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NATIONAL INVENTORY OF NEEDS FOR SANITATION FACILITIES

I. PUBLIC WATER SUPPLY

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INTRODUCTION

Of the various public utilities which modern community life requires, none is more important or indeed more essential to the continued prosperity and health of the community than an adequate supply of good water. This truism has been so widely and, on occasion, so forcibly demonstrated that few if any well-informed persons would dispute it.

The dependence of public health on a good water supply goes far beyond the mere requirement that such a supply be free from the possibility of transmitting water-borne disease. If the public health in a community be viewed in its broader modern sense as being concerned not only with the negative question of preventing disease but also with the more positive one of promoting good health among all citizens, the wider implications of a good water supply are evident.

In this connection it is only necessary to point out a few instances familiar to everyone. Among these are the protection of life and property against fire and the proper sanitation of the community, such as street cleaning and the rapid and effective disposal of sewage and other water-carried wastes. These services are dependent on an ample quantity of water from a public supply, but its quality and palatability are also involved very directly in such matters as the consumption of physiologically adequate quantities of water by individuals, the economical use of water for laundry and other household cleaning purposes, and the avoidance of unsafe local sources of water supply for drinking purposes whenever the public supply is objectionable in taste or appearance or unsuitable for culinary purposes. All of these phases of the use of water have an important bearing on public health, quite aside from the paramount requirement of its safety for human consumption.

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In undertaking the present study of public water supply needs in the various States, the problem has been viewed from this broader angle of providing not only for the elimination of water-borne disease but also of insuring to every community a public water supply meeting the two basic requirements of ample quantity and satisfactory quality for all of the ordinary water uses of a community. The inventory has considered in detail every phase of such requirements with two exceptions, namely, (1) the freedom of water supplies from excessive hardness, which is to a large extent an economic problem, and (2) freedom from iron and manganese. In a section of this paper, the particular question of hardness and its economic cost will be discussed, however, in its relation to the general problem of public water supplies in certain areas of the country where hard waters are common.

Before taking up the inventory proper, it will be desirable to sketch very briefly the present status of public water supplies in the United States, to indicate broadly the general requirements for satisfactory supplies, and to point out some of the more important economic losses involved in failure to meet these requirements, together with the economic benefits resulting from correction of such deficiencies.

Present status of public water supplies in the United States.—In the United States, public water supplies date historically from the year 1652, when the first system of this kind was instituted at Boston. At the end of the year 1800, some 150 years later, 17 waterworks systems existed in this country. Fifty more years passed before these systems numbered 100, but in 1900 they had increased to about 3,200 and in 1924 to 9,000 (*1*). In 1940 they approximated 14,500 and at the present time are estimated to serve about 84,500,000 people, or slightly less than two-thirds the total population of the entire country. The phenomenal development of public water supplies in the United States within the past 50 years, amounting to nearly a fivefold multiplication in their total number, probably is without parallel in waterworks history.

A recent census of water treatment facilities in the United States, conducted by the Public Health Service (*2*), together with supplementary data on untreated supplies, has shown that the greatest deficiency in public water supplies exists in the smaller communities having populations under 1,000, as indicated by the following comparison between the total numbers of incorporated places, divided into three groups according to their populations, and the numbers of these communities served by public water systems:

Population	*Total number of incorporated places—1940 Census*	*Number of incorporated places with public water supplies*
5,000 and over	2,042	2,033
1,000 to 4,999	4,627	4,300
Under 1,000	10,083	4,323

From this tabulation it appears that over 99 percent of the communities in the largest population group, 5,000 and over, are served by public water systems and about 93 percent in the middle group, but only 43 percent in the lowest group of less than 1,000 population. The census also has disclosed that approximately 10 million people, comprising about 11 percent of the total population served by public water supplies, are supplied with water receiving no treatment.

According to the data collected from the Public Health Service's water purification census up to the end of the year 1941, approximately 75,100,000 people, or 89 percent of the total population served by water supply systems, are furnished with treated water from some 5,535 treatment plants. The classification of treatment furnished, based on data for all of the 48 States combined, was as follows at the end of the year 1941:

Treatment	Percent of total by— Number of plants	Population served
Rapid-sand filter purification	(30. 8)	(44. 2)
Purification only	28. 8	37. 4
With softening	2. 9	6. 2
With iron and manganese removal	0. 1	0. 3
Slow-sand filter purification	1. 8	5. 8
Iron and manganese removal	8. 7	3. 5
Softening only	5. 0	1. 9
Simple chlorination and miscellaneous chlorination	47. 0	43. 3
Iron and manganese removal, with softening	2. 7	0. 7
Miscellaneous (without chlorination)	2. 8	0. 7

Although simple chlorination, serving about 32,400,000 people through 2,592 plants, is the process most frequently used, rapid-sand filter purification, with 1,754 plants, serves a slightly greater population (about 33,000,000). Water softening either alone or in combination with other treatment serves about 6,700,000 people through 587 plants, of which 426 plants use softening alone or in combination with iron removal. Slow-sand filter purification serves about 4,300,000 people through 98 plants.

During the few years preceding the entry of the United States into the present war, the construction of new water systems and the improvement of old ones proceeded very actively under the stimulus of Federal aid projects of the Public Works Administration and the Work Projects Administration. With our entry into the war, this work was suspended, except for water supplies urgently needed at military posts and training camps and, in some cases, in vital war-industrial areas where sudden and large increases in population have overtaxed existing facilities. At the present time, established waterworks systems are being maintained with the barest minimum of repairs and replacements, owing to scarcity of metals and other critical materials needed in war production.

This situation, which of necessity will continue throughout the remainder of the war, will mean a progressive retrogression in the existing water supply facilities of the country which, together with the suspension of ordinary extensions to meet normal population growth, will create a cumulative deficiency to be made up after the war.[3] An added stimulus to post-war rehabilitation and improvement of public water supplies will be the increasingly widespread demand for new supplies by many communities, especially the smaller ones which now lack such facilities, and also a tendency toward more exacting standards of quality for all water supplies, which will tend to create a general demand for improvements and additions in water treatment.

In some sections of the country, notably in the more densely populated areas of the Eastern and Middle Western States, the general problem of maintaining good public water supplies is complicated by two major developments which have presented a situation of increasing difficulty in recent years. These are: (1) a progressive depletion of ground water supplies as the result of overdrafts in underground reserves, and (2) a marked increase in pollution of surface sources of water by sewage and industrial wastes. The first-named tendency, which attained somewhat alarming proportions during the drought years of the 1930's, has necessitated in some cases the augmentation of ground supplies by those obtained from surface sources. This tendency will increase, if further depletion of underground water strata occurs. During the decade 1930–40, excessive pollution of surface sources of water supply resulted in the development of new sources at Toledo, Grand Rapids, Albany, Youngstown, Springfield (Ill.), Sandusky (Ohio), and Little Rock (*3*). These improvements cost altogether more than $20,000,000. In numerous other instances, raw water pollution has necessitated extension and elaboration of existing water-purification facilities, often at great expense. In general, water problems of this type are intimately related to those of waterways pollution and the ultimate solution of these two general problems will be likewise closely interdependent.

General requirements of a good water supply.—In general, a satisfactory public water supply should be adequate in quantity and pressure to meet all domestic, industrial, and fire-protection needs of a community. It should be hygienically safe at all times for drinking and culinary purposes, should not contain excessive turbidity, color, hardness, or iron, and should be free from undesirable tastes and odors. It also should contain no toxic metals or other like substances such as lead or arsenic and should be free of certain materials such as phenols or cresols, which may cause objectionable tastes in treated water supplies. It should be relatively noncorrosive and should be suffi-

[3] According to a recent estimate by Wolman, the expenditure of about 20 million dollars per year will be required immediately after the war to make up this deficiency.

ciently in equilibrium chemically so that no cumulative deposits of mineral salts will occur in piping and hot-water systems.

