox	2
Typhoid fever	6

GEORGIA.

Chicken pox	24
Conjunctivitis	1
Diphtheria	19
Hookworm disease	3
Influenza	10
Malaria	13
Measles	312
Mumps	11
Pneumonia	64
Scarlet fever	15
Septic sore throat	1
Smallpox	49
Tuberculosis (pulmonary)	18
Typhoid fever	5
Typhus fever	3
Whooping cough	27

ILLINOIS.

Cerebrospinal meningitis—Cook County	1
Diphtheria:	
Cook County	160
Kane County	8
La Salle County	10
Rock Island County	14
Scattering	79
Influenza	26
Measles	469
Pneumonia	285
Poliomyelitis:	
Cook County	1
Mason County	1
Scarlet fever:	
Cook County	118
Iroquois County	11
Kane County	9
Lake County	15
Randolph County	8
Scattering	103

ILLINOIS—continued.

	Cases.
Smallpox	3
Tuberculosis	236
Typhoid fever:	
Cook County	92
Scattering	21
Whooping cough	102

INDIANA.

Diphtheria	216
Influenza	23
Measles	422
Pneumonia	15
Poliomyelitis—Blackford County	1
Scarlet fever	159
Smallpox	78
Trachoma	1
Tuberculosis	36
Typhoid fever	111

IOWA.

Diphtheria	51
Scarlet fever	86
Smallpox	9
Typhoid fever	4

KANSAS.

Cerebrospinal meningitis	1
Chicken pox	157
Diphtheria	118
German measles	3
Influenza	2
Malaria	1
Measles	84
Mumps	130
Pneumonia	24
Poliomyelitis	2
Scarlet fever	97
Smallpox	9
Tetanus	2
Tuberculosis	49
Typhoid fever	6
Whooping cough	95

LOUISIANA.

Dengue	3
Diphtheria	42
Hookworm disease	21
Influenza	65
Measles	270
Pneumonia	42
Scarlet fever	17
Smallpox	5
Tuberculosis	34
Typhoid fever	9

MAINE.

Cerebrospinal meningitis	2
Chicken pox	79
Diphtheria	25
German measles	5
Measles	43
Mumps	27
Pneumonia	9
Scarlet fever	32
Tuberculosis	3
Typhoid fever	3
Vincent's angina	2
Whooping cough	73

MARYLAND.[1]

	Cases.
Cerebrospinal meningitis	2
Chicken pox	108
Diphtheria	47
Influenza	26
Lethargic encephalitis	1
Malaria	1
Measles	48
Mumps	10
Ophthalmia neonatorum	1
Pneumonia (all forms)	66
Scarlet fever	90
Septic sore throat	1
Smallpox	3
Tuberculosis	38
Typhoid fever	20
Whooping cough	48

MASSACHUSETTS.

Cerebrospinal meningitis	2
Chicken pox	419
Conjunctivitis (suppurative)	15
Diphtheria	250
German measles	5
Influenza	7
Lethargic encephalitis	2
Measles	333
Mumps	246
Ophthalmia neonatorum	18
Pellagra	1
Pneumonia (lobar)	110
Poliomyelitis	9
Scarlet fever	335
Septic sore throat	2
Trichinosis	1
Tuberculosis (all forms)	132
Typhoid fever	10
Whooping cough	6

MICHIGAN.

Diphtheria	276
Measles	486
Pneumonia	110
Scarlet fever	339
Smallpox	129
Tuberculosis	32
Typhoid fever	20
Whooping cough	58

MINNESOTA.

Chicken pox	173
Diphtheria	131
Measles	209
Pneumonia	8
Scarlet fever	245
Smallpox	54
Tuberculosis	116
Typhoid fever	8
Whooping cough	6

MISSISSIPPI.

Diphtheria	26
Scarlet fever	8
Smallpox	7
Typhoid fever	7

MISSOURI.

Cerebrospinal meningitis	4
Chicken pox	83
Diphtheria	99
Influenza	5

MISSOURI—continued.

	Cases.
Measles	188
Mumps	5
Pneumonia	15
Poliomyelitis	8
Rabies	14
Scarlet fever	113
Smallpox	6
Tetanus	2
Trachoma	3
Tuberculosis	43
Typhoid fever	8
Whooping cough	74

MONTANA.

Diphtheria	19
Poliomyelitis—Savage	1
Scarlet fever	46
Smallpox	23
Typhoid fever	3

NEW JERSEY.

Cerebrospinal meningitis	7
Chicken pox	287
Diphtheria	201
Influenza	11
Measles	158
Pneumonia	118
Poliomyelitis	4
Scarlet fever	113
Trachoma	1
Typhoid fever	15
Whooping cough	94

NEW MEXICO.

Chicken pox	10
Diphtheria	10
Dysentery	1
Influenza	2
Measles	16
Mumps	18
Pneumonia	4
Scarlet fever	16
Tetanus	1
Tuberculosis	12
Typhoid fever	6

NEW YORK.

(Exclusive of New York City.)

Diphtheria	279
Influenza	11
Lethargic encephalitis	1
Measles	830
Pneumonia	235
Poliomyelitis	10
Scarlet fever	358
Smallpox	9
Typhoid fever	23
Whooping cough	355

NORTH CAROLINA.

Chicken pox	206
Diphtheria	109
German measles	4
Measles	1,216
Ophthalmia neonatorum	1
Scarlet fever	100
Septic sore throat	5
Smallpox	5
Typhoid fever	15
Whooping cough	414

[1] Week ended Friday.

OREGON.	Cases.
Chicken pox	33
Diphtheria:	
Marion County	8
Portland	30
Scattering	3
Influenza	1
Measles	580
Mumps	2
Pneumonia	17
Poliomyelitis	1
Scarlet fever	24
Smallpox	11
Tuberculosis	6
Typhoid fever	11

SOUTH DAKOTA.	
Cerebrospinal meningitis	1
Chicken pox	28
Diphtheria	6
Measles	177
Pneumonia	5
Scarlet fever	51
Tuberculosis	4
Typhoid fever	2
Whooping cough	5

TEXAS.	
Chicken pox	52
Dengue	27
Diphtheria	81
Influenza	63
Lethargic encephalitis	1
Measles	188
Mumps	21
Pellagra	3
Pneumonia	21
Scarlet fever	79
Smallpox	28
Trachoma	10
Typhoid fever	34
Tuberculosis	23
Whooping cough	9

VERMONT.	
Chicken pox	31
Measles	162
Mumps	3
Poliomyelitis	1
Scarlet fever	17
Smallpox	14
Whooping cough	86

[1] Deaths.

WASHINGTON.	Cases.
Chicken pox	53
Diphtheria:	
King County	10
Scattering	19
Measles	413
Mumps	32
Scarlet fever:	
Lincoln County	10
Scattering	44
Smallpox:	
Adams County	9
Lincoln County	15
Lewis County	14
Scattering	18
Tuberculosis	45
Typhoid fever	6
Whooping cough	15

WEST VIRGINIA.	
Diphtheria	20
Scarlet fever	17
Typhoid fever	4

WISCONSIN.	
Milwaukee:	
Chicken pox	75
Diphtheria	4
Measles	1
Pneumonia	5
Poliomyelitis	1
Scarlet fever	19
Smallpox	2
Tuberculosis	23
Typhoid fever	1
Whooping cough	36
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	197
Diphtheria	116
Influenza	22
Lethargic encephalitis	1
Measles	249
Pneumonia	14
Scarlet fever	179
Smallpox	9
Tuberculosis	12
Typhoid fever	5
Whooping cough	94

Reports for Week Ended December 1, 1923.

DISTRICT OF COLUMBIA.	Cases.
Chicken pox	37
Diphtheria	17
Poliomyelitis	1
Scarlet fever	30
Smallpox	12
Tuberculosis	20
Typhoid fever	5
Whooping cough	6

NEBRASKA.	
Chicken pox	21
Diphtheria	23
Lethargic encephalitis	1
Measles	94
Mumps	1
Scarlet fever	21
Smallpox	1
Whooping cough	8

NORTH DAKOTA.	Cases.
Chicken pox	25
Diphtheria	34
German measles	1
Lethargic encephalitis	1
Measles	165
Pneumonia	14
Scarlet fever	44
Trachoma	1
Tuberculosis	6
Typhoid fever	5
Whooping cough	4

WYOMING.	
Chicken pox	16
Diphtheria	1
Measles	118
Pneumonia	2
Scarlet fever	11
Typhoid fever	1
Whooping cough	34

SUMMARY OF CASES REPORTED MONTHLY BY STATES.

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

State.	Cerebrospinal meningitis.	Diphtheria.	Influenza.	Malaria.	Measles.	Pellagra.	Poliomyelitis.	Scarlet fever.	Smallpox.	Typhoid fever.
October, 1923.										
California	8	1,056	79	37	1,217	4	91	630	190	119
November, 1923.										
Connecticut	9	264	22	1	572	.....	9	342	2	22
North Dakota	.....	146	.....	.....	465	.....	4	213	20	28

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923.

ANTHRAX.

City.	Cases.	Deaths.
Alabama:		
Montgomery	1	.....

CEREBROSPINAL MENINGITIS.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding week of the years 1915 to 1922, inclusive. In instances in which data for the full eight years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Nov. 24, 1923.		City.	Median for previous years.	Week ended Nov. 24, 1923.	
		Cases.	Deaths.			Cases.	Deaths.
Alabama:				New York:			
Birmingham	0	2	.....	Lackawanna	0	1	1
California:				New York	4	2	1
Long Beach	0	1	.....	North Carolina:			
Sacramento	0	1	1	Wilmington	0	1	.....
Illinois:				Ohio:			
Chicago	1	1	1	Cleveland	0	1	.....
Kentucky:				Pennsylvania:			
Covington	0	1	.....	Philadelphia	1	.....	1
Louisiana:				Tennessee:			
New Orleans	0	1	1	Memphis	0	1	.....
Shreveport	.....	.....	1	Texas:			
Massachusetts:				Houston	0	.....	1
Lynn	0	1	1	Wisconsin:			
Michigan:				Janesville	0	1	1
Hamtramck	0	.....	1				
New Jersey:							
Bayonne	0	1	.....				
Montclair	0	1	.....				
Passaic	0	.....	1				

DIPHTHERIA.

See p. 2985; also Current State summaries, p. 2974, and Monthly summaries by States, p. 2978.

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

INFLUENZA.

City.	Cases.		Deaths, week ended Nov. 24, 1923.
	Week ended Nov. 25, 1922.	Week ended Nov. 24, 1923.	
Alabama:			
Anniston	1	1	
Birmingham	1	6	1
Dothan	8		
Mobile		1	
Montgomery			1
California:			
Bakersfield			1
Long Beach	1	1	
Los Angeles	4	5	2
Oakland	1		1
San Francisco	4	4	1
Stockton		7	2
Connecticut:			
Bridgeport		1	1
New London	1		
District of Columbia:			
Washington	1		
Georgia:			
Atlanta	1	2	2
Augusta	8		
Brunswick		2	
Savannah		2	
Illinois:			
Chicago	6	14	4
Danville	1		
Decatur		1	
Kansas:			
Kansas City	1		
Kentucky:			
Louisville	2	1	
Louisiana:			
New Orleans		2	1
Shreveport		1	
Maryland:			
Baltimore	31	16	3
Cumberland		2	
Massachusetts:			
Boston	2	3	
Clinton	1		
Everett	1		
Fall River		1	1
Haverhill	4		
Lynn			1
Malden	1		
Springfield	2		
Michigan:			
Detroit	2	3	
Grand Rapids		1	
Missouri:			
Kansas City	2	1	1
St. Louis		1	
Montana:			
Butte	1		
Great Falls	3		
New Jersey:			
Bloomfield		1	
East Orange		1	
Englewood		1	1
Garfield	1		
Kearny		1	
Newark	15	8	2
Passaic		5	
Trenton		1	
New Mexico:			
Albuquerque		1	
New York:			
Albany	4		
Buffalo		2	
Lackawanna	1		
New York	41	31	11
Rochester			1
Syracuse		1	
Ohio:			
Cincinnati		2	2
Cleveland	1	6	
Columbus	2		2
Oregon:			
Portland	1		
Pennsylvania:			
Philadelphia	3	3	3
Pittsburgh			2
Texas:			
Dallas			1
Virginia:			
Richmond			1
West Virginia:			
Huntington			1
Wisconsin:			
Milwaukee		1	

LETHARGIC ENCEPHALITIS.