The amounts of water consumed in cities of the United States average about 120 gallons per capita daily,[4] with ranges of 80 to over 300 gallons in individual cities. Surveys have indicated that average rates of domestic consumption of water range from 30 to 50 gallons or more per capita, with 30 gallons as the estimated minimum. For ordinary residential districts, pressures of 25 to 40 pounds per square inch are required, though present practice favors carrying 60 to 75 pounds in order to provide adequate pressure for fire protection and to allow a large margin of fluctuation in local pressures in meeting sudden drafts. For fire protection, available flows ranging up to 12,000 gallons per minute are required, with an additional allowance of 2,000 to 8,000 gallons per minute for a second fire. In the Chicago stockyards fire of 1935, the rate of draft exceeded 50,000 gallons per minute. In general, the ordinary maximum daily consumption may exceed the yearly average by about 50 percent and the maximum hourly consumption may exceed the daily rate by 50 percent. In designing water systems, pumping, treatment, and distribution capacities are figured as high as 2.0 or 2.5 times the average rate of consumption, in order to allow for ordinary maximum rates of draft in addition to overdraft for fire protection.

Desirable quality requirements for public water supplies have been set forth in the Drinking Water Standards of the Public Health Service, of which the latest revision was issued September 25, 1942 (*4*). Although these Standards are intended to be applicable only for drinking and culinary waters supplied by common carriers in interstate commerce, they have been followed in a majority of the States as a criterion of quality for public water supplies in general. The Standards limit the number of coliform bacteria in a water to an average not exceeding 1 per 100 milliliters, these bacteria being indicative of undesirable pollution when present in higher concentrations. Additional requirements fix upper limits for turbidity and color of a water, and its content of lead, arsenic, and other undesirable metallic pollutants. No objectionable taste or odor is permissible. Although no limit is set for the total hardness, certain limiting requirements are suggested with respect to the total alkalinity at various hydrogen ion concentrations (pH). Appended to the Standards is a "Manual of Recommended Water Sanitation Practice," in which various sanitary defects in water supplies are described, together with suggested measures whereby such defects may be prevented or eliminated.

[4] The recent Public Health Service census has indicated an average of 119 gallons in 29 States for which the best data are available.

Economic losses from deficiencies in water quality.—The costs of sanitary and other defects in the quality of water supplies have been studied by several observers, dating from the original work of the late George C. Whipple (*5*) about 35 years ago. Several estimates have been made of the economic losses due to deaths from preventable water-borne diseases such as typhoid fever and dysentery. On the basis of damage awards resulting from an outbreak of water-borne typhoid fever at Olean, N. Y., in the year 1928 Shaw and Chase (*6*) have estimated that each death from typhoid fever costs the community about $20,000; hence each death prevented may be considered as saving an equivalent sum. On the assumption that one-half of the reduction in deaths from typhoid fever recorded between 1900 and 1935 was attributable to increased safety of water supplies, the authors conclude that this saving due to pure water has amounted to the total sum of $400,000,000 annually in the United States.

On the same basis it may be estimated that the economic loss from deaths due to typhoid fever approximated $68,400,000 in 1935, when the death rate for the entire registration area was 2.8 per 100,000, and $21,200,000 in 1940, when the death rate reached the phenomenally low point of 0.8 per 100,000. If one-half the typhoid fever in 1940 was water-borne, the economic loss in this year due to deaths from this disease was roughly $10,000,000.

The same authors have considered the economic losses due to excessive amounts of turbidity, color, iron and manganese, and to undesirable tastes and odors in public water supplies. They have based their estimates in part on the recorded per capita expenditures for bottled spring waters not having these defects. Their conclusions on these points are that the annual losses due to these types of water quality impairment are very roughly as follows:

	Per million gallons daily of water consumption	*Per thousand of population annually*[1]
For turbidity exceeding 10 p. p. m.	$400 per p. p. m.	$48 per p. p. m.
For color exceeding 5 p. p. m.	200 per p. p. m.	24 per p. p. m.
For iron and manganese	1,000 per p. p. m.	120 per p. p. m.
For tastes and odors	$2,000 to $20,000 per year	$240 to $2,400

In a city of 100,000 population, a water containing 3 p. p. m. of iron would impose, on this basis, an economic loss amounting to $36,000 annually. At the minimum figure given for tastes and odors, the total cost of this impairment in the same city would be estimated at $200,000 annually. Both of these deficiencies in the quality of public water supplies have a definite public health significance because water consumers served with an iron-bearing or taste-producing water supply will tend to avoid such a supply in favor of other local sources which may be and frequently are hygienically unsafe.

[1] Assuming an average water consumption of 120 gallons per capita daily.

The annual losses due to corrosive water vary widely with local conditions, as would be expected, but are always a definite item of cost in terms of shortened life of services and inside piping in homes, office buildings, and factories. In one case cited by Shaw and Chase, the loss due to corrosion was estimated at $36,500 annually per million gallons daily of water consumption. As pipe corrosion is a relative action, nearly always prevalent to some degree wherever water comes in contact with a corrodible metal, no generalized estimate can be made as to the total damage done by this agent, though it probably is very large and exacts a heavy annual toll in all waterworks systems.

Excessive hardness in a water supply, in addition to causing extra soap consumption, exacts a toll of shortened life for washable fabrics and cooking utensils, increased expense of maintaining plumbing, water tanks, and heaters, fuel losses in heating water in homes and factories because of scale formation, and the added costs of household water softeners and industrial boiler compounds.

Recent data have indicated that the combined annual cost of hard water averages from 1.0 to 1.5 cents per capita for each part per million of hardness in excess of 75 to 100 p. p. m. Shaw and Chase estimated that the annual losses at Dayton, Ohio, using a water of 350 p. p. m. hardness, were $3.50 per capita, as compared with the cost of using a softened water at 100 p. p. m. Estimates for 232 Kansas municipalities using water averaging 334 p. p. m. hardness have indicated an annual loss of 25 pounds of soap per capita. At 16 cents per pound, this represents a loss of $4 per capita per year.

An approximate estimate of the total economic loss due to use of hard water in over 600 cities surveyed by Collins in 1932, as analyzed by Olson in a recent paper (7), has indicated an annual cost of about $24,000,000, or roughly 90 cents per capita, for some 27,000,000 people using waters exceeding 90 p. p. m. hardness.

In addition to the cost of other deficiencies in the equality of our water supplies, it may be estimated very roughly that excessive hardness and water-borne disease probably exact an economic loss amounting to at least $35,000,000 annually, to which roughly $5,000,000 might be added for losses due to nonfatal illness from water-borne disease, including both typhoid fever and diarrhea-enteritis. The losses represented by other defects in the quality of water supplies, though of such a nature as to be highly variable and thus indeterminable, probably would amount to at least $10,000,000 annually and doubtless would exceed this sum by a considerable margin if they could be fully and accurately appraised. This would not include the economic losses due to pipe corrosion which, if known, would undoubtedly be represented by a far greater annual expense over the entire country than the figures above given would indicate.

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Although it would be hazardous to fix a definite figure for the total economic loss now resulting from sanitary and other defects in the quality of public water supplies in the United States, it would seem fairly safe to say, from the evidence available, that such a figure would be not less than $50,000,000 annually and might be somewhat higher if more definite information were available concerning the total cost of such items as unpalatability, excessive turbidity and color, iron and manganese, and corrosiveness in water supplies. Added to this would be a certain, though intangible, economic loss to the country resulting from the absence of public water supplies in the 6,087 incorporated communities having populations less than 5,000. It is in these communities that Wolman and Gorman (*8*) have noted the greatest occurrence of typhoid fever, the number of outbreaks in such communities having been 72 percent of the total during the period 1930–36. The needs of this large number of small communities for public water supply systems constitute probably the most important problem remaining to be solved in this particular category of community sanitation.

THE PRESENT INVENTORY

The present inventory was undertaken in March 1943 in connection with a general survey of sanitation needs instituted by the States Relations Division of the Public Health Service through its Sanitation Section.

Basic data for the inventory have been obtained from seven main sources, as follows:

1. United States census data for 1940, listing incorporated communities and their populations.

2. A national census of water treatment plants in the United States, up to the end of the year 1940, as compiled by the United States Public Health Service, with cooperation by State departments of health. Published in summary form in Public Health Reports, vol. 57, No. 45, Nov. 6, 1942, pp. 1679–1694, together with unpublished supplements for 1941 and 1942.

3. Reports of the National Resources Planning Board, dealing with water supply projects.

4. Reports of Lanham Act projects, as submitted for review by the Public Health Service.

5. Reports of reconnaissance surveys by the Public Health Service.

6. Public Works Administration waterworks non-Federal projects. Publication No. 101, Public Works Administration.

7. Engineering estimates for post-war construction from State and local agencies.

The inventory, which is based on a listing of individual com-

munities in each State, includes all known improvements and extensions of existing waterworks, except water softening and iron removal installations, required to furnish adequate service as an extension of existing treatment facilities. Included also in the listing are new public water supply systems needed for all incorporated communities with populations exceeding 200, excepting the construction of new water softening and iron removal plants. The works included in the extensions would provide the convenience of a public water supply system to as much of the entire population as is deemed economically feasible and would reduce the hazards to public health associated with inadequate public systems or the use of unprotected local sources of water.

The waterworks projects listed would include, in addition to improvements and extensions of supply and purification facilities, the extension of water distribution systems and feeder mains and provision for complete new water systems, including facilities for supply, purification, and distribution. In many communities, both large and small, existing water systems are in need of extensions and improvements. These needs are caused by normal population growth, obsolescence and depreciation of existing facilities, increase in pollution of sources of water supply, and other similar elements. The need for improvements of this type is of greater than normal magnitude because of necessary curtailment of ordinary waterworks construction during the present war period.

The tendency of large communities to expand peripheral suburban areas creates a general need for water distribution extensions and increase in feeder main capacity in order to provide adequate service in outlying districts. Many smaller communities containing closely developed areas are in need of public water supply systems because of the hazards associated with unsupervised private water development. In some cases water supplies for neighboring groups of smaller communities can be developed on a water district plan, thus economizing on the provision of these facilities.

In table 1 are listed the numbers of incorporated communities in each State, together with the numbers of these communities served by public water supplies according to three population groups. In the last column of the table is given the total number of incorporated communities served by public water supplies in each State. This table shows a total number of 16,752 incorporated communities in the 48 States, of which 10,656 are provided with public water supplies. Some 2,033 communities of 5,000 population and over are listed as having public water systems. Reference to a previous tabulation (page 2) will show a comparison of the total number of communities in each population group and the number provided with public water systems.

TABLE 1.—*Incorporated communities served by public water supplies*

State	Number of incorporated communities	Served by public water supplies			
		Population under 1,000	Population 1,000–4,999	Population 5,000 and over	Total
Alabama	279	56	86	30	172
Arizona	34	3	13	10	26
Arkansas	414	64	87	22	173
California	286	35	138	110	283
Colorado	250	122	52	17	191
Connecticut	43	1	10	24	35
Delaware	52	11	16	2	29
Florida	273	73	88	35	196
Georgia	590	116	129	38	283
Idaho	151	35	39	11	85
Illinois	1,140	240	291	122	653
Indiana	529	135	29	68	232
Iowa	931	357	171	44	572
Kansas	589	221	107	32	360
Kentucky	323	69	105	29	203
Louisiana	210	40	76	28	144
Maine	26		6	20	26
Maryland	145	48	34	12	94
Massachusetts	122		9	113	122
Michigan	475	108	162	78	348
Minnesota	745	220	149	44	413
Mississippi	295	84	83	23	190
Missouri	793	75	139	47	261
Montana	115	52	35	12	99
Nebraska	531	305	88	17	410
Nevada	12	2	6	3	11
New Hampshire	18		2	16	18
New Jersey	344	65	127	122	314
New Mexico	63	16	21	14	51
New York	611	207	228	120	555
North Carolina	488	83	119	45	247
North Dakota	333	49	37	10	96
Ohio	873	170	243	115	528
Oklahoma	520	42	115	43	200
Oregon	207	112	50	16	178
Pennsylvania	989	127	308	205	640
Rhode Island	19		1	18	19
South Carolina	248	29	70	24	123
South Dakota	303	132	46	10	188
Tennessee	221	68	67	27	162
Texas	645	202	276	102	580
Utah	192	108	55	8	171
Vermont	75	14	22	10	46
Virginia	218	76	64	29	169
Washington	222	116	61	22	199
West Virginia	209	58	84	26	168
Wisconsin	512	142	132	54	328
Wyoming	89	35	24	6	65
Total	16,752	4,323	4,300	2,033	10,656

Method of compiling the inventory.—The preliminary listing of incorporated communities over 200 in population was obtained from the 1940 United States Census, together with their 1940 populations. These communities are listed by States. From the detailed information of the Public Health Service water purification census an estimate was made of the needed extensions of systems providing water

treatment, in accordance with the difference shown between the total census population of each community and the population served by the present system. In this manner ratios were obtained of the total census population to population served which could be applied to estimating the necessary extension of distribution systems both on treated supplies and on untreated supplies, the latter listings being obtained from other sources. In estimating the needs, if the existing treatment capacity was shown to be more than 1.5 times the average water consumption, the capacity of the treatment system was considered as adequate; if otherwise, an increase in capacity to 2.5 times the present average consumption rate was considered necessary. This procedure was in accordance with usual practice in estimating needed extensions of water-treatment systems for future periods.

The data concerning needs for extensions of untreated water supplies not included in the Public Health Service treatment census were obtained from reports of the National Resources Planning Board, together with the other sources of information above noted. From the National Resources reports only projects not yet constructed were listed. From reports of the Lanham Act projects and the United States Public Health Service reconnaissance surveys were taken listed projects which had not been included in other sources of information. Estimates of requirements for new systems were obtained by comparison of lists of existing water supplies with lists of incorporated communities in each State as shown by the 1940 Census. In this connection, reference also was made to proposed projects listed in various issues of the engineering periodicals.

In order to establish a background for estimating the cost of future projects, a study was made of the per capita costs of waterworks projects as reported by the Public Works Administration in publication No. 101. This publication shows the location, description, and final cost of waterworks constructed by the Public Works Administration during the period July 1933 to March 1939. The following types of projects were considered separately from the report:

(1) New waterworks systems
(2) New purification works
(3) New sources and purification works combined
(4) New ground-water supplies

In these groups all projects containing extensions, renewals, and additions to present systems were excluded in order to show the true picture of the cost of completed new construction. New waterworks system costs include those of developing new sources (in most cases wells), construction of pumping stations, including buildings, and the construction of distribution systems. New purification works include sedimentation tanks, coagulation basins, rapid- or slow-sand filtration, pumping equipment, structure of housing and

pumping equipment, and the necessary main extensions to connect the purification plant with the distribution system.

The third group, new sources and purification works, includes, in addition to treatment plants, new sources of supply which may have been from either a surface or a ground-water source.

The fourth group consists of projects in which new ground-water sources were developed, including pumps, structures to house the pumps, and main extensions to connect the source of supply with the distribution system.

In order to analyze the data thus grouped, the projects were listed individually, the construction costs per capita computed, and these costs then averaged for the various population ranges. The average per capita costs thus obtained were then plotted against average populations for the several groups.

The base data for these plots are given in table 2, divided into four sections according to the subdivision above indicated.

TABLE 2.—*Relation between average size of population group and corresponding cost of newly constructed water supply facilities*

[Based on Public Works Administration contracts, 1933–39]

	Population range	Number of projects	Average population	Average cost per capita
Waterworks systems (complete, including source)	100–500	246	370	$84.00
	500–1,000	340	700	65.00
	1,000–10,000	195	1,800	45.00
Treatment works	100–500	2	384	23.20
	500–2,000	11	1,130	19.80
	2,000–10,000	23	4,320	15.00
	Over 10,000	8	39,800	9.20
Sources and treatment works combined	500–2,000	4	1,350	28.40
	2,000–10,000	9	5,320	18.40
	Over 10,000	6	120,000	15.50
Ground water supplies	100–500	4	430	16.20
	500–2,000	12	1,230	7.30
	2,000–10,000	5	3,050	5.28

In general, it is noted that the per capita costs of construction for new water supply facilities of all types tend to bear an inverse relation to the size of the population group served, that is, to diminish with increasing population.

Altogether 865 Public Works Administration projects were listed in the four categories—44 in treatment, 19 in source and treatment, 781 in completely new systems, and 21 in ground water supplies.