City.	Cases.	Deaths.
California:		
San Francisco	1	1
Illinois:		
Chicago	3	
Missouri:		
Kansas City	1	1
New Jersey:		
Newark	1	
Orange	1	
New York:		
New York	7	2
Rome	1	

MALARIA.

Alabama:		
Anniston	1	1
Montgomery	1	
California:		
Oakland	1	
Connecticut:		
New Haven	1	
Georgia:		
Savannah	1	

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

MEASLES.

See p. 2985; also Current State summaries, p. 2974, and Monthly summaries by States, p. 2978.

PELLAGRA.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Alabama:			Maryland:		
Birmingham		1	Baltimore		1
Georgia:			Massachusetts:		
Atlanta		1	Boston	1	
Augusta		1	North Carolina:		
Kentucky:			Raleigh		1
Louisville		1	Texas:		
Louisiana:			Houston		1
New Orleans	1	1			

PNEUMONIA (ALL FORMS).

Alabama:			Indiana:		
Anniston	20	8	Fort Wayne		1
Birmingham	13	8	Frankfort		1
Mobile		4	Gary		3
Montgomery		2	Hammond	2	1
Tuscaloosa	1		Indianapolis		8
Arkansas:			Michigan City		1
Little Rock	3		Muncie		1
California:			New Castle		2
Bakersfield		2	South Bend		1
Eureka		1	Terre Haute		3
Long Beach	1		Iowa:		
Los Angeles	48	15	Council Bluffs		1
Oakland		3	Muscatine		1
Pasadena		2	Kansas:		
Sacramento		1	Coffeyville	2	
San Diego		2	Fort Scott		1
San Francisco	15	9	Kansas City	4	
San Jose		1	Topeka		1
Santa Ana		2	Wichita		2
Santa Cruz		2	Kentucky:		
Stockton		5	Covington		1
Colorado:			Lexington		1
Boulder		1	Louisville		12
Denver		20	Louisiana:		
Pueblo		2	New Orleans		16
Connecticut:			Shreveport		5
Bridgeport	5	2	Maine:		
Fairfield		1	Auburn	1	
Greenwich	1		Bangor		1
New Haven	4	3	Biddeford		4
Delaware:			Lewiston	1	
Wilmington		4	Portland		1
District of Columbia:			Maryland:		
Washington		17	Baltimore	27	25
Florida:			Cumberland	6	1
St. Petersburg		2	Frederick	3	
Georgia:			Massachusetts:		
Albany	3		Arlington	1	
Atlanta	19	17	Belmont	2	
Augusta		5	Boston	23	11
Brunswick	1		Cambridge		3
Rome	3		Chicopee		2
Savannah		5	Everett	1	
Illinois:			Fall River		4
Aurora		2	Framingham		1
Bloomington		1	Gardner		1
Champaign	2		Haverhill		3
Chicago	197	51	Holyoke	1	
Cicero		1	Leominster	1	
Danville		1	Lowell		2
Decatur	1		Lynn	3	2
East St. Louis		2	Malden		1
Elgin		1	Melrose	2	1
Evanston	1		Newburyport		2
Galesburg	2	1	Newton	2	1
Jacksonville		1	Peabody		1
Kewanee	1		Somerville	2	
Oak Park	2		Springfield		2
Peoria		2	Wakefield	2	
Quincy	2	1	Woburn		1
Rockford		1	Worcester		7
Springfield	8	3			

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

PNEUMONIA (ALL FORMS)—Continued.

City.	Cases.	Deaths.
Michigan:		
Ann Arbor	2	1
Battle Creek	3	.....
Benton Harbor	2	1
Detroit	51	30
Flint	5	2
Grand Rapids	4	1
Hamtramck	.....	2
Highland Park	.....	1
Ishpeming	.....	1
Jackson	3	.....
Kalamazoo	5	2
Muskegon	4	3
Pontiac	3	.....
Port Huron	1	.....
Saginaw	1	.....
Minnesota:		
Duluth	5	4
Minneapolis	.....	3
St. Paul	.....	8
Missouri:		
Kansas City	14	12
St. Joseph	.....	4
Montana:		
Billings	.....	1
Great Falls	.....	1
Nebraska:		
Lincoln	.....	1
Omaha	.....	13
New Hampshire:		
Concord	.....	2
Manchester	.....	2
Nashua	.....	1
New Jersey:		
Atlantic City	.....	2
Bayonne	3	.....
Belleville	1	.....
Bloomfield	1	.....
Camden	5	3
Clifton	2	1
East Orange	1	.....
Elizabeth	.....	8
Englewood	1	.....
Garfield	2	.....
Hoboken	.....	1
Jersey City	2	.....
Kearny	.....	2
Morristown	.....	1
Newark	49	7
Orange	.....	1
Passaic	2	.....
Paterson	3	.....
Perth Amboy	.....	2
Plainfield	2	1
Rahway	.....	1
Trenton	.....	4
West Orange	2	.....
New Mexico:		
Albuquerque	.....	1
New York:		
Albany	8	.....
Amsterdam	.....	1
Buffalo	20	9
Cortland	1	.....
Elmira	4	.....
Geneva	.....	1
Glens Falls	1	.....
Hornell	3	1
Hudson	.....	1
Lackawanna	.....	2
Lockport	2	.....
Middletown	.....	1
Mount Vernon	.....	1
New York	261	133
Olean	1	.....
Rochester	17	3
Rome	3	.....
Schenectady	4	1
Syracuse	17	2
New York—Continued.		
Troy	.....	2
White Plains	.....	2
North Carolina:		
Durham	.....	1
Greensboro	.....	1
Salisbury	.....	1
Wilmington	.....	2
Winston-Salem	.....	2
North Dakota:		
Fargo	.....	1
Ohio:		
Akron	5	.....
Ashtabula	.....	2
Barberton	.....	1
Chillicothe	.....	1
Cincinnati	.....	11
Cleveland	.....	28
Cleveland Heights	1	.....
Columbus	.....	5
Dayton	1	.....
East Cleveland	.....	1
Lancaster	.....	1
Lima	.....	3
Middletown	.....	3
New Philadelphia	1	.....
Piqua	2	1
Sandusky	1	.....
Toledo	.....	2
Younstown	.....	7
Zanesville	.....	1
Oklahoma:		
Oklahoma	.....	4
Pennsylvania:		
Philadelphia	51	41
Pittsburgh	.....	29
Rhode Island:		
Cranston	.....	1
Pawtucket	.....	1
Providence	.....	4
South Carolina:		
Charleston	.....	3
Columbia	.....	3
Greenville	.....	1
South Dakota:		
Sioux Falls	.....	2
Tennessee:		
Memphis	.....	9
Nashville	.....	6
Texas:		
Dallas	3	1
Fort Worth	.....	1
Galveston	.....	1
Houston	.....	5
San Antonio	.....	10
Waco	.....	2
Utah:		
Provo	1	.....
Salt Lake City	.....	4
Virginia:		
Alexandria	1	.....
Lynchburg	.....	1
Norfolk	.....	4
Petersburg	.....	5
Portsmouth	.....	3
Richmond	.....	2
Roanoke	.....	3
West Virginia:		
Charleston	.....	2
Clarksburg	.....	1
Fairmont	1	.....
Huntington	.....	3
Wheeling	.....	2
Wisconsin:		
Kenosha	.....	1
Madison	.....	1
Milwaukee	.....	9
Racine	.....	1
Superior	.....	1

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

POLIOMYELITIS (INFANTILE PARALYSIS).

The column headed "Median for previous years" gives the median number of cases reported during the corresponding week of the years 1915 to 1922, inclusive. In instances in which data for the full eight years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Nov. 24, 1923.	
		Cases.	Deaths.
California:			
Long Beach	0	1	
Los Angeles	0	2	
Connecticut:			
Bridgeport	0	1	
New Haven	0	1	
Illinois:			
Chicago	0	4	
Springfield	0	1	1
Indiana:			
Mishawaka	0	1	
Iowa:			
Muscatine	0	1	
Kansas:			
Atchison	0	1	
Wichita	0	1	
Massachusetts:			
Boston	0	2	
Brockton	0	1	
Everett	0	1	
Haverhill	0	1	
Massachusetts—Contd.			
Holyoke		1	
Lowell	0	6	
Lynn	0	1	1
Nebraska:			
Omaha	0	1	
New Jersey:			
Elizabeth	0	1	
Harrison	0		1
Hoboken	0	1	
Newark	0		1
New York:			
New York	3	7	2
Syracuse	0	1	
Pennsylvania:			
Philadelphia	0	1	
Texas:			
El Paso	0		1
Wisconsin:			
Milwaukee	0	1	

RABIES IN ANIMALS.

City.	Cases.	City.	Cases.
California:		Massachusetts:	
Alameda	1	Methuen	1
Los Angeles	9	Missouri:	
Pasadena	1	Independence	1
Georgia:		Kansas City	2
Savannah	1	Texas:	
Kentucky:		Beaumont	1
Louisville	1		

SCARLET FEVER.

See p. 2985; also Current State summaries, p. 2974, and Monthly summaries by States, p. 2978.

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

SMALLPOX.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding week of the years 1915 to 1922, inclusive. In instances in which data for the full eight years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Nov. 24, 1923.	
		Cases.	Deaths.
Arkansas:			
Little Rock	0	1	
California:			
Long Beach	0	8	
Los Angeles	1	35	
Riverside	0	3	
District of Columbia:			
Washington	0	4	
Georgia:			
Atlanta	1	25	
Illinois:			
Chicago	1	1	
Indiana:			
East Chicago	0	1	
Gary	0	2	
Indianapolis	2	1	
Michigan City		2	
Muncie	0	7	
Iowa:			
Clinton	0	4	
Des Moines	0	1	
Waterloo	0	1	
Kentucky:			
Louisville	0	1	
Louisiana:			
Shreveport		1	
Michigan:			
Detroit	1	13	
Highland Park	0	12	
Holland	0	5	
Jackson	0	11	
Saginaw	0	2	
Minnesota:			
St. Paul	9	5	
Montana:			
Great Falls	1	1	
North Carolina:			
Greensboro	0	2	
Ohio:			
Columbus	0	2	
Dayton	0	1	
Middletown	0	1	
Youngstown	0	9	
Zanesville	0	14	
Pennsylvania:			
Philadelphia	0	1	
York	0	1	
Tennessee:			
Chattanooga	0	3	
Knoxville	0	2	
Texas:			
Fort Worth	0	3	
Vermont:			
Burlington	0	9	
Virginia:			
Roanoke	0	1	
Washington:			
Seattle	1	5	
Spokane	18	17	
Tacoma	0	6	
Walla Walla	3	1	
Wisconsin:			
Green Bay	0	2	
Milwaukee	1	2	
Superior	0	2	

TETANUS.

City.	Cases.	Deaths.
California:		
Oakland	1	
Georgia:		
Savannah	1	1
New York:		
Olean	1	

TUBERCULOSIS.

See p. 2985; also Current State summaries, p. 2974.

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

TYPHOID FEVER.

The column headed "Median for previous years" gives the median number of cases reported during the corresponding week of the years 1915 to 1922, inclusive. In instances in which data for the full eight years are incomplete, the median is that for the number of years for which information is available.