Construction costs have continued to rise from 1915 up to the present time, except for minor declines during short intervals. Following the last war, construction costs varied considerably but during the period 1920–30 averaged about 12 percent higher than those prevailing during the war. Construction costs at the present time are about 32 percent higher than in the period 1934–40. Following

the present war, insofar as experience of the last war is a guide, it is reasonable to expect further increase in costs above the present level.

Assuming this increase to be of about the same magnitude as it was after the last war, the inference would be that construction costs after the present war would be about 48 percent higher than in the period 1934–40. Costs prevailing at this high level may have the effect of impeding many worth while public works, though indications are that some sort of price control will be maintained after the war to hold approximately to present costs. Any increase in construction costs above the present level will have the effect of increases in the estimates here shown. For this reason the total estimated costs for new waterworks construction based on per capita costs indicated in table 2 for the period 1933–39 were increased 32 percent to conform to present-day prices.

For the derivation of estimated costs of extensions and improvements to existing waterworks, a general figure of $35 per capita was used, $20 of which was allotted to source and treatment and $15 to distribution system improvements. Where detailed costs for such extensions and improvements have been directly available in sources above indicated, these costs have been used. For purposes of estimating total costs of extensions and improvements, the per capita costs were applied only to the populations benefited by such improvements and not to the total incorporated populations.

Included in the over-all estimate are costs for several improvements to existing waterworks, concerning which primary engineering studies of some type have been made, usually in the larger cities. With respect to these projects, actual engineering estimates amounting to $151,690,000 were prepared on the basis of present-day costs and no increase was allowed.

Results of the inventory.—According to the estimates which have been prepared on the basis of the unit costs above given, the total estimated cost of additional water supply facilities needed, as indicated by the present inventory, is approximately $683,300,000 and is distributed as follows:

	Number	*Estimated cost*
New systems	4, 863	$180, 960, 000
Extensions or improvements	6, 455	502, 340, 000

The numbers of incorporated communities, including their total populations, considered for new waterworks are listed by States in table 3. In this table it will be noted that the total population of the lowest community size group (population 500 and under) is about twice the total population in the next larger group (population 501 to 1,000) and somewhat over four times the total population of the largest community group. The disparity between the total number of communities in the "500 and under" group and the total for the other

two groups is much greater than the difference between their corresponding populations.

TABLE 3.—*Incorporated communities considered for new waterworks*

State	Population 500 and under		Population 501–1,000		Population over 1,001	
	Number of communities	Total population (1940)	Number of communities	Total population (1940)	Number of communities	Total population (1940)
Alabama	75	21,142	24	15,960	6	7,449
Arizona			5	4,375	3	4,142
Arkansas	193	50,114	29	19,460	3	3,422
California			1	677		
Colorado	42	8,324	4	3,015	5	8,032
Connecticut			2	1,312		
Delaware	14	3,957	2	1,164		
Florida	45	12,638	17	11,311	6	9,754
Georgia	150	44,874	29	18,165	4	5,696
Idaho	47	14,904	11	5,833		
Illinois	347	102,981	117	78,769	12	12,504
Indiana	147	42,529	33	21,032	5	5,680
Iowa	306	71,898	30	19,958	2	3,178
Kansas	203	49,754	18	11,041	2	2,464
Kentucky	69	21,013	20	13,077	4	5,231
Louisiana	44	14,715	14	9,474	5	8,061
Maryland	23	7,614	9	7,352	9	16,695
Michigan	94	32,508	27	17,438	3	4,934
Minnesota	211	57,956	29	17,462	2	2,782
Mississippi	90	23,804	14	8,422	2	6,618
Missouri	413	107,487	65	42,370	18	16,849
Montana	14	4,208	1	839	1	1,012
Nebraska	109	20,827	4	2,517	2	2,457
Nevada			1	964		
New Jersey	9	2,791	6	3,329	1	2,128
New Mexico	7	2,163	4	2,969		
New York	41	11,450	13	8,253	3	3,569
North Carolina	143	44,724	41	28,044	5	5,548
North Dakota	156	45,884	26	16,981	2	2,457
Ohio	205	67,027	72	44,161	4	6,295
Oklahoma	191	55,920	61	39,881	5	5,984
Oregon	9	2,079	2	1,231		
Pennsylvania	9	2,734	9	6,265	3	5,217
South Carolina	61	18,982	18	10,120	7	12,122
South Dakota	67	17,867	8	4,769		
Tennessee	27	7,687	1	560	3	4,683
Texas	41	10,809	11	7,364	12	17,988
Utah	16	4,269	5	3,481	2	9,292
Vermont	17	4,472	8	5,498	2	3,365
Virginia	41	12,662	5	2,952	2	2,257
Washington	12	3,651	3	2,108	2	4,023
West Virginia	32	9,010	8	5,430	1	1,133
Wisconsin	145	41,759	28	18,216	6	9,345
Wyoming	8	2,392	1	885		
Total	3,873	1,044,579	836	544,484	154	222,366

NOTE.—Data for Maine, Massachusetts, New Hampshire, Rhode Island, and District of Columbia not included, as no incorporated communities have been considered for new waterworks in these States.

The total estimated costs of the additional water facilities needed is broken down by States in table 4. In this table the costs of development and purification have been separated from the costs of distribution and the two estimates combined under the heading of "total costs."

It would be impracticable to show in this paper a complete break-

down of these estimates in terms of cost of water supply needs for individual communities, although this information has been collected and tabulated as a basis of the figures given in table 4.

As the detailed projects for meeting these improvements will be to a very large extent the responsibility of the local communities, it hardly seems necessary or justified to undertake any such detailed presentation here. The real purpose of presenting the estimates in their present form is to indicate what the total costs of meeting these needs in the various States may be expected to approximate in relation to the cost of fulfilling other sanitation needs as they may be developed from the present inventory. These broad estimates also will serve as a basis for comparing at the level of present costs the estimated requirements of each State in relation to those for other States.

TABLE 4.—*Cost summary—water supply*

[In thousands of dollars]

State	Development and purification	Distribution	Total	State	Development and purification	Distribution	Total
Alabama	2,420	4,490	6,910	Nebraska	3,640	5,130	8,770
Arizona	3,200	970	4,170	Nevada	80	70	150
Arkansas	3,130	6,400	9,530	New Hampshire	160	280	440
California	41,040	5,710	46,750	New Jersey	3,020	3,630	6,650
Colorado	3,750	1,970	5,720	New Mexico	610	420	1,030
Connecticut	1,320	1,990	3,310	New York	25,300	12,510	37,810
Delaware	280	610	890	North Carolina	4,040	7,820	11,860
District of Columbia	6,850	5,150	12,000	North Dakota	3,060	5,200	8,260
Florida	2,760	4,100	6,860	Ohio	23,600	15,510	39,110
Georgia	5,050	7,710	12,760	Oklahoma	5,020	10,260	15,280
Idaho	960	1,960	2,920	Oregon	1,590	1,330	2,920
Illinois	77,600	18,660	96,260	Pennsylvania	24,340	11,800	36,140
Indiana	7,400	8,390	15,790	Rhode Island	9,280	860	10,140
Iowa	3,460	7,210	10,670	South Carolina	1,480	2,770	4,250
Kansas	3,190	5,070	8,260	South Dakota	1,550	1,950	3,500
Kentucky	5,630	6,520	12,150	Tennessee	2,250	3,170	5,420
Louisiana	1,410	4,270	5,680	Texas	8,650	4,490	13,140
Maine	1,110	950	2,060	Utah	2,330	3,530	5,860
Maryland	37,760	9,470	47,230	Vermont	1,080	1,780	2,860
Massachusetts	17,750	3,080	20,830	Virginia	2,390	2,110	4,500
Michigan	33,670	6,600	40,270	Washington	4,070	7,070	11,140
Minnesota	4,240	7,210	11,450	West Virginia	1,670	1,480	3,150
Mississippi	2,110	3,440	5,550	Wisconsin	10,950	10,180	21,130
Missouri	16,590	21,450	38,040	Wyoming	1,680	350	2,030
Montana	230	1,470	1,700	Total	424,750	258,550	683,300

In compiling the data shown in tables 3 and 4, no estimates have been included for the costs of added water softening facilities in the various States, or for the populations thereby affected. Based on Olson's figures for the population now consuming water of various degrees of hardness, it may be estimated very roughly that about 27 million people in the United States consume water which would require softening to bring it to a hardness level of 80 to 100 parts per million. According to the latest supplementary data from the Public

Health Service water treatment census, approximately 6.7 million people were provided with water softening facilities in 1941. It therefore may be estimated that roughly 20 million people would still need such facilities if they could be provided. A similar estimate of needed facilities for removing iron and manganese from water supplies would be desirable but must be omitted here because of the lack of reliable data.