City.	Median for previous years.	Week ended Nov. 24, 1923.	
		Cases.	Deaths.
Alabama:			
Anniston	0	.....	1
Arkansas:			
Fort Smith	4	1	.....
Little Rock	0	1	.....
California:			
Los Angeles	2	11	1
Pasadena	0	2	.....
San Francisco	1	1	1
Colorado:			
Denver	0	1	.....
Pueblo	0	2	.....
Connecticut:			
Fairfield	0	1	.....
District of Columbia:			
Washington	1	3	1
Georgia:			
Atlanta	0	1	.....
Macon	2	1	.....
Savannah	1	2	.....
Illinois:			
Chicago	5	38	2
Danville	0	.....	1
East St. Louis	0	1	1
Evanston	0	6	.....
Oak Park	0	1	.....
Springfield	0	1	.....
Indiana:			
East Chicago	0	1	.....
Hammond	0	.....	1
Muncie	0	.....	1
South Bend	0	1	.....
Kentucky:			
Louisville	1	1	.....
Paducah	0	1	.....
Louisiana:			
Shreveport	.....	1	.....
Maryland:			
Baltimore	5	7	1
Cumberland	0	.....	1
Frederick	0	1	.....
Massachusetts:			
Adams	0	1	.....
Beverly	0	1	.....
Boston	3	1	.....
Chelsea	0	1	.....
Gardner	0	1	.....
Lynn	0	1	.....
North Adams	0	.....	1
Worcester	0	1	.....
Michigan:			
Battle Creek	0	1	.....
Detroit	5	1	2
Flint	0	1	.....
Grand Rapids	1	1	.....
Kalamazoo	0	1	.....
Muskegon	0	3	.....
Saginaw	1	1	.....
Minnesota:			
Minneapolis	1	1	.....
Rochester	0	1	.....
St. Paul	1	1	1
Missouri:			
St. Louis	4	2	1
New Hampshire:			
Concord	0	1	.....
New Jersey:			
Belleville	0	1	.....
Newark	1	1	.....
Paterson	0	1	.....
West Hoboken	0	1	.....
West New York	0	1	.....
New York:			
Buffalo	2	2	1
Lockport	0	1	.....
New York	22	18	2
Rochester	1	3	.....
Syracuse	0	1	.....
White Plains	0	1	.....
North Carolina:			
Greensboro	0	1	1
Wilmington	0	2	.....
Ohio:			
Cincinnati	0	2	.....
Columbus	0	.....	1
Toledo	1	1	.....
Zanesville	0	1	.....
Oklahoma:			
Oklahoma	0	2	1
Pennsylvania:			
Butler	0	1	.....
Columbia	0	1	.....
Philadelphia	5	2	.....
Sharon	0	1	.....
Texas:			
Dallas	0	21	1
El Paso	1	5	1
Fort Worth	0	2	.....
Galveston	0	2	.....
Utah:			
Salt Lake City	0	1	.....
Virginia:			
Roanoke	0	4	.....
Washington:			
Seattle	1	1	.....
Spokane	0	1	.....
West Virginia:			
Huntington	0	.....	1
Wheeling	1	.....	1
Wisconsin:			
Appleton	0	1	.....
Eau Claire	0	1	.....
Milwaukee	0	2	.....

TYPHUS FEVER.

City.	Cases.	Deaths.
Georgia:		
Savannah	2	.....

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Alabama:										
Anniston	17,734	16					1			1
Birmingham	178,806	44	8		2		6		5	2
Mobile	60,777	22	2		1					2
Montgomery	43,464	16	2		5		3			1
Tuscaloosa	11,996				1		2		3	
Arkansas:										
Fort Smith	28,870		2				1			
Little Rock	65,142		7		1		4		3	
North Little Rock	14,048		1		1		2			
California:										
Alameda	28,806	2	2		2				1	
Bakersfield	18,638	7		1			1			1
Eureka	12,923	6			8		1		2	
Glendale	13,536	13								2
Long Beach	55,593	23	9		1		6		1	
Los Angeles	576,673	221	77	2	6		48		105	28
Oakland	216,261	52	20	2	5		18		8	2
Pasadena	45,354	15	1		2		2		3	
Richmond	16,843	1	1		1					
Riverside	19,341	3	2		1		2		1	
Sacramento	65,908	27	4	1			2		4	5
San Bernardino	18,721	5	7				6			1
San Diego	74,683	27	7		1		3		9	3
San Francisco	506,676	140	71	6	155	1	27		28	8
San Jose	39,642	14	3		5		1			
Santa Ana	15,485	7					3			1
Santa Cruz	10,917	4								1
Stockton	40,296	12	13		3		8		1	1
Colorado:										
Boulder	11,006	5	1		37					2
Denver	256,491	86	13	1	1		14			16
Greeley	10,958	3								
Pueblo	43,050	13	1		9		2			2
Trinidad	10,906		1							
Connecticut:										
Bridgeport	143,555	32	13	1			9		5	2
Bristol	29,620	2	1				5			
Fairfield (town)	11,175	4								
Greenwich (town)	22,123				14		1		1	
Hartford	138,036	28	17	1			10		3	
Manchester (town)	18,370	3	1		1		2			
Milford (town)	10,193	3								
New Haven	162,537	39	2		1		12	1	6	1
New London	25,688	5								
Norwich (city)	22,304	6			1				3	1
Delaware:										
Wilmington	110,168	27	10	1			6			1
District of Columbia:										
Washington	437,571	121	18	2	5		25		21	9
Florida:										
St. Petersburg	14,237	10		1	7		2	1		
Tampa	51,608	15	2		11		3		1	
Georgia:										
Albany	11,555				1					
Atlanta	200,616	95	14		50		6		3	5
Augusta	52,548	25	1				4		4	2
Brunswick	14,413	2								
Lagrange	17,028		4		2					
Macon	52,995		1						1	
Rome	13,252				2					
Savannah	83,252	45	3		4		2			5
Idaho:										
Boise	21,393	3					3			
Illinois:										
Alton	24,682	8	1							
Aurora	36,397	8	15				5			
Berwyn	14,150	4			5		1		1	
Bloomington	28,725	6	1				3		2	
Centralia	12,491	4								
Champaign	15,873						2			
Chicago	2,701,705	249	167	10	32		94	2	222	31
Cicero	44,995	6			5		3			1

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Illinois—Continued.										
Danville	33,776	13					4			
Decatur	43,818	9	4				3		2	1
East St. Louis	66,767	13	7		1		1		1	
Elgin	27,454	10			3		1		3	
Evanston	37,234	10	1				6			
Forest Park	10,768	1			1					
Freeport	19,669	3	3							
Galesburg	23,834				2					
Jacksonville	15,713	10	1							
Kewanee	16,026	1								
La Salle	13,050				1		1			
Mattoon	13,552						1		1	
Oak Park	39,858	14	1				1		1	
Pekin	12,086		1							
Peoria	76,121	20	1	1	1		2			
Quincy	35,978	6	1				2		2	
Rock Island	35,177	2	2		29					
Rockford	65,651	16	1		2		2			2
Springfield	59,183	28	4	1			3		11	2
Urbana	10,244		3				3		3	
Indiana:										
Anderson	29,767	5	2		8		2		1	
Bloomington	11,595	1	1	1			1			
Crawfordsville	10,139	4	2				2			
East Chicago	35,967	12	2							2
Elwood	10,790	2	1		45					
Evansville	85,264		12				8			
Fort Wayne	86,549	26	2				2			1
Frankfort	11,585	4			48					
Gary	55,378	9	10	2			16			1
Hammond	36,004	9	2				4			
Huntington	14,000	2	1				1			
Indianapolis	314,194	100	20	1	1		2		15	6
La Fayette	22,486	5							6	
Laporte	15,158	0	6							
Logansport	21,626	2	1							
Michigan City	19,457	7	3	1			2			
Mishawaka	15,195	3	1				1			
Muncie	36,524	14			2					2
Newcastle	14,458	2	1							
South Bend	70,983	19	19		1		8	1	3	1
Terre Haute	66,083	18	1				6			1
Iowa:										
Burlington	24,057	11	5				1		1	1
Clinton	24,151		4							
Council Bluffs	36,162	14	5				1			
Des Moines	126,468		5				7			
Dubuque	39,141	12	4	1						
Iowa City	11,267						8			
Marshalltown	15,731	0	1				1			
Muscatine	16,068	5	1				1		1	
Ottumwa	23,003		3							
Sioux City	71,227		6		133		4			
Waterloo	36,230				7		9			
Kansas:										
Atchison	12,630				29				1	
Coffeyville	13,452	5	2		1				1	
Fort Scott	10,693	4	1		20					
Hutchinson	23,298						2			
Kansas City	101,177		2		7		7		17	
Lawrence	12,456	3	3				2			
Parsons	16,028						3			
Topeka	50,022	8	6		1		4		2	
Wichita	72,217	21	10				2		1	
Kentucky:										
Covington	57,121	25					27	1		3
Henderson	12,169	3	1				1			
Lexington	41,534	17	1		1		1		2	2
Louisville	234,891	82	6						13	8
Owensboro	17,424		1							
Louisiana:										
New Orleans	387,219	145	11	2	14		6		16	11
Shreveport	43,874	21	3		48		1		1	1

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Maine:										
Auburn	16,985	4								
Bangor	25,978								4	
Bath	14,731	6	1				1			
Biddeford	18,008	10	2				2			
Lewiston	31,791	15	1				3			
Portland	69,272	12	2				1			
Sanford (town)	10,691	5							2	1
Waterville	13,351				4					
Maryland:										
Baltimore	733,826	212	32	1	9		28		39	16
Cumberland	29,837	5	5						2	
Frederick	11,066	2								
Massachusetts:										
Adams (town)	12,967	4	1				1		1	
Amesbury (town)	10,036	1								
Arlington (town)	18,665	6	1				2		2	
Attleboro	19,731	5								1
Belmont (town)	10,749	2			2					
Beverly	22,561		1				1			
Boston	748,060	194	68	2	43		91	1	43	10
Braintree (town)	10,580	4	1						1	1
Brockton	66,254	7	11		1		2		1	
Brookline	37,748	11	1		2		4			
Cambridge	109,694	27	8		4		10		3	2
Chelsea	43,184	6	2				6		3	1
Chicopee	36,214	4	2				1			
Clinton	12,979	3								1
Danvers	11,108				4				2	
Dedham	10,792	3								
Easthampton	11,261						1			
Everett	40,120	6	4							
Fall River	120,485	33	4				9		3	1
Framingham	17,033	4			1					
Gardner	16,971	10					6			
Greenfield	15,462	3			1		1			
Haverhill	53,884	16	7		1		2		1	1
Holyoke	60,203	19	54	1	7		3		2	1
Leominster	19,744	3	1				2			
Lowell	112,759	29	3		1		4	1	10	2
Lynn	99,148	18	3		2		1		1	2
Malden	49,103	8	3	1			3	1		1
Medford	39,038	9	2				2		2	
Melrose	18,204	4								
Methuen	15,189	1	2	1					1	
Milford	13,471	2					4			
New Bedford	121,217	34	2	1	1				2	2
Newburyport	15,618	7					1			
Newton	46,054	5	2		1		1			
North Adams	22,282	8					2		1	
Northampton	21,951	10		1						
Northbridge	10,174	2								
Peabody	19,552	5	4		1		5		1	
Pittsfield	41,763	12	3		28		4		1	
Plymouth	13,045	3								1
Quincy	47,876	10	3		3		3		1	
Salem	42,529	15	2		5		8		3	
Somerville	93,091	15	5	1	1		11		3	2
Southbridge	14,245	1	2	1						
Springfield	129,614	22	10		2		5			
Taunton	37,137	7			2					
Wakefield	13,025	3			2					
Waltham	30,915	8	4		1					
Watertown	21,457	4	4		21		1		1	1
Webster	13,258	1					1			
West Springfield	13,443	4								
Westfield	18,604	1							1	
Weymouth	15,057	4								
Winchester	10,485	6	1				2		3	2
Winthrop	15,455	4							2	
Woburn	16,574	6								
Worcester	179,754	49	33	3	1		14		6	
Michigan:										
Ann Arbor	19,516	7					3	1		
Battle Creek	36,164						16		1	