At present cost levels, it may be estimated that a first-class water softening plant with filters would cost about $50,000 per million gallons daily capacity. With a mean rate of water consumption of 120 gallons per capita daily, this would represent a construction cost of $6 per capita for softening plant. Applied to a population of 20 million, the total estimated cost would be $120,000,000 for softening of all water supplies not now thus treated and averaging more than 80 to 100 p. p. m. hardness. If this item be added to the total estimated cost of all other development and treatment facilities, as shown in table 4, the total cost under this item would be increased from $424,750,000 to $544,750,000 and the grand total for all water supply additions and improvements from $683,300,000 to $803,300,000.

In connection with these figures it is of particular interest to refer to an estimate of post-war needs for additions and improvements to existing waterworks systems in the United States compiled by the editor of the journal Water Works Engineering and published in that journal in February 1943 (*9*). This estimate did not include the cost of constructing complete new water systems for small communities, estimated in the present inventory at a total cost of $180,000,000. The total estimated cost of the additions and improvements to existing water supplies covered by Water Works Engineering was $650,000,000, based on data supplied from 92 cities of 100,000 population or more. This figure is slightly lower than the total of $683,300,000 derived from the present inventory, excluding water softening improvements. If the $180,000,000 for construction of new waterworks systems be added to the Water Works Engineering estimate, a total amount of $830,000,000 is obtained, which figure is not far from the total of $803,300,000 estimated from the present inventory. On this basis and assuming a total population of 84,500,000 now connected with waterworks systems, the cost of the improvements, including water softening and construction of new plants, would approximate $9.50 per capita.

Methods of fulfilling needs.—Under any general plan of water supply rehabilitation and improvement which may be envisioned at the present writing, the part to be played by the local waterworks departments and their State public utilities and health organizations would be the predominant one. Thus the local waterworks departments, thoroughly familiar with detailed local needs, would be in the best

position to draft plans for needed additions and improvements to their own water systems and likewise to supervise the construction work. Moreover, as public waterworks systems are to a large extent self-supporting and revenue-producing agencies, the local waterworks departments should be able, in a majority of cases, to handle the detailed financing of local improvements with such aid as might be necessary from State and Federal Governments. In some instances probably no outside aid, financial or otherwise, would be necessary, although experience has indicated that many desirable or even necessary water supply improvements, if left to the initiative of local authorities, sometimes are deferred too long under the pressure of local factional disputes and competition for funds for other improvement projects. Under these circumstances, the stimulus of State aid and educational efforts, backed by State laws and regulations, often is necessary. This is a proper and widely recognized function of State governmental agencies.

Before any water supply improvements can be undertaken, preliminary engineering surveys and detailed plans and specifications must be prepared, either by the waterworks department if it has the necessary technical facilities, or, otherwise, by private consultants with State aid and general supervision. It cannot be too strongly emphasized that these detailed surveys, estimates, plans, and specifications should be drawn up well in advance, so as to be ready when the time for action comes. Funds and personnel should be made available for this work without delay by appropriate action of the governmental and waterworks authorities concerned with this problem.

Construction of public waterworks systems, as well as additions and improvements to such systems, affords an ideal means of employment for a large and diversified group of individuals and industries. Water supply improvements are self-paying investments which add permanent assets to any community needing them. In the general scale of public works projects, whether for immediate post-war reemployment or for a long-range improvement program, waterworks always have merited and will continue to hold a very high place because of the essential nature of this utility and the widespread public benefits it bestows.

In financing water supply improvements, whether on a 10-year, a 20-year, or some other plan, funds usually are obtained through bond issues, repaid on some plan of amortization spread over short or long periods of time according to the policy and capital resources of the local water utility. In some communities many waterworks improvements are financed out of reserves accumulated from current water revenues, though this is the exception rather than the rule. In either

case the cost of any construction program becomes, as a practical matter, one of planned annual expenditure over a term of years.

An approximate idea as to the annual payments which would be required to amortize a total capital expenditure of $683,300,000 for fulfilling the detailed water supply needs embraced by this inventory (exclusive of water softening) may be gained by application of the usual formula for liquidating a given capital sum by equal annual payments over any given period of time, at any assumed rate of interest. According to this formula, the annual payment (Y) required to liquidate a capital sum (C) in (n) years with an interest rate of (r) percent is $Y = C \times w$ where $w = [r/100] + [1 - (1 + r/100) - n]$.

For the purpose of illustration, let it be assumed that the period of annual payments was 20 years and the interest rate 3 percent. On this basis annual payments of $45,930,000 as a rounded figure would liquidate a capital cost of $683,300,000 at the end of 20 years, including interest charges on annual unpaid balances. The yearly payments in this particular case would amount to 6.722 percent of the original capital sum. In a similar manner, it may be calculated that annual payments of about $54,000,000 would liquidate a capital sum of $803,300,000, which would include the total estimated cost of water-softening in addition to the items covered in the inventory.

If the total economic loss due to present deficiencies in public water supplies be considered as amounting to about $50,000,000 annually and the improvements included in the present inventory were to result in the elimination of this loss, or a major part of it, the saving thus effected would go far toward repaying the total cost of the improvements by the end of 20 years or thereabouts.

A question may be raised as to the annual cost of operating the increased water supply facilities. Although this would be a definite and considerable item of cost, varying with the kind of added water service concerned, it would be spread among a large number of water consumers and would be readily absorbed in the general water service rates, as is customary in the ordinary operation of public waterworks systems. So far as the present estimates are concerned, it quite logically may be neglected for this reason, as constituting a legitimate item in the operating expense of a water system.

As the useful life of most waterworks structures ordinarily exceeds 20 years, this period would be a fairly safe one over which to finance improvements, such as are included in the present inventory. For parts of a waterworks system, such as distribution reservoirs and pipes and the more durable structures connected with intake, pumping, and treatment works, it is customary to figure useful life for as long as 30 or 40 years, though some features such as pumps and certain treatment equipment may become outmoded by functional improvements in design before the equipment has become worn out.

Aside from the economic savings which would tend to make water supply improvements self-liquidating, certain intangible benefits would result which in some cases probably would exceed any direct financial return. For the nearly 5,800 small communities which this inventory has revealed as having no public water systems, the intangible benefits of providing these communities with public water supplies would be almost incalculable if they could be expressed in terms of general improvement in health conditions and betterment of living conditions in the individual homes, resulting from adequate supplies of safe water delivered to taps and the installation of water-carriage systems of sewage disposal. The health benefits would affect in some measure the rural districts immediately contiguous to these communities, to which are drawn many people from these outlying districts for local trade. Experience has shown that many small communities, where favorably located, tend to undergo accelerated growth and industrial development after being provided with public water supplies. A recent study in Florida and Georgia (*10*) has revealed that for industrial and residential areas the hardness of a water supply influences the rate of population growth, which is greater in cities providing softer water.

As to the extent of State and Federal aid which would be required in order to carry out any extensive program of public water supply construction, and the manner in which such aid best may be applied, anything further than very brief comment seems beyond the scope of this paper.

Because of the revenue-producing character of public water supply systems, it would appear that Federal aid, if needed, could be limited very properly to capital loans at low interest rates, to be repaid through some plan of amortization such as has been illustrated above. One of the more outstanding needs shown by the present inventory has been the construction of new water systems for many small communities which have only very limited capital resources. In such instances it is quite possible that some form of State or Federal aid would be necessary in order to initiate construction work on any comprehensive scale. In the case of small communities whose resources are not sufficient to permit the use of ordinary public financing through the sale of bonds, special loan arrangements probably would be necessary. Technical aid by the States in connection with the drafting of detailed plans and specifications would be needed in many such instances.