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Michigan—Continued.										
Benton Harbor	12,233	6	1	1			2		2	
Detroit	993,678	217	72	4	59		81		29	13
Flint	91,599	16	24		6		3		10	1
Grand Rapids	137,634	39	14	1	2		7			
Hamtramck	48,615	11	3				3			1
Highland Park	46,499	12	1	1	2		4		1	1
Holland	12,183		3				2			
Ironwood	15,739	5	1				7			1
Ishpeming	10,500	2			4		6			
Jackson	48,374	16	4		1		6		3	
Kalamazoo	48,487	20	5	1			9		1	
Marquette	12,718	3			47		1			
Muskegon	36,570	12	2	1			13			
Pontiac	34,273	12	12				6		5	1
Port Huron	25,944	1	1				1			
Saginaw	61,903	24	8	1	13		3			
Sault Ste. Marie	12,096	2			69					
Minnesota:										
Duluth	98,917	22					20		3	1
Hibbing	15,089	1					5			
Mankato	12,469		1							
Minneapolis	380,582	70	36	1			85		38	4
Rochester	13,722	12							1	
St. Cloud	15,873		10				3			
St. Paul	234,698	50	28	2	12		25		12	5
Virginia	14,022		1							
Winona	19,143	8								
Missouri:										
Cape Girardeau	10,252		1							
Independence	11,686		5				2			
Joplin	29,902		1				1			
Kansas City	324,410	85	15	1	13		12		7	
St. Joseph	77,939	22	2		11		3			
St. Louis	772,897	201	27		11		65		47	12
Montana:										
Anaconda	11,668	5			6		6		1	1
Billings	15,100	2			23		1			
Great Falls	24,121	7	2				1			
Helena	12,037	6								1
Missoula	12,668	1								
Nebraska:										
Lincoln	54,948	10	20		21		2		1	
Omaha	191,601	57	7	1	2		4			1
Nevada:										
Reno	12,016	2					1			
New Hampshire:										
Berlin	16,104	2					2			
Concord	22,167	12			12					
Dover	13,029	5			4					
Keene	11,210	4	1		4		1			
Manchester	78,384	22	3		3	1	4			
Nashua	28,379	5			28		1			
New Jersey:										
Asbury Park	12,400	5								
Atlantic City	50,707	10	1						1	
Bayonne	76,754		5		3		3		2	
Belleville	15,660				1					
Bloomfield	22,019	2								
Camden	116,309	30	15				1		8	2
Clifton	26,470	4	4						1	
East Orange	50,710	5					2		2	
Elizabeth	95,783		13		1		2		4	3
Englewood	11,627	1								
Garfield	19,381	1	3				2			
Hackensack	17,667	3	1							1
Harrison	15,721								4	
Hoboken	68,166	18					8		2	
Jersey City	298,103		9		20		6		15	
Kearny	26,724	9			2				1	
Montclair	28,810	3								
Morristown	12,548	5					1			
Newark	414,524	82	3	2	13		6	1	27	4
Orange	33,268	6							1	1
Passaic	63,841	9	10		2		2			1

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
New Jersey—Continued.										
Paterson	135,875	.....	4	.....	18	.....	3	.....	3	.....
Perth Amboy	41,707	12	2	.....	2	.....	8	.....	1	.....
Phillipsburg	16,923	4	.....	.....	.....	.....	.....	.....	.....	.....
Plainfield	27,700	4	.....	.....	16	.....	.....	.....	.....	.....
Rahway	11,042	2	2	.....	.....	.....	.....	.....	.....	.....
Summit	10,174	2	.....	.....	.....	.....	.....	.....	.....	.....
Trenton	119,289	48	17	.....	6	1	1	.....	5	8
West Hoboken	40,074	1	1	.....	.....	.....	.....	.....	.....	1
West New York	29,926	4	3	.....	.....	.....	.....	.....	.....	.....
West Orange	15,573	2	2	.....	.....	.....	.....	.....	1	.....
New Mexico:										
Albuquerque	15,157	8	.....	.....	.....	.....	2	.....	6	3
New York:										
Albany	113,344	.....	48	.....	3	.....	30	.....	3	.....
Amsterdam	33,524	11	12	1	30	.....	12	.....	.....	1
Auburn	36,192	6	.....	.....	.....	.....	1	.....	.....	.....
Buffalo	506,775	137	21	2	12	.....	23	.....	21	9
Cohoes	22,987	10	1	.....	15	.....	.....	.....	.....	.....
Cortland	13,294	4	.....	.....	.....	.....	1	.....	1	.....
Elmira	45,393	15	3	.....	.....	.....	2	.....	.....	.....
Geneva	14,648	2	.....	.....	.....	.....	.....	.....	.....	.....
Glens Falls	16,638	1	.....	.....	.....	.....	.....	.....	.....	.....
Hornell	15,025	1	1	.....	.....	.....	1	.....	.....	.....
Hudson	11,745	4	.....	.....	.....	.....	.....	.....	1	.....
Ithaca	17,004	5	2	1	.....	.....	1	.....	1	.....
Lackawanna	17,918	8	6	.....	5	.....	1	.....	2	2
Little Falls	13,029	4	.....	.....	.....	.....	.....	.....	.....	.....
Lockport	21,308	4	.....	.....	33	.....	6	.....	.....	.....
Mount Vernon	42,726	8	.....	.....	1	.....	.....	.....	.....	.....
New York	5,620,048	1,218	168	13	198	5	100	.....	[1] 227	[1] 80
Newburgh	30,366	10	1	.....	.....	.....	.....	.....	.....	1
Niagara Falls	50,760	10	5	1	1	.....	1	.....	2	.....
North Tonawanda	15,482	7	1	.....	.....	.....	6	.....	1	.....
Olean	20,506	1	2	.....	1	.....	5	.....	.....	.....
Peekskill	15,868	4	2	.....	1	.....	1	.....	1	.....
Rochester	295,750	62	12	1	3	.....	6	.....	.....	.....
Rome	26,341	7	.....	.....	61	1	4	.....	.....	.....
Saratoga Springs	13,181	3	2	.....	.....	.....	.....	.....	2	1
Schenectady	88,723	14	16	.....	38	.....	5	.....	2	1
Syracuse	171,717	42	19	2	22	.....	24	.....	7	2
Troy	72,013	22	.....	.....	74	.....	2	.....	5	2
White Plains	21,031	6	.....	.....	3	.....	2	.....	1	1
North Carolina:										
Durham	21,719	5	3	.....	.....	.....	4	.....	.....	.....
Greensboro	43,525	11	3	.....	1	.....	.....	.....	.....	1
Raleigh	24,418	21	4	.....	.....	.....	5	.....	1	2
Rocky Mount	12,742	5	.....	.....	.....	.....	.....	.....	.....	1
Salisbury	13,884	2	.....	.....	.....	.....	.....	.....	.....	.....
Wilmington	33,372	7	.....	.....	.....	.....	.....	.....	1	.....
Winston-Salem	48,395	16	4	1	37	.....	1	.....	1	.....
North Dakota:										
Fargo	21,961	5	.....	.....	.....	.....	.....	.....	.....	.....
Grand Forks	14,010	.....	.....	.....	.....	.....	7	.....	.....	.....
Ohio:										
Akron	208,435	32	9	.....	2	.....	10	.....	14	.....
Ashtabula	22,082	8	.....	.....	.....	.....	.....	.....	.....	.....
Barberton	18,811	3	.....	.....	.....	.....	3	.....	.....	.....
Bucyrus	10,425	6	4	1	.....	.....	1	.....	.....	.....
Cambridge	13,104	3	.....	.....	.....	.....	4	.....	.....	.....
Chillicothe	15,831	6	1	.....	.....	.....	.....	.....	.....	.....
Cincinnati	401,247	120	12	.....	7	.....	17	.....	13	9
Cleveland	796,841	221	40	8	11	.....	40	.....	30	12
Cleveland Heights	15,236	.....	1	.....	.....	.....	.....	.....	.....	.....
Columbus	237,031	63	24	.....	.....	.....	8	.....	4	5
Dayton	152,559	39	11	.....	.....	.....	12	.....	3	.....
East Cleveland	27,292	6	2	.....	.....	.....	2	.....	.....	.....
East Liverpool	21,411	.....	3	1	.....	.....	1	.....	3	.....
East Youngstown	11,237	1	.....	.....	.....	.....	.....	.....	.....	.....
Findlay	17,021	5	3	.....	1	.....	1	.....	.....	.....
Fremont	12,468	5	.....	.....	.....	.....	2	.....	.....	.....
Hamilton	39,675	12	.....	.....	.....	.....	.....	.....	.....	.....
Kenmore	12,683	.....	1	.....	.....	.....	.....	.....	.....	.....

[1] Pulmonary only.

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Ohio—Continued.										
Lancaster	14,706	5	2				1			
Lima	41,326	13	1				2			
Lorain	37,295		1				13			
Mansfield	27,824	9	1	1	1		4			
Martins Ferry	11,634	3	2				3		1	
Middletown	23,594	5	1							
New Philadelphia	10,718		3		17		1			
Newark	26,718	9					4			
Norwood	24,966	3	2						1	
Piqua	15,044	4							1	
Salem	10,305	6								
Sandusky	22,897	4	2				2	1		
Springfield	60,840	8	3				14			
Steubenville	28,508	7					6			
Tiffin	14,375	7		1						
Toledo	243,164	55	29	2	2		19			4
Youngstown	132,358	29	26	2			22	1	1	1
Zanesville	29,569	12	3				7			
Oklahoma:										
Guthrie	11,757		1				2			
Oklahoma	91,295	23	5				4			1
Shawnee	15,348	8	2		6		2			1
Pennsylvania:										
Allentown	73,502		4		2		1			
Altoona	60,331		2				1			
Beaver Falls	12,802				1		6			
Berwick	12,181		1				5			
Bethlehem	50,358		11		6		7			
Braddock	20,879		4						1	
Butler	23,778		1		2					
Carnegie	11,516						3			
Charleroi	11,516						1			
Chester	58,030		4				1			
Coatesville	14,515		1				2			
Columbia	10,836		1							
Dubois	13,681		2							
Duquesne	19,011		1							
Easton	33,813		1		1					
Erie	93,372		9		2		24			
Harrisburg	75,917		4		2		3			
Jeannette	10,627		1							
Johnstown	67,327		12				3		1	
McKeesport	46,781		1				2			
New Kensington	11,987		3				1			
North Braddock	14,928		4				3		1	
Oil City	21,274		1				3			
Philadelphia	1,823,779	457	114	10	19		48		49	36
Pittsburgh	588,343	150	47	4	6		45	3	11	5
Plymouth	16,500		1							
Pottstown	17,431		1				2			
Pottsville	21,876				1					
Punxsutawney	10,311						1			
Reading	107,784		1				2			
Sharon	21,747		1				3			
Shenandoah	24,726		2							
Sunbury	15,721		1							
Swissvale	10,908		5							
Tamaqua	12,363		1							
Uniontown	15,692		3				1			
Warren	14,272						10		1	
Washington	21,480		2		70		4			
Wilkes-Barre	73,833		3				3		1	
Wilkinsburg	24,403		7				2			
York	47,512		2				1			
Rhode Island:										
Cranston	29,407	5	1				4			
Cumberland (town)	10,077	1	2				1			
Newport	30,255	4	1							
Pawtucket	64,248	17	3				3			1
Providence	237,595	48	10				29			2
South Carolina:										
Charleston	67,957	28	3				10			1
Columbia	37,524	24	1		13					1
Greenville	23,127	4					4			

CITY REPORTS FOR WEEK ENDED NOVEMBER 24, 1923—Continued.

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

City.	Population Jan. 1, 1920.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
South Dakota:										
Sioux Falls	25,202	11	1				3	1		
Tennessee:										
Chattanooga	57,895		3				4			
Knoxville	77,818				13		6		3	3
Memphis	162,351	58	11		1		6	1	8	4
Nashville	118,342	34	3				4		1	4
Texas:										
Amarillo	15,494	6					2			
Beaumont	40,422	10			1		6			1
Corpus Christi	10,522	3	2	1						
Dallas	158,976	42	23	1	180		8		1	2
El Paso	77,560	21	3		4	1	6		2	4
Fort Worth	106,482	23	6		1		2		4	3
Galveston	44,255	14					1			
Houston	138,276	43	4		1		5			3
San Antonio	161,379	47	5				1			7
Waco	38,500	11	1	1					1	1
Utah:										
Provo	10,303	4								
Salt Lake City	118,110	36	5		5		1		9	1
Vermont:										
Barre	10,008	4								1
Burlington	22,779	2	1				1			
Virginia:										
Alexandria	18,060	3								1
Charlottesville	10,688	5								
Lynchburg	30,070	10	4		2		5	1	1	1
Newport News	35,596	3			1		3		2	
Norfolk	115,777		2		7		5		3	2
Petersburg	31,012	4	1				1		2	1
Portsmouth	54,387	11			1					
Richmond	171,667	43	11		6	1	8		5	2
Roanoke	50,842	19	5				2		3	2
Washington:										
Aberdeen	15,337				1					
Bellingham	25,585		2		3					
Ho[illegible]niam	10,058						1			
Seattle	315,312		2		72		8		20	
Spokane	104,437		13		309		21			
Tacoma	96,965		5		6		12			
Vancouver	12,637				2					
West Virginia:										
Bluefield	15,282	4	2							
Charleston	39,608	11	2				1	1		
Clarksburg	27,869	12					3			
Huntington	50,177	26					3			2
Morgantown	12,127						6			
Parkersburg	20,050	5	1				3			
Wheeling	56,208	22	7		1		11		2	1
Wisconsin:										
Appleton	19,561		1		3		2		1	
Beloit	21,284	4	3				2		1	
Eau Claire	20,906		1				2			
Fond du Lac	23,427	6					8		1	
Green Bay	31,017		11		9		20			
Janesville	18,293	3	1				2			
Kenosha	40,472	4	7				2		1	
Madison	38,378	4	5		1		1			
Manitowoc	17,563	0	1							
Marinette	13,610				21		1			
Milwaukee	457,147		34	1	3		11		23	4
Oshkosh	33,162	6	1							
Racine	58,593	15	7	1			12	1		1
Sheboygan	30,955	3	8				10			
Stevens Point	11,371						8			
Superior	39,671	7	3				2			
Waukesha	12,558		1							
Wausau	18,661		3				1		1	
West Allis	13,745		11		1		1			

FOREIGN AND INSULAR.

AUSTRIA.

Births and Deaths—Vienna—First Six Months of 1923.

The following statistics were taken from a report compiled from the weekly Beitraege zur Statistik der Stadt Wien.

"During the first half year of 1923 there were 14,499 deaths in Vienna's total population, which amounted to 1,842,000 on January 31, 1920. This shows a considerable decrease as compared with the first half year of 1922, during which period there occurred 17,221 deaths. More favorable circumstances in this city, which make better care of the weak children and sick possible, as well as more prosperous conditions for most families and greater power of purchasing the day's necessities may well explain these pleasing results."

During the first six months of 1923, 14,682 children were born alive in Vienna, and there were 1,463 still births.

Cases and deaths reported in Vienna during the first six months of 1923.

Disease.	New cases.	Deaths.	Disease.	New cases.	Deaths.
Measles	.....	75	Encephalitis lethargica	.....	2
Scarlet fever	657	17	Organic diseases of the heart	.....	1,876
Whooping cough	.....	78	Acute bronchitis	.....	64
Diphtheria	520	78	Chronic bronchitis	.....	54
Dysentry	168	30	Inflammation of the lungs and pleurisy	.....	1,311
Erysipelas	.....	37	All other diseases of the respiratory organs	.....	241
Typhus fever	1	.....	Diarrhea of children under 2 years of age	.....	229
Typhoid fever	124	17	Nephritis	.....	191
Influenza	.....	65	Infectious childbed fever	.....	83
Tuberculosis of the lungs	.....	2,201	All other childbed diseases	.....	21
Tuberculosis of the brain	.....	228	Congenital defects	.....	556
All other tuberculosis (scrofulosis)	.....	405	Trachoma	60	.....
Cancer and cancerous ulcer	.....	1,414			
Cerebrospinal meningitis	9	8			
Meningitis and brain fever	.....	103			
Parotitis	.....	2			

BRAZIL.

Leprosy—Pernambuco.

The following data concerning leprosy and measures for its control in the State of Pernambuco, Brazil, are taken from an article in the Journal do Commercio, Pernambuco, (Recife), October 14, 1923, and were forwarded by American Consul E. Verne Richardson.

Representatives of the Saneamento e Prophilaxia Rural Commission of the Government of Brazil, laboring in the State of Pernambuco, are prosecuting a vigorous campaign against leprosy. Already the results of this activity are manifest in an increasing number of patients at the various public dispensaries. Since the inauguration of this movement in 1921 to September 30, 1923, 180 cases of leprosy have been brought under observation; of these 118 were males and 62 females. Seventeen were children. Investigation revealed that only 26 of the cases treated were persons who had lived with lepers. Fifteen deaths occurred among the 180 cases treated, 14 in Recife and 1 in Olinda, an adjacent suburb. Of the

remaining 165, 151 live in Recife, and of these 90 are confined in the Hospital dos Lazaros. The National Department of Public Health at Rio de Janeiro maintains free clinics for the treatment of leprosy at five hospitals in Pernambuco.

CANADA.

Communicable Diseases—Ontario—November, 1923 (Comparative).

Communicable diseases have been notified in the Province of Ontario, Canada, as follows:

	November, 1923.		November, 1922.	
	Cases.	Deaths.	Cases.	Deaths.
Cerebrospinal meningitis	2		3	4
Chancroid	2		4	
Chicken pox	483		(1)	(1)
Diphtheria	374	22	385	29
Gonorrhea	91		217	
Influenza		7		
Lethargic encephalitis		6	(1)	(1)
Measles	293		235	
Mumps	25		(1)	(1)
Pneumonia		128		185
Poliomyelitis	1		10	1
Scarlet fever	680	11	461	9
Septic sore throat	11	1	(1)	(1)
Smallpox	58		76	
Syphilis	187		147	
Tuberculosis	116	58	156	84
Typhoid fever	68	13	37	11
Whooping cough	369	6	309	8

[1] Not reported in 1922.

CUBA.

Communicable Diseases.

Communicable diseases have been reported in Cuba as follows:

Provinces.

OCTOBER 11-20, 1923.

Provinces.	Chicken pox.	Diphtheria.	Malaria.	Measles.	Paratyphoid fever.	Scarlet fever.	Smallpox.	Typhoid fever.
Camaguey			19					7
Habana		4	41	4	3	1		7
Matanzas					4			3
Oriente			41					17
Pinar del Rio			2		2			4
Santa Clara	2	1	10		6			9

OCTOBER 21-31, 1923.

Camaguey			83					1
Habana		9	60	2	1	7		15
Matanzas			1					5
Oriente			42					8
Pinar del Rio		1	4					
Santa Clara			1		2			12

NOVEMBER 1-10, 1923.

Camaguey		1	96					3
Habana	2	6	86	5	1			15
Matanzas	1		1		1			3
Oriente		1	65					16
Pinar del Rio			1					5
Santa Clara	2		6					10

JAMAICA.

Smallpox (Reported as Alastrim).

During the two weeks ended November 27, 1923, 51 cases of smallpox (reported as alastrim) were reported in the island of Jamaica. Of these, 1 case, occurring during the week ended November 17, 1923, was notified in the Parish of Kingston.

Typhoid Fever—Kingston and Vicinity.

During the same period 38 cases of typhoid fever were reported at Kingston and 6 cases in the surrounding country.

POLAND.

Communicable Diseases—August 19–September 1, 1923.

Communicable diseases have been notified in Poland as follows:

AUGUST 19–25, 1923.

Disease.	Cases.	Deaths.	Districts with greatest number of deaths.
Cerebrospinal meningitis	3	3	Kielce.
Diphtheria	59	5	Lwow.
Measles	127	5	Warsaw.
Scarlet fever	196	26	Lodz and Stanislawow.
Smallpox	17	1	Stanislawow.
Tuberculosis	96	159	Warsaw, Lodz, Lwow, and Posen.
Typhoid fever	258	26	Lodz and Warsaw.
Typhus fever	64	6	Krakow and Tarnopol.
Typhus fever, recurrent	7	.....	
Whooping cough	66	9	Stanislawow and Warsaw.

AUGUST 26–SEPTEMBER 1, 1923.

Cerebrospinal meningitis	12	9	Kielce.
Diphtheria	69	6	Lodz.
Measles	135	11	Lodz and Warsaw.
Scarlet fever	248	24	Lwow and Tarnopol.
Smallpox	2	3	
Tuberculosis	65	169	Warsaw, Lodz, and Lwow.
Typhoid fever	282	25	Do.
Typhus fever	64	6	Kielce and Krakow.
Typhus fever, recurrent	8	.....	
Whooping cough	93	16	Stanislawow.

Dysentery—Rabies.

During the week ended August 25, 1923, 356 cases of dysentery, with 39 deaths, were reported in Poland. During the week ended September 1, 1923, 330 cases of dysentery, with 51 deaths, and 2 deaths from rabies were reported.

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

The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended December 14, 1923.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India:				
Calcutta	Oct. 7-20	11	7	

PLAGUE.

China:				
Amoy	Oct. 14-27		3	Rodent plague present.
Nanking	Oct. 21-Nov. 3			Present.
Egypt:				
Alexandria	Nov. 5-11	1		
India:				
Bombay	Oct. 7-13	2	2	
Java				Sept. 1-30, 1923: Deaths, 578.
Province—				
Djocjakarta	Sept. 1-30		9	
Kedoe	do		151	
Pekalongan	do		32	
Samarang	do		198	
Soerabaya	do		1	
Soerakarta	do		187	
Peru				Oct. 1-31, 1923: Cases, 15; deaths, 6.
Locality—				
Canete	Oct. 1-31	1		
Huacho	do	1		
Lima (city)	do	10	6	
Lima (country)	do	3		
Siam:				
Bangkok	Sept. 30-Oct. 13	2	2	
Straits Settlements:				
Singapore	Oct. 7-20	1	1	

SMALLPOX.

Brazil:				
Bahia	Sept. 30-Oct. 6	1		
Pernambuco	Oct. 14-27	15		
Canada:				
Ontario				Nov. 1-30, 1923: Cases, 58.
Sarnia	Nov. 4-24	1		
Chile:				
Talcahuano	Oct. 29-Nov. 4	5	1	
China:				
Amoy	Oct. 14-27			Present.
Chungking	Oct. 14-20			Endemic.
Foochow	Oct. 14-27			Present.
Harbin	Oct. 1-21	5		
Hongkong	Oct. 7-20	65	30	
Nanking	Oct. 21-Nov. 3			Present.
Shanghai	Oct. 22-Nov. 4	3	1	
Egypt:				
Cairo	Aug. 13-26	1		
Esthonia				Sept. 1-30, 1923: Cases, 1.
India:				
Bombay	Oct. 7-13	2	1	
Jamaica				Nov. 14-27, 1923: Cases 51 (reported as alastrim).
Kingston	Nov. 14-27	1		
Java:				
East Java—				
Soerabaya	Sept. 16-Oct. 6	157	28	
West Java—				
Batavia	Oct. 6-19	17		
Mexico:				
Mexico City	Oct. 28-Nov. 3	1		Including municipalities in Federal districts.
Peru:				
Lima	Oct. 1-31	2		
Poland				Aug. 19-Sept. 1, 1923: Cases, 19; deaths, 4.

[1] 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 Week Ended December 14, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Portugal:				
Lisbon	Oct. 29–Nov. 10	1	1	
Oporto	Nov. 11–17	3	1	
Siam:				
Bangkok	Oct. 31–Nov. 13	53	34	
Spain:				
Valencia	Nov. 11–17	19	1	
Switzerland:				
Berne	Nov. 4–10	1		

TYPHUS FEVER.