In view of the variety and large number of post-war reconstruction needs which may be expected to arise, many public works projects which in ordinary times would be highly desirable from the standpoint of the general public welfare will have to justify themselves as being of immediate economic benefit in order to obtain consideration. In some cases, public water supply improvements, when measured by this standard, will be found deferable. In other instances,

however, they doubtless will rank very high in both immediate and long-range value as a public investment, on which a substantial and certain return is assured, both financially and otherwise. It would be a very wise provision for the future to make a careful survey of this matter during the war in order that meritorious water supply improvements may be identified in advance and detailed plans prepared for carrying them out at the proper time after the war. In this respect, the present inventory is only a preliminary step. It should be followed up by a systematic study of the more urgent water problems which must be solved within a reasonably short time in order to avoid possible injury or even disaster to the public health. Such a study may be commended to the various States, with full cooperation by the local communities and by the Public Health Service which has a large fund of specialized technical information on this subject at its disposal. It should not be delayed lest intelligent action, based on facts, be laid aside at a critical future moment in favor of hasty and ill-advised projects which may be unnecessary or, at best, unproductive of any substantial future benefits.

Acknowledgment of the assistance in the preparation and analysis of the data incorporated in this inventory is made to Senior Public Health Engineer Maurice LeBosquet, Jr., of the Office of Stream Sanitation, and to Public Health Engineer Samuel R. Weibel, of the Office of Stream Pollution Investigations, Cincinnati, Ohio. The Sanitation Section under direction of Sanitary Engineer Director J. K. Hoskins rendered valuable aid and advice in the planning and arrangement of this review.

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COURT DECISION ON PUBLIC HEALTH

Filled milk law upheld.—(Kansas Supreme Court; *State ex rel. Mitchell* v. *Sage Stores Co. et al.*, 141 P.2d 655; decided October 2, 1943.) The so-called filled milk statute of Kansas made it unlawful "to manufacture, sell, keep for sale, or have in possession with intent to sell or exchange, any milk, cream, skim milk, buttermilk, condensed or evaporated milk, powdered milk, condensed skim milk, or any of the fluid derivatives of any of them to which has been added any fat or oil other than milk fat, either under the name of said products, or articles or the derivatives thereof, or under any fictitious or trade name whatsoever." This statute was held by the Supreme Court of Kansas to apply to a canned product manufactured by mixing sweet skim milk, refined cottonseed oil, and natural vitamin A and vitamin D concentrates and thereafter evaporating the mixture so as to reduce it to 40 percent of its original volume solely from the loss of water. In sustaining the constitutionality of the law, the following conclusions were among those reached by the court:

(*a*) The purpose of the statute was to preserve the public health and prevent fraud and deception of consumers.

(*b*) If the character or effect of an article, as intended to be used, is debatable, the legislature is entitled to its own judgment which cannot be superseded by the court's views.

(*c*) The fact that a food product is wholesome does not of itself make a prohibitory statute either inapplicable to the product or unconstitutional as applied to it.

(*d*) Whether regulation or absolute prohibition is necessary to attain a statute's purposes is a question for the legislature.

(*e*) The defendant's product was within the statute's purview and it was not material that the product was unknown when the law was enacted.

(*f*) Since the defendant's product was susceptible of being sold as and for evaporated milk, and was so sold, the legislature could prohibit its sale as an instrument of fraud and it was not material that the defendant intended that its product be sold for what it really was and without fraud or deception.

The court said that it had, in *Carolene Products Co.* v. *Mohler*, decided in 1940,[1] held the filled milk statute to be a valid health measure designed to protect the public against deception and fraud and that it adhered to that view now. It appeared that the product in the instant case was the same as the product condemned by the court in the earlier case except that the present product contained cottonseed oil while the former product contained coconut oil.

[1] For abstract of decision see Public Health Reports, Oct. 4, 1940, p. 1834.

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

REPORTS FROM STATES FOR WEEK ENDED JANUARY 1, 1944

Summary

The number of reported cases of influenza increased from 83,973 for the preceding week to 126,299 for the current week. These figures are for 43 States and the District of Columbia, and are exclusive of New Hampshire, Vermont, Massachusetts, Delaware, and Mississippi (also New York State outside New York City)—States in which the disease is not reportable or which reported no cases during the 2 weeks. Of these 44 States (counting the District of Columbia as a State), 26 reported increases and 18 decreases. Of the total reported increase of 42,326 cases, an increase of 30,530 cases was reported in 3 States—Kentucky 18,271, West Virginia 8,321, and Texas 3,938. Some of these cases may be delayed reports.

The number of deaths from all causes in 89 large cities increased from 12,601 last week to 14,262. The 3-year average for the week is 9,481, or an indicated excess mortality above the normal expectancy of 50 percent during the current week. A comparison of rates based on actual populations of these cities would no doubt show a smaller excess. Deaths from influenza and pneumonia in a group of 38 scattered cities as reported to the Public Health Service for recent weeks are as follows:

	Nov. 27	Dec. 4	Dec. 11	Dec. 18	Dec. 25	Jan. 1
1943	254	331	459	833	1,063	1,214
1942	299	294	332	378	387	479
3-year average [1]	281	290	296	328	334	374

[1] Corrected figures.

A total of 463 cases of meningococcus meningitis was reported, more than in any week prior to 1943, as compared with 361 last week, an average of 259 for the next preceding 4 weeks, 187 for the corresponding week last year, and a 5-year median of 37. Increases occurred in all but two of the nine geographic areas, slight decreases being reported in the New England and East South Central. More than half of the current total was reported in six States, as follows (last week's figures in parentheses): New York 65 (43), Pennsylvania 45 (34), Ohio 21 (12), Illinois 36 (28), Michigan 38 (15), and California 35 (24).

The cumulative total for the fourth quarter of 1943 is 3,399, as compared with 1,103 for the corresponding period of 1942. A total of 17,922 cases was reported in 1943, the largest number for any year of record, as compared with 3,774 in 1942, and a 5-year median of 2,023.