Austria:				
Vienna	Sept. 23–Oct. 13	1		
Chile:				
Antofagasta	Oct. 28–Nov. 9	7		
Valparaiso	Oct. 26–Nov. 1		14	
China:				
Antung	Oct. 15–28	3		
Chungking	Oct. 14–20			Endemic.
Egypt:				
Alexandria	Nov. 5–11	1	1	
Cairo	Aug. 13–26	6	5	
Germany:				
Königsberg	Oct. 14–20	2		
Stuttgart	Oct. 14–Nov. 3	4	1	
Greece:				
Saloniki	Oct. 8–21	1		
Java:				
East Java—				
Soerabaya	Sept. 16–Oct. 6	12	2	
Latvia				Sept. 1–30, 1923: Cases, 9; paratyphus fever, 6 cases; recurrent typhus, 1 case.
Mexico:				
Mexico City	Oct. 28–Nov. 3	10		Including municipalities in Federal district.
Poland				Aug. 19–Sept. 1, 1923: Cases, 128; deaths, 6. Recurrent typhus: Cases, 15.

Reports Received from June 30 to December 7, 1923.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
Ceylon:				
Colombo	Sept. 16–22		2	
China:				
Canton	Aug. 26–Sept. 1	1		
Foochow	July 29–Sept. 1			Present.
Shanghai	Aug. 20–Sept. 2	2	28	Cases, foreign; deaths, native.
Do	Aug. 28–Sept. 16		12	Do.
India:				Apr. 15–June 30, 1923: Cases, 19,470; deaths, 14,008. July 1–Sept. 22, 1923: Cases, 21,602; deaths, 12,299.
Bombay	June 3–30	34	23	
Do	July 1–Sept. 29	131	76	
Calcutta	May 6–June 30	371	300	
Do	July 8–Sept. 29	212	165	
Madras	June 3–30	2		
Do	July 1–Oct. 27	20	10	
Rangoon	May 13–June 30	18	15	
Do	July 1–Oct. 6	36	33	

[1] From medical officers of the public Health Service, American consuls, and other sources.

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

Reports Received from June 30 to December 7, 1923—Continued.

CHOLERA—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Indo-China				Oct. 1-31, 1923: Cases, 92; deaths, 53. Preceding month: Cases, 24; deaths, 14. October, 1921: Cases, 100; deaths, 61. Nov. 1-Dec. 31, 1922: Cases, 161; deaths, 50 (native); European, 1 case.
City—				
Saigon	May 20-June 30	12	11	Including 100 square kilometers of surrounding country.
Do	July 1-28	13	12	Do.
Province—				
Annam	Sept. 1-Dec. 31	179	66	
Do	Feb. 1-28			Epidemic.
Cambodge	Sept. 1-Dec. 31	47	27	
Cochin-China	do	51	33	
Do	Jan. 1-Feb. 28	19	8	
Tonkin	Oct. 1-Dec. 31	1		
Iraq (Mesopotamia):				
Bagdad	Sept. 3-17	46	37	
Basrah	Aug. 8-Oct. 9	592	434	Port declared infected since Aug. 6, 1923.
Philippine Islands:				
City—				
Manila	June 10-16	2	1	Death in foreign case from Chinkiang, China.
Province—				
Bulacan	May 17-23	1		
Capiz	May 27-June 2	1	1	
Cebu	Apr. 8-21	1	1	
Cotobato	Apr. 8-14	1	1	
Laguua	May 6-June 9	2	1	
Mindoro	Aug. 5-11	2	2	
Mountain	Mar. 25-31	1	1	
Occidental Negros	July 22-28	1	1	
Pangasinan	June 24-30	2	2	
Viscaya	July 7-14	1	1	
Russia (Soviet)				Jan. 1-May 15, 1923: Cases, 10.
Siam:				
Bangkok	May 13-June 30	10	11	
Do	July 1-Sept. 29	7	4	

PLAGUE.

Algeria:				
Algiers	Aug. 11-20	2	1	Actual dates of occurrence: Aug. 16 and 17, 1923.
St. Eugène	Aug. 1-20	2	2	Locality 5 miles north of Algiers.
Australia:				
Sydney	June 30	1	1	
Azores:				
St. Michael Island	May 6-26	12	5	In one locality
Bolivia:				
La Paz	Sept. 1-30		1	
Brazil:				
Bahia	Sept. 2-15	3	2	
Do	Oct. 14-27	3	1	
Porto Alegre				Jan. 1-Mar. 31, 1923: Deaths, 19.
British East Africa:				
Kenya—				
Kisumu	June 10-16	2	1	
Do	Aug. 5-11		1	
Mombasa	Aug. 19-Oct. 13	21	15	Plague rats, 6.
Kilindini Area	do			Plague rats, 12.
Tanganyika	May 6-June 2	3	3	Territory.
Do	July 5-21	20	12	
Uganda	Apr. 1-30	7	5	
Canary Islands:				
Las Palmas	June 7	1		
Teneriffe	Nov. 6			Present
Ceylon:				
Colombo	May 6-June 30	18	19	Plague rats, 45.
Do	July 1-Oct. 20	75	69	Plague rats, 30. One plague-infected cat.
China:				
Amoy	May 13-June 25		10	
Do	July 1-Oct. 13		21	
Foochow	May 27-June 23			Present.
Do	July 8-Sept. 1			Reported as endemic.

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

Reports Received from June 30 to December 7, 1923—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
China—Continued.				
Honkgong	Apr. 29–June 30	63	40	
Do	July 1–Oct. 6	33	39	
Manchuria—				
Yakoshih	May 31	1	1	Station on Eastern Chinese Railway. Occurring in tarabagan (marmot) hunter. Bubonic.
Nanking	June 17–30			Rodent plague present.
Do	July 1–Oct. 20			Do.
Ecuador:				
Guamote	Aug. 1–15	9	2	Country district.
Guayaquil				May 16–June 30, 1923: Rats examined, 13,800; found infected, 39. July 1–Aug. 15, 1923: Rats examined, 13,450; found infected, 23. Aug. 16–30, 1923: Rats taken, 54,304; found infected, 66. (Number examined not reported.)
Do	July 1–Sept. 30	10	3	
Santa Ana (Manabi)	July 16–Aug. 15	7	3	
Egypt				Jan. 1–June 21, 1923: Cases, 1,051; deaths, 548. May 1–29: Cases, 345. Jan. 1–June 24, 1923: Cases, 1,069. Jan. 1–Oct. 4, 1923: Cases, 1,360; deaths, 652.
City—				
Alexandria	Jan. 7–June 24	35	15	May 1–29, 1923: Cases, 14.
Do	July 1–Sept. 30	17	3	
Port Said	Jan. 7–June 24	24	12	May 1–29, 1923: Cases, 13.
Do	July 1–Sept. 30	30	5	
Suez	Mar. 2–June 15	12	7	May 1–29, 1923: Cases, 3.
Do	July 16–Aug. 30	11	1	
Province—				
Assiout	May 1–29	64		Deaths not reported.
Beniseuef	do	7		Do.
Fayoum	do	14		Do.
Garbieh	do	2		Do.
Geizeh	do	3		Do.
Girgeh	do	123		Sept. 26: One case.
Keneh	do	22		Deaths not reported.
Menoufieh	do	34		Sept. 15: Cases, 1; deaths, 1.
Minieh	do	46		Deaths not reported.
France:				
Paris	Aug. 13	1		Published in Public Health Reports, Sept. 14, 1923, pp. 2189 and 2190.
Greece:				
Syra Island	Sept. 10			Present.
Hawaii:				
Hamakua				Plague-infected rats: Pohakea, May 23, 1923, 1 rat; vicinity of Pacific Sugar Co. mill, June 2, 1 rat; Aug. 2, 1 rat at Hamakua Mill Co. plantation. Aug. 16, plague rat found at Kapulena
Honokaa	Sept. 21	1	1	July 20, 1923: One plague rat; July 30, 2 plague rats; Honokaa Sugar Co. mill and Honokaa village.
India				Apr. 29–June 23, 1923: Cases, 5,783; deaths, 4,481. July 1–Sept. 22, 1923: Cases, 23,225; deaths, 15,850.
Bombay	Apr. 29–June 20	503	411	
Do	July 1–Oct. 6	48	40	
Calcutta	May 6–June 9	13	13	
Do	Aug. 12–Sept. 15	2	2	
Karachi	May 13–June 30	110	85	Plague rats, 5.
Do	July 1–Oct. 20	123	111	
Madras Presidency	May 13–June 30	254	141	
Do	July 1–Oct. 27	4,022	2,447	
Rangoon	May 6–June 30	260	229	
Do	July 1–Oct 13	332	291	
Indo-China				Oct. 1–Dec. 31, 1922: Cases, 245; deaths, 237. Sept. 1–30, 1922: 70 cases, 68 deaths.
City—				
Saigon	June 24–30	5	5	Including 100 square kilometers of surrounding country.
Do	July 1–7	1	1	Do.

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

Reports Received from June 30 to December 7, 1923—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Indo-China—Continued.				
Province—				
Annam	Oct. 1-Dec. 31	40	36	Preceding month, 15 deaths.
Do	Jan. 1-Feb. 28	47	39	
Cambodge	Oct. 1-Dec. 31	145	145	Preceding month, 51 deaths.
Do	Jan. 1-Feb. 28	152	152	
Cochin-China	Oct. 1-Dec. 31	4	1	Preceding month, 4 cases, 2 deaths.
Do	Jan. 1-Feb. 28	3	3	
Iraq (Mesopotamia):				
Bagdad	May 1-June 30	335	224	
Basrah	Aug. 8-Sept. 4	4	2	
Java				May 1-June 30, 1923: Deaths, 912. July 1-Aug. 31, 1923: Deaths, 976.
Province—				
Djokjakarta	June 1-30		5	
Do	July 1-Aug. 31		4	
Kedoe	June 1-30		135	
Do	July 1-Aug. 31		231	
Pekalongan	June 1-30		48	
Do	July 1-Aug. 31		105	
Samarang	June 1-30		143	
Do	July 1-Aug. 31		260	
Soerabaya	June 1-30		1	
Do	Aug. 1-31		2	
Soerakarta	do		109	May 16, 1923: Epidemic in 5 districts.
Do	July 1-Aug 31		374	
Madagascar				Apr. 1-June 30, 1923: Cases, 84; deaths, 81. July 1-Aug. 15, 1923; Cases, 11; deaths, 9; Sept 1-30, 1923: cases, 41; deaths, 37.
Tananarive Province	Apr. 1-June 30	60	57	
Do	July 1-Sept. 30	41	36	
Tananarive town	Apr. 1-June 30	24	24	
Do	July 1-Sept. 30	11	10	
Mauritius Island				May 4-21, 1923: 2 cases.
Port Louis	May 4	1		
Mexico:				
Tampico				Apr. 15-21, 1923: 1 plague rat. Aug. 8, 1923: At Dona Cecelia, a suburb of Tampico, 1 plague-infected rat found. From Jan. 1 to Aug. 8, 1923, plague-infected rats found, 5.
Morocco:				
Dar-Kebdani	Aug. 31-Sept. 13	1		Camp in Spanish Zone, Melilla District.
Larache (El Arish)	Nov 2			Present. Spanish Zone.
Melilla	Aug. 1-Oct. 19	7		
Palestine:				
Haifa	Sept. 8-Oct. 1	2		
Jaffa	June 19-July 16	10	1	Bubonic and septicemic.
Peru				May 1-June 30, 1923: Cases, 111; deaths, 68. July 1-Sept. 30, 1923: Cases, 43; deaths, 24.
Locality—				
Ayabaca	May 16-June 30	15	13	
Do	July 1-31	4	2	
Callao	May 1-June 30	5	3	
Do	July 1-Sept. 30	4	2	
Canete	May 16-June 30	3	2	
Do	July 1-Sept. 30	7	4	
Cerro Azul	May 1-31	3	1	
Chiclayo	May 1-June 30	9	2	
Do	July 1-Aug. 31	6	4	
Cutervo	May 1-15	2	1	
Guadaloupe	Sept. 1-30			Present.
Huancabamba	May 1-June 30	34	25	
Huacho	July 1-31	1		
Huaral	June 1-30	2	2	
Do	July 1-Sept 30	3	1	Sept. 1-30, 1923: Present on country estates.
Lima (city)	May 1-31	17	8	
Do	July 1-Sept. 30	14	8	
Lima (country)	May 1-31	7	4	
Do	July 1-Sept. 30	3	2	
Mollendo	June 1-30	1	1	
Reque	Aug. 1-31	1	1	
Salaverry	May 1-June 30	11	3	
Trujillo	do	2	3	
Portugal:				
Lisbon	Oct. 25	2	1	
Russia				Jan. 1-May 15, 1923: Few cases in Far East regions.