Telegraphic morbidity reports from State health officers for the week ended January 1, 1944, and comparison with corresponding week of 1943 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1938-42	Week ended—		Median 1938-42	Week ended—		Median 1938-42	Week ended—		Median 1938-42
	Jan. 1, 1944	Jan. 2, 1943		Jan. 1, 1944	Jan. 2, 1943		Jan. 1, 1944	Jan. 2, 1943		Jan. 1, 1944	Jan. 2, 1943	
NEW ENGLAND												
Maine	0	0	0	87	-------	1	184	23	35	3	6	0
New Hampshire	0	0	0	-------	-------	-------	1	49	6	0	1	0
Vermont	0	0	0	189	-------	-------	13	265	24	0	0	0
Massachusetts	21	4	2	-------	-------	-------	262	392	191	18	6	1
Rhode Island	0	0	0	60	-------	-------	106	3	3	4	7	0
Connecticut	1	0	0	683	11	1	9	411	67	7	3	1
MIDDLE ATLANTIC												
New York	11	14	20	[1] 199	[1] 15	[1] 12	542	762	645	65	19	5
New Jersey	2	0	12	270	21	17	437	150	38	23	8	0
Pennsylvania	9	16	16	57	6	-------	516	1,362	533	45	10	2
EAST NORTH CENTRAL												
Ohio	6	15	15	8,037	9	14	1,130	42	42	21	5	2
Indiana	3	2	12	117	17	17	126	82	25	8	4	0
Illinois	5	19	33	361	24	20	86	84	36	36	8	2
Michigan [2]	10	15	6	294	8	1	968	99	160	38	4	2
Wisconsin	3	1	1	2,323	45	44	419	217	217	5	0	0
WEST NORTH CENTRAL												
Minnesota	10	1	1	18	-------	-------	268	6	67	8	0	0
Iowa	1	3	3	4,377	-------	7	40	33	75	7	1	0
Missouri	1	11	10	68	1	5	18	7	7	16	6	1
North Dakota	2	2	2	595	15	17	329	3	16	2	0	0
South Dakota	6	1	2	1	1	1	80	97	4	2	0	0
Nebraska	7	2	0	393	-------	-------	5	106	4	3	3	0
Kansas	11	5	6	2,195	1	10	23	62	64	7	2	1
SOUTH ATLANTIC												
Delaware	0	0	0	-------	-------	-------	4	4	1	1	0	0
Maryland [2]	3	2	4	586	4	7	72	8	9	12	10	1
District of Columbia	1	1	1	603	4	5	39	4	1	6	1	0
Virginia	1	14	32	9,690	432	260	409	47	47	7	7	2
West Virginia	2	1	6	12,068	18	17	98	1	16	0	1	1
North Carolina	4	26	24	223	26	6	300	16	65	5	5	1
South Carolina	10	7	7	6,155	674	440	79	2	6	3	3	1
Georgia	5	4	10	6,513	65	124	125	14	25	7	2	0
Florida [2]	5	6	6	140	1	16	26	4	2	7	0	0
EAST SOUTH CENTRAL												
Kentucky	7	6	6	20,491	25	25	8	51	32	7	2	3
Tennessee	6	1	8	1,753	18	42	66	14	55	5	0	0
Alabama	6	13	13	7,022	194	194	140	2	15	2	3	3
Mississippi [2]	4	9	9	-------	-------	-------	-------	-------	-------	3	2	0
WEST SOUTH CENTRAL												
Arkansas	6	14	14	5,345	108	108	22	34	44	4	5	0
Louisiana	2	9	9	4,136	10	10	1	9	7	7	2	1
Oklahoma	8	8	14	2,875	93	123	0	42	9	7	1	0
Texas	31	50	40	13,330	1,254	1,254	66	27	67	4	3	2
MOUNTAIN												
Montana	4	1	1	2,521	15	15	134	69	41	3	3	0
Idaho	0	2	1	29	2	2	3	38	25	0	0	0
Wyoming	0	0	0	[3] 952	55	55	13	2	2	0	1	0
Colorado	6	6	6	808	42	69	188	32	32	2	10	0
New Mexico	0	1	1	81	1	4	0	0	9	2	1	0
Arizona	0	2	2	824	119	120	26	10	10	3	0	0
Utah [2]	0	0	0	1,767	55	55	3	334	48	1	3	0
Nevada	0	0	0	792	-------	-------	0	29	0	0	1	0
PACIFIC												
Washington	4	3	3	220	3	2	43	393	139	8	4	0
Oregon	4	2	3	2,811	18	40	55	296	31	4	12	0
California	27	24	19	4,429	30	38	168	49	191	35	12	2
Total	255	323	352	[3] 126,488	3,440	3,440	7,650	5,786	4,781	463	187	37
52 weeks	13,744	15,559	16,923	421,155	109,167	189,352	602,085	505,871	505,871	17,922	3,774	2,023

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended January 1, 1944, and comparison with corrresponding week of 1943 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [4]		
	Week ended—		Median 1938–42	Week ended—		Median 1938–42	Week ended—		Median 1938–42	Week ended—		Median 1938–42
	Jan. 1, 1944	Jan. 2, 1943		Jan. 1, 1944	Jan. 2, 1943		Jan. 1, 1944	Jan. 2, 1943		Jan. 1, 1944	Jan. 2, 1943	
NEW ENGLAND												
Maine	0	0	0	22	14	12	0	0	0	1	0	0
New Hampshire	0	0	0	4	16	9	0	0	0	0	0	0
Vermont	0	0	0	14	9	8	0	0	0	0	0	0
Massachusetts	2	1	0	246	311	144	0	0	0	2	1	1
Rhode Island	0	0	0	4	14	8	0	0	0	0	0	0
Connecticut	0	0	0	34	29	29	0	0	0	0	0	0
MIDDLE ATLANTIC												
New York	2	1	2	252	285	299	0	0	0	1	2	6
New Jersey	1	2	1	84	60	95	0	0	0	2	0	1
Pennsylvania	0	1	0	213	180	180	0	34	0	1	2	7
EAST NORTH CENTRAL												
Ohio	0	0	1	212	225	225	0	5	2	5	2	3
Indiana	0	2	0	48	78	122	0	5	2	0	0	0
Illinois	5	3	3	160	141	182	0	1	1	1	2	2
Michigan [3]	1	3	0	160	160	194	0	0	0	2	2	2
Wisconsin	8	1	0	109	183	157	0	0	5	1	0	0
WEST NORTH CENTRAL												
Minnesota	0	0	1	85	68	68	0	0	19	0	0	0
Iowa	0	2	2	62	50	70	0	1	1	0	0	1
Missouri	1	0	0	45	57	57	0	1	0	0	3	1
North Dakota	1	0	0	9	12	12	0	0	0	0	0	0
South Dakota	0	0	0	30	22	22	0	0	0	0	0	0
Nebraska	0	2	0	47	19	19	0	1	1	1	0	0
Kansas	1	1	1	80	60	65	2	0	0	0	0	0
SOUTH ATLANTIC												
Delaware	0	0	0	1	11	8	0	0	0	1	0	0
Maryland [3]	2	0	0	57	29	35	0	0	0	2	1	3
District of Columbia	0	0	0	31	26	13	0	0	0	1	1	1
Virginia	0	0	0	50	50	49	0	0	0	2	5	5
West Virginia	0	1	1	46	28	51	0	0	0	0	0	1
North Carolina	1	0	0	49	98	44	0	1	0	0	0	1
South Carolina	0	1	1	10	11	9	0	0	0	0	2	0
Georgia	0	2	0	22	41	22	0	0	0	3	2	2
Florida [3]	0	0	0	9	13	10	0	0	0	4	1	1
EAST SOUTH CENTRAL												
Kentucky	0	1	1	54	41	53	0	1	0	82	1	2
Tennessee	0	0	0	19	21	52	0	0	0	1	0	2
Alabama	0	0	0	9	25	37	0	0	0	1	2	2
Mississippi [3]	1	1	1	7	16	8	0	0	0	0	1	0
WEST SOUTH CENTRAL												
Arkansas	1	0	0	8	9	9	0	1	1	3	2	2
Louisiana	1	0	0	7	11	8	0	0	0	2	4	5
Oklahoma	2	0	0	69	15	23	1	3	3	1	1	1
Texas	2	16	2	37	51	57	0	7	4	0	6	6
MOUNTAIN												
Montana	0	0	0	24	10	12	0	0	0	0	0	0
Idaho	0	0	0	47	17	8	0	0	0	1	0	0
Wyoming	[3] 0	1	0	3	46	6	0	0	0	0	0	0
Colorado	1	1	0	19	41	26	0	0	1	0	1	1
New Mexico	0	1	0	10	13	13	0	0	0	3	3	1
Arizona	0	1	0	20	6	7	0	1	1	0	1	1
Utah [3]	0	1	1	94	68	13	0	0	0	0	0	0
Nevada	0	0	0	0	1	0	0	0	0	0	0	0
PACIFIC												
Washington	1	0	1	150	42	42	0	0	1	1	0	0
Oregon	1	3	0	67	9	9	0	0	0	3	2	0
California	7	1	1	182	116	116	0	0	0	0	1	3
Total	[3] 42	50	36	3,021	2,858	2,858	3	62	62	128	51	80
52 weeks	12,401	4,193	7,288	140,475	126,853	155,064	733	863	2,462	5,546	6,703	9,585

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended January 1, 1944, and comparison with corresponding week of 1943 and 5-year median—Con.