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

Reports Received from June 30 to December 7, 1923—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Senegal:				
Dakar	July 1-31	4	4	Reported to have come from port of Rufisque, Senegal.
Rufisque	Aug 6			Present.
Siam:				
Bangkok	Apr. 20-June 30	31	30	
Do	July 1-Sept. 29	14	13	
Siberia				Sporadic cases of plague reported yearly in localities vicinity of stations Matsievskaya and Borzia, Transbaikal Railway.
Haramhor	May 6	1	1	Village in zone of endemic tarabaran (marmot) plague, Transbaikal region.
Station No. 83				Station on Transbaikal Railway. Marmot plague during recent years.
Soktu				Do.
Straits Settlements:				
Singapore	May 6-June 30	6	8	
Do	July 22-Sept. 29	6	6	
Syria:				
Beirut	May 12-June 29	3		
Do	July 1-Sept. 30	7	1	
Turkey:				
Constantinople	Aug. 19-Sept. 22		2	On Aug. 16, 1923, 2 cases reported.
Do	Oct. 14-20		1	
Union of South Africa:				
Haarhoff's Kraal	Oct. 18	3	3	
On vessel:				
S. S. Crewe Hall	Oct. 15	1		At Catania, Italy. Patient embarked at Port Said, Egypt. Vessel left Vizagapatam, India, Aug. 29; at Colombo, Ceylon, Sept. 12; Aden, Sept. 23; Port Sudan, Sept. 26; sailed for New York, Oct. 15, 1923.

SMALLPOX.

Algeria:				
Algiers	May 1-31	2		
Do	July 1-Aug. 10	3		
Arabia:				
Aden	May 27-June 2		2	
Do	July 8-Sept. 30	8	2	
Austria:				
Vienna	July 29-Aug. 4	1		
Azores:				
St. Michael Island	July 15-21	7		Mild.
Bolivia:				
La Paz	Apr. 1-June 30	2	3	
Do	Aug. 1-Sept. 30	5	6	
Brazil:				
Bahia	Aug. 19-Sept. 22	6		
Manaos				Year 1921: Cases, 2. Year 1922: 1 case.
Pernambuco	May 6-June 16	5		
Do	July 1-Oct. 13	59	7	
Rio de Janeiro	May 13-June 23	25	3	
Do	July 15-Oct. 20	46	10	
Rio Grande do Sul				Jan. 1-Mar. 31, 1923: Present with some mortality.
British East Africa:				
Kenya—				
Mombasa	May 20-26	1		From vessel from Bombay.
Tanganyika	Apr. 20-June 9	3		Territory.
Do	July 1-Sept. 29	93	19	Do.
Uganda—				
Entebbe	Apr. 1-30	4		
Zanzibar				July 1-31, 1923: Cases, 7; deaths, 3.
Canada:				
Alberta—				
Calgary	May 27-June 2	1		Infection from Deer Lodge, Mont.
British Columbia—				
Vancouver	May 27-June 30	33	1	
Do	July 1-Nov. 10	23	1	
Victoria	Aug. 5-25	2		

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

Reports Received from June 30 to December 7, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Canada—Continued.				
Manitoba—				
Winnipeg	June 3–30	1		
Do	July 1–Nov. 17	9		
New Brunswick—				
Kent County	July 1–7	1		
Ontario				June 1–30, 1923: Cases, 13. July 1–Sept. 30, 1923: Cases, 48.
London	July 15–21	1		
Toronto	June 24–30	3		
Do	July 15–21	1		
Quebec—				
Quebec	June 10–16	1		Varioloid.
Saskatchewan—				
Moose Jaw	July 8–14	1		
Regina	June 24–30	3		
Do	Oct. 7–13	1		
Ceylon:				
Colombo	May 6–June 2	23	1	
Chile:				
Concepcion	May 22–June 11		3	June 1–30, 1923: Cases, 2. July 1–31, 1923: 1 death.
Do	Sept. 1–30	3	2	
Talcahuano	Aug. 12–18	1		Landed from vessel.
Valparaiso	May 7–June 23	6	121	June 10–16, 1923: 29 cases reported from 2 districts.
Do	July 1–28	12	10	July 30, 1923: 25 cases in lazaretto. Aug. 6: 20 cases. Aug. 14: 60 cases present.
Do	Sept. 14–Oct. 27		3	
China:				
Amoy	May 13–June 23		3	June 19–25, 1923: Present.
Do	July 1–Oct. 13			Present.
Antung	May 14–20	1		
Canton				June 1–30, 1923: Present. July 1–31, 1923: Present.
Chungking	May 13–June 30			Present and endemic.
Do	July 1–Oct. 13			Do.
Foochow	May 13–Oct. 13			Present.
Hongkong	Apr. 29–June 30	98	82	
Do	July 1–Sept. 29	86	71	
Manchuria—				
Dairen	May 21–27	1		
Harbin	May 7–June 24	5		
Do	July 1–Sept. 30	11		
Mukden	May 13–20	1		
Nanking	May 13–June 23			Do.
Do	June 24–Sept. 22			Do.
Shanghai	May 21–June 3	4		Foreign.
Do	July 2–Aug. 26	1	4	Cases, foreign; deaths, Chinese.
Chosen (Korea):				
Chemulpo	May 1–31	1		
Fusan	May 1–June 30	4		
Do	July 1–31	22	6	
Gensan	May 1–31	1		
Seoul	May 1–June 30	42	13	
Do	July 1–Aug. 31	7	9	
Colombia:				
Barranquilla	Oct. 15–21		1	
Cuba:				
Antilla	July 8–14		2	From Preston.
Czechoslovakia				Jan.–Mar., 1923: Cases, 15. Apr.–June, 1923: Cases, 16; deaths, 4.
Province—				
Bohemia	Jan. 1–Mar. 31	15	4	
Ecuador:				
Alausi	July 16–31	3		
Bahia	Sept. 1–15	4		
Esmeraldas	Aug. 16–Sept. 15	5		
Guayaquil	May 16–31	1		
Jipijapa	Sept. 1–15	8		
Monte Cristi (Manabi)	....do	20		
Riobama	May 16–31	1	1	
Rocafuerte	....do			Present.
Santa Ana	Sept. 1–15	10		
Vinces	....do			Present in district.
Zaruma (El Oro)	May 16–31			Present.
Egypt:				
Cairo	Mar. 12–July 1	24	8	
Do	Aug. 6–12	1	1	
Esthonia				June 1–30, 1923: Cases, 4. Aug. 1–31, 1923: Cases, 2.

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

Reports Received from June 30 to December 7, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Finland				May 1–15, 1923: 1 case. July 2–31, 1923: 3 cases. Aug. 1–Oct. 15, 1923: 4 cases.
French Guiana				Nov.–Dec., 1923: Present. June 6, 1923: Present.
Cayenne				Year 1922: Present.
Great Britain:				
Birmingham	June 18–30	3		Present.
Bristol	June 28			Do.
Cardiff	June 3–30	6		
Gloucester	June 28			
Do	July 12	19		123 cases reported in hospital; present in rural districts. July 15, 1923: Present. Aug. 9, 1923: 33 cases in isolation hospital; two weeks previously about 250 cases present in hospital.
London	Sept. 9–29	5	1	Sept. 22, 1923: Additional cases in Middlesex County.
Nottingham	June 3–9	1		May 1–31, 1923: Cases, 211.
Do	July 8–Sept. 22	6		
Sheffield	Sept. 16–22	3		
Greece:				
Athens	May 1–31	53		
Patras	Apr. 24–June 15		19	
Saloniki	Apr. 30–May 20	2	2	
Do	June 25–July 8	2	3	
Guadeloupe (West Indies)				July 22–Aug. 4, 1923: Present in epidemic form. (Reported as alastrim.) Aug. 17, 1923: Stated to be officially declared present. Sept. 14–29: Epidemic generally diffused. Oct. 13–24, 1923: Epidemic.
Basse Terre	Aug. 17–Oct. 13			Present.
Pointe à Pitre	Aug. 17			Estimated from 2,000 to 3,000 cases. Sept. 2–8, 1923: 1,500 cases present; 8 deaths reported. Oct. 14–20, 1923: 1,000 cases present.
Hungary				July 15–Aug. 4, 1923: Cases, 28.
India				Apr. 15–June 30, 1923: Cases, 8,112; deaths, 2,933. July 1–Sept. 22, 1923: Cases, 10,801; deaths, 2,567.
Bombay	Apr. 22–June 30	298	141	
Do	July 1–Oct. 6	78	39	
Calcutta	May 13–June 9	12	9	
Do	July 1–Sept. 8	19	14	
Karachi	May 13–June 30	24	8	
Do	July 1–Oct. 13	17	5	
Madras	May 13–June 23	91	16	
Do	July 8–Oct. 27	64	17	
Rangoon	May 6–June 30	125	67	
Do	July 1–Oct. 13	51	19	
Indo-China				Nov. 1–Dec. 31, 1922: Cases, 234; deaths, 68.
City—				
Saigon	May 20–June 30	34	23	Including 100 surrounding square kilometers.
Do	July 1–28	31	18	Do.
Provinces—				
Annam	Nov. 1–30	3	1	
Do	Jan. 1–Feb. 28	10	1	
Cambodge	Nov. 1–Dec. 31	97	41	
Do	Jan. 1–Feb. 28	63	17	
Cochin-China	Nov. 1–Dec. 31	125	34	
Do	Jan. 1–Feb. 28	231	67	
Laos	Feb. 1–28			A few cases.
Tonkin	Dec. 1–31	9	1	
Do	Jan. 1–Feb. 28	69	13	
Iraq (Mesopotamia):				
Bagdad	Apr. 1–June 30	32	11	
Do	July 31–Sept. 4	13		
Basrah	Sept. 25–Oct. 9	3	1	
Italy:				
Leghorn	Sept. 17–23	6		
Turin	May 28–June 3	1		
Do	July 2–15	2		
Jamaica				May 27–June 30, 1923: Cases, 226. July 1–Nov. 10, 1923: Cases, 517. (Reported as alastrim.)
Kingston	May 27–June 30	39		
Do	July 1–Nov. 10	51		
Japan:				
Kobe	May 28–June 10	2		
Do	July 2–8	1		

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

Reports Received from June 30 to December 7, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Java:				
East Java				Aug. 26–Sept. 1, 1923: Cases, 36; deaths, 3.
Soerabaya	Apr. 22–June 30	187	22	
Do	July 15–Sept. 15	128	21	
Soerakarta				July 31, 1923: Epidemic.
West Java—				
Batavia	May 5–June 8	17	3	Province.
Do	June 30–Oct. 5	5	1	Do.
Latvia				Apr. 1–May 31, 1923: Cases, 8. Aug. 1–31, 1923, 1 case.
Martinique				May 26–Nov. 10, 1923: Present.
Mexico:				
Aguascalientes	July 8–14		1	
Chihuahua	June 11–24	7		
Guadalajara	July 22–Sept. 22		10	June 1–30, 1923: Cases, 15; deaths 2.
Mexico City	May 19–June 30	164		Including municipalities in Federal district.
Do	July 1–Oct. 27	210		Do.
Vera Cruz	Nov. 12–18		1	
Palestine:				
Jaffa	June 5–11	1		
Persia:				
Tabriz	Apr. 1–June 30		2	District.
Teheran	Feb. 22–June 14		30	Mar. 22–June 22, 1923: Deaths, 12.
Do	July 24–Aug. 24		1	June 23–July 22, 1923: Deaths, 9.
Poland				Apr. 29–June 30, 1923: Cases, 1,861; deaths, 43. July 1–Aug. 12, 1923: Cases, 20; deaths, 6.
Portugal:				
Lisbon	May 20–June 30	35	3	
Do	July 1–Nov. 3	48	12	
Oporto	June 10–30	6	3	
Do	July 9–Nov. 10	105	66	
Portuguese West Africa:				
Angola—				
Loanda	Apr. 1–21	2		
Do	July 29–Aug. 18		2	
Rhodesia (British Africa):				
Northern Rhodesia	May 8–14	21	8	
Southern Rhodesia	May 3–16	4	2	
Siam:				
Bangkok	Apr. 29–June 30	90	53	
Do	July 1–Sept. 29	379	222	Apr. 22–Aug. 25, 1923: Cases, 329; deaths, 184. Sept. 8, 1923: Reported prevalent.
Sierra Leone:				
Freetown	July 16–31	1		Landed from S. S. Tsad, from Southampton via Las Palmas.
Kaballa	May 1–15	1		In Sembehun district.
Pujehun	May 16–31	1		
Sambuya	Aug. 1–15	1		
Spain:				
Barcelona	May 31–June 6		1	
Do	June 28–Oct. 17		9	
Seville	July 19–25		1	
Valencia	May 15–June 30	44	2	
Do	July 1–Nov. 10	60	15	
Switzerland:				
Basel	May 27–June 30	4		
Do	July 8–Aug. 25	8		
Berne	May 20–June 30	11		
Do	July 1–Nov. 3	15		
Luzerne	May 1–June 7	36		
Do	July 1–Oct. 31	34		
Zurich	May 20–June 23	10		
Do	July 15–Sept. 15	9		
Syria:				
Aleppo	July 15–31	6		
Damascus	May 15–June 11	7		
Do	Aug. 16–Oct. 23	14	1	
Tunis:				
Bizerta	June 10–20	1		
Tunis	June 11–17	1		
Do	June 26–Nov. 11	2		
Turkey:				
Constantinople	May 13–June 26		45	
Do	June 27–Nov. 3	1	19	

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

Reports Received from June 30 to December 7, 1923—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Union of South Africa				May 1–June 30, 1923: Cases 66; deaths, 1 (colored), July 1–31, 1923: Cases, 17 (colored).
Cape Province				May 1–31, 1923: Cases, 32 (colored). July 1–31, 1923: Cases, 10 (colored).
Do	May 6–June 30			Outbreaks.
Do	July 1–Oct. 13			Do.
East London	July 8–14	1		
Natal				July 1–31, 1923: 1 case (colored).
Orange Free State	Apr. 29–June 30			Outbreaks.
Do				July 1–31, 1923: Cases, 4 (colored).
Do	Sept. 9–Oct. 13			Outbreaks.
Transvaal				May 1–31, 1923: 1 case, July 1–31, 1923: Cases, 2 (colored).
Do	July 1–Aug. 31			Outbreaks.
Yugoslavia				July 1–Aug. 25, 1923: Cases, 150; deaths, 22.
Province—				
Bosnia-Herzegovina	July 1–7	1		
Croatia-Slavonia	do	4	1	
Zagreb	June 24–30	1		
Serbia	July 1–7	2	1	
Belgrade	June 10–16	1	1	
Do	July 8–14		1	
Woivodina	July 1–7	1		
On vessels:				
S. S. Kargola	May 20–26	1		At Mombasa, Britsh East Africa. Vessel arrived from Bombay, Mar. 25, 1923.
S. S. Makura	May 26	2		Two cases in quarantine (reported as alastrim). Vessel left Victoria, B. C., Apr. 28, 1923. Touched at Honolulu.
S. S. Tsad	July 16–31	1		At Freetown, Sierra Leone, Africa, from European and West African ports.
S. S. —	Aug. 12–18	1		Landed at Talcahuano, Chile.

TYPHUS FEVER.

Algeria:				
Algiers	May 1–June 30	66	19	
Do				July 1–Oct. 31, 1923: Cases, 7; deaths, 6.
Argentina:				
Rosario	May 25–31		3	
Do	Sept. 1–30		1	
Bolivia:				
La Paz	June 1–30	4		
Do	July 1–Sept. 30	18	3	
Bulgaria:				
Sofia	Apr. 22–June 23	11	2	Paratyphus, 2 cases; 2 deaths.
Do	July 15–Sept. 1	17	1	Paratyphus, 5 cases. Sept. 2–29, 1923: Paratyphus, cases 6.
Canary Islands:				
Teneriffe	Oct. 22–Nov. 4		2	
Chile:				
Antofagasta	Oct. 21–27	8	1	
Concepcion	May 22–June 18		3	
Do	Aug. 7–Sept. 30		2	
Iquique	Sept. 2–Oct. 13		2	
Talcahuano	May 13–19	1		
Valparaiso	May 7–June 23		26	June 11, 1923: 34 cases in Salvador Hospital. July 30, 1923: 45 cases in hospital. Aug. 6: 58 cases. Aug. 12–18: 82 cases stated to be present. Aug. 25: 88 cases in lazaretto.
Do	July 1–Oct. 13		77	
China:				
Antung	May 23–June 24	12		
Do	July 16–Oct. 14	6		
Chungking	Aug. 23–Oct. 13			Endemic.
Hankow	May 19–25	1		
Manchuria—				
Harbin	May 6–13	1		
Do	Aug. 27–Sept. 2	2		
Mukden	May 14–20	2		

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

Reports Received from June 30 to December 7, 1923—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Czechoslovakia				Jan.-Mar., 1923: Cases, 191; deaths, 6. Apr. 1–June 30: Cases, 132; deaths, 4. Paratyphoid A, 1; paratyphoid B, 20.
Province—				
Bohemia	Apr. 1–June 30	8		
Moravia	do	2		
Russinia	do	98	1	
Silesia	do	1	1	
Slovakia	do	23	2	
Egypt:				
Alexandria	May 14–June 24	7	5	
Do	June 25–Nov. 4	12	7	Paratyphoid fever, 2 cases.
Cairo	Apr. 12–June 24	44	29	
Do	June 25–Oct. 12	25	24	
Port Said	Aug. 3–19	1		
Esthonia				June 1–30, 1923: Recurrent typhus, 1 case; paratyphus, 2 cases.
Finland	Sept. 16–30	1		Aug. 1–Oct. 15, 1923: Paratyphus, 109 cases. Sept. 1–15, 1923: One case recurrent typhus.
France:				
Marseille	Mar. 1–May 31		3	
Germany:				
Coblenz	May 27–June 2		1	
Do	July 23–Sept. 22	10		
Hamburg	May 20–26	3		
Do	July 29–Aug. 4	1		Case developed July 28, 1923, at Emigration Hall, Hamburg.
Königsberg	May 13–June 2	2		
Do	Aug. 12–18	1		
Stettin	May 27–June 9	1	1	
Stuttgart	Sept. 2–22	4		
Great Britain:				
Ireland—				
Cork	Aug. 19–25	1	1	
Greece				May 1–31, 1923: Cases, 876.
Athens	May 1–31	150	5	
Do	July 22–31		1	
Patras	Apr. 24–June 15		30	
Do	Aug. 16–31		2	
Piræus	May 1–June 30	356	11	
Do	July 1–10	3		
Saloniki	Apr. 30–June 24	56	16	Apr. 30–May 27, 1923: Recurrent typhus: Cases, 3; deaths, 3.
Do	July 9–15	1		
Guatemala:				
Guatemala City	Apr. 1–June 30		5	
Hungary				Jan. 1–May 19, 1923: Cases, 318; deaths, 36. In 11 counties.
Budapest	Jan. 1–June 2	48	12	
Do	Sept. 2–8	1		
Iraq (Mesopotamia):				
Bagdad	Apr. 1–June 30	3		
Do	Aug. 8–15	1	1	
Japan:				
Nagasaki	July 2–8	1		
Java:				
East Java—				
Soerabaya	July 29–Aug. 18	16	3	
Latvia				Apr. 1–June 30, 1923: Cases, 231; paratyphus, 5 cases. June 1–Aug. 31, 1923: Cases, 86; paratyphus, 11 cases; recurrent typhus, 1 case.
Mexico:				
Guadalajara	June 1–30	1		Sept. 16–22, 1923: 1 death.
Do	July 1–Oct. 30	2	1	
Mexico City	May 20–June 30	75		Including municipalities in Federal district.
Do	July 1–Oct. 27	156		Do.
San Luis Potosi	July 29–Aug. 4		1	
Palestine				Aug. 14–20, 1923: 1 case, in northern district.
Haifa	Oct. 16–22	1		
Jaffa	May 22–28	2		
Do	June 26–Oct. 1	7		Relapsing fever, 1 case.
Jerusalem	May 22–28	1		
Persia:				
Tabriz	Apr. 1–14	2		
Teheran	Feb. 22–June 14		4	
Do	July 1–22		1	

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

Reports Received from June 30 to December 7, 1923—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Poland				Mar. 4–Apr. 7, 1923: Cases, 2,253; deaths, 172. Recurrent typhus: Cases, 338; deaths, 6. Apr. 29–June 30, 1923: Cases, 2,206; deaths, 177. July 1–Aug. 18, 1923: Cases, 544; deaths, 46. Recurrent typhus: Apr. 29–June 23, 1923: Cases, 337; deaths, 3. July 1–Aug. 18, 1923: Cases, 102; deaths, 4.
Portugal:				
Oporto	June 10–16	1		
Do	July 1–21	3		
Rumania:				
Kishineff	May 1–June 30	41		
Do	Aug. 1–31	10		District.
Russia				Jan. 1–Apr. 30, 1923: Cases, 106,854. (Corresponding period 1922: Cases, 847,516.) Feb. 1–28, 1923: Cases, 17,577. Recurrent, Jan. 1–Feb. 28, 1923: Cases, 43,540.
European Russia and autonomous republics.	Jan. 1–Apr. 30	93,999		
Siberia, Caucasus, and Central Asia.	do	9,921		
Waterways and railways	do	2,934		
Spain:				
Barcelona	June 21–27		1	
Do	Aug. 23–Oct. 31		14	
Madrid	May 1–31		1	
Do	July 1–31		2	
Sumatra:				
Medan	May 1–June 30	34		
Switzerland:				
Zurich				Sept. 16–22, 1923: Paratyphus fever, cases, 5.
Syria:				
Aleppo	May 20–June 16	4	2	
Do	July 15–21	3	1	
Beirut	May 1–10	1		
Tunis:				
Tunis	May 28–June 24	3	2	
Do	July 9–Oct. 7	1	2	
Turkey:				
Constantinople	May 13–June 26		19	
Do	June 27–Nov. 3	11	11	
Union of South Africa				May 1–June 30, 1923: Cases, 230; deaths, 47 (colored). White—Cases, 15; deaths, 1. Total, 245 cases, 48 deaths. July 1–31, 1923: Cases, 133 (colored, 132 cases; white, 1 case); deaths, 24.
Cape Province				May 1–31, 1923: Cases, 49 (colored); white, 5. July 1–31, 1923: Cases, 94; deaths, 21 (colored).
Do	Aug. 12–Oct. 13			Outbreaks.
Natal				May 1–31, 1923: One case (colored).
Orange Free State				May 1–31, 1923: Cases, 45 (colored). July 1–31, 1923: Cases, 36; deaths, 3 (colored). One case in white population.
Do	May 6–June 16			Outbreaks.
Do	Aug. 12–Oct. 13			Do.
Transvaal				May 1–31, 1923: Cases, 7. July 1–31, 1923: Cases, 2 (colored).
Johannesburg	May 1–June 30	4	4	
Do	Oct. 6–13	1		
Yugoslavia				July 1–7, 1923: Cases, 4.
Province—				
Bosnia-Herzegovina	July 1–7	4		
Croatia-Slavonia—				
Zagreb	May 27–June 2	1		
Serbia—				
Belgrade	Aug. 12–18	1		

YELLOW FEVER.

Brazil:				
Bahia	May 13–June 30	25	6	
Do	July 1–Sept. 8	13	6	
Colombia:				
Bucaramanga	June 25–Aug. 26			Present.