Division and State	Whooping cough			Week ended Jan. 1, 1944								
	Week ended—		Median 1938–42	Anthrax	Dysentery			Encephalitis, infectious	Leprosy	Rocky Mt. spotted fever	Tularemia	Typhus fever
	Jan. 1, 1944	Jan. 2, 1943			Amebic	Bacillary	Unspecified					
NEW ENGLAND												
Maine	3	89	42	0	0	0	0	0	0	0	0	0
New Hampshire	0	15	1	0	0	0	0	0	0	0	0	0
Vermont	15	44	30	0	0	0	0	0	0	0	0	0
Massachusetts	50	184	126	0	0	17	0	2	0	0	0	0
Rhode Island	8	13	13	0	0	0	0	0	0	0	0	0
Connecticut	17	50	43	0	0	1	0	0	0	0	0	0
MIDDLE ATLANTIC												
New York	116	349	391	0	1	9	0	2	0	0	1	1
New Jersey	48	131	131	0	0	0	0	0	0	0	0	0
Pennsylvania	57	188	252	0	0	0	0	0	0	0	0	0
EAST NORTH CENTRAL												
Ohio	39	104	151	0	0	0	0	0	0	0	2	0
Indiana	6	10	14	0	0	0	0	0	0	0	0	0
Illinois	38	123	123	0	0	0	0	0	0	0	4	0
Michigan [2]	70	351	266	0	0	4	0	1	0	0	0	0
Wisconsin	62	116	117	0	0	0	0	0	0	0	2	0
WEST NORTH CENTRAL												
Minnesota	16	30	30	0	0	0	0	0	0	0	0	0
Iowa	16	26	22	0	0	0	0	0	0	0	0	0
Missouri	8	13	11	0	0	0	1	0	0	0	0	0
North Dakota	2	16	7	0	0	0	0	0	0	0	0	0
South Dakota	0	7	2	0	0	0	0	0	0	0	0	0
Nebraska	9	2	2	0	0	0	0	0	0	0	0	0
Kansas	12	28	28	0	0	0	0	0	0	0	1	0
SOUTH ATLANTIC												
Delaware	0	2	2	0	0	0	0	0	0	0	0	0
Maryland [2]	28	55	46	0	0	0	1	1	0	0	2	0
District of Columbia	3	13	12	0	0	0	0	0	0	0	0	0
Virginia	95	10	36	0	0	0	212	0	0	0	4	1
West Virginia	29	13	13	0	0	0	0	0	0	0	0	0
North Carolina	62	76	79	0	0	0	0	0	0	1	0	1
South Carolina	102	33	25	0	0	0	0	0	0	0	1	5
Georgia	25	4	4	0	0	1	0	0	0	0	1	12
Florida [2]	19	6	6	0	7	2	0	3	0	0	0	7
EAST SOUTH CENTRAL												
Kentucky	24	4	39	0	0	0	0	1	0	0	0	0
Tennessee	9	19	19	0	0	0	1	0	0	0	0	2
Alabama	14	44	24	0	0	0	0	0	0	0	0	13
Mississippi [2]				0	0	0	0	0	0	0	0	3
WEST SOUTH CENTRAL												
Arkansas	21	17	10	0	1	20	0	0	0	0	0	0
Louisiana	0	9	5	0	0	0	0	0	0	0	0	2
Oklahoma	2	13	10	0	0	0	0	0	0	0	0	0
Texas	95	163	79	0	14	157	0	0	0	0	0	11
MOUNTAIN												
Montana	3	18	8	0	0	0	0	2	0	0	0	0
Idaho	1	2	2	0	0	0	0	0	0	0	0	0
Wyoming	3	1	3	0	0	0	0	0	0	0	[3] 0	0
Colorado	28	10	14	0	0	0	0	0	0	0	0	0
New Mexico	2	18	18	0	0	3	2	0	0	0	0	0
Arizona	20	7	7	0	0	0	17	0	0		0	0
Utah [2]	11	37	17	0	0	0	0	0	0	0	0	0
Nevada	0	6	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	34	17	17	0	0	0	0	0	0	0	0	0
Oregon	11	7	7	0	0	0	0	0	0	0	0	0
California	54	139	128	0	2	0	0	0	0	0	0	0
Total	1,287	2,632	2,632	0	25	214	234	12	0	1	[3] 18	58
52 weeks	176,415	177,916	177,916	65	2,129	18,182	4,558	692	30	437	801	4,533
52 weeks, 1942				78	1,179	12,127	6,405	568	45	452	915	3,720

[1] New York City only.
[2] Period ended earlier than Saturday.
[3] Delayed reports from Wyoming (included only in cumulative totals) are as follows: influenza, 1,000; poliomyelitis, 1; tularemia, 3.
[4] Including paratyphoid fever cases reported separately as follows: Massachusetts, 1; Georgia, 3; Florida, 2.

WEEKLY REPORTS FROM CITIES

City reports for week ended December 18, 1943

This table lists the reports from 86 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	3	0	9	0	6	2	3	0	7	0	0	2
New Hampshire:												
Concord	0	0	------	0	2	0	1	0	1	0	0	0
Vermont:												
Barre	0	0	------	0	0	0	0	0	2	0	1	0
Massachusetts:												
Boston	2	0	------	2	12	7	28	2	47	0	0	9
Fall River	0	0	------	0	1	0	4	0	1	0	0	0
Springfield	0	2	------	0	19	0	0	0	4	0	0	4
Worcester	0	0	------	0	1	0	11	0	58	0	0	1
Rhode Island:												
Providence	0	0	34	1	73	0	5	0	1	0	0	6
Connecticut:												
Bridgeport	0	0	------	0	2	0	2	1	6	0	0	0
Hartford	0	0	5	2	0	0	3	0	4	0	0	1
New Haven	0	0	2	0	3	0	0	0	4	0	0	0
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	------	7	1	0	24	0	7	0	0	0
New York	19	3	357	15	304	26	160	5	156	0	3	52
Rochester	0	0	------	2	0	8	17	0	3	0	0	4
Syracuse	0	0	------	2	0	1	4	0	2	0	0	13
New Jersey:												
Camden	1	0	5	3	0	0	2	0	1	0	0	0
Newark	0	0	20	2	6	2	18	0	11	0	0	8
Trenton	0	0	27	1	2	1	5	0	1	0	0	1
Pennsylvania:												
Philadelphia	2	0	44	13	8	7	67	0	36	0	0	7
Pittsburgh	1	0	11	6	184	3	28	0	8	0	2	5
Reading	0	0	------	3	4	0	3	0	0	0	0	2
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	8	0	9	3	13	2	4	0	23	0	0	2
Cleveland	0	0	74	1	201	2	16	0	38	0	0	12
Columbus	0	0	4	4	13	0	4	0	6	0	0	6
Indiana:												
Fort Wayne	0	0	------	2	0	0	7	0	0	0	0	0
Indianapolis	0	0	------	10	0	3	31	0	12	0	0	6
South Bend	0	0	------	0	58	0	0	0	3	0	0	0
Illinois:												
Chicago	3	0	59	7	4	20	55	0	51	0	0	20
Springfield	0	0	23	0	6	0	10	0	1	0	1	0
Michigan:												
Detroit	5	0	141	10	7	7	36	0	29	0	0	23
Flint	0	0	------	2	4	1	13	0	1	0	0	4
Grand Rapids	0	0	------	1	32	0	1	0	4	0	0	0
Wisconsin:												
Kenosha	0	0	1	0	0	0	0	0	3	0	0	0
Milwaukee	0	0	7	7	2	8	13	0	24	0	1	33
Racine	0	0	------	0	0	0	0	0	3	0	0	4
Superior	0	0	------	0	66	0	6	0	0	0	0	0
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	------	1	6	0	5	0	23	0	0	9
Minneapolis	7	0	------	7	31	4	22	0	48	0	0	5
St. Paul	0	0	------	7	40	0	19	0	23	0	0	6
Missouri:												
Kansas City	4	0	28	6	1	2	11	1	7	0	0	0
St. Joseph	0	0	------	0	0	1	0	0	2	0	0	0
St. Louis	0	0	48	14	5	12	39	0	9	0	2	10

City reports for week ended December 18, 1943—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
North Dakota:												
Fargo	0	0	------	0	46	0	0	0	1	0	0	0
Nebraska:												
Omaha	0	0	0	3	2	0	6	0	12	0	0	1
Kansas:												
Topeka	0	0	------	1	1	0	4	0	5	0	0	0
Wichita	1	0	3	2	14	1	3	0	2	0	0	2
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	1	7	1	5	0	0	0	0	2
Maryland:												
Baltimore	3	0	62	8	24	6	36	0	18	0	0	31
Cumberland	0	0	1	0	0	0	0	0	0	0	0	0
Frederick	0	0	------	0	0	0	1	0	0	0	0	0
District of Columbia:												
Washington	1	0	1,348	7	36	4	25	0	27	0	1	1
Virginia:												
Lynchburg	0	0	91	0	250	0	0	0	1	0	0	13
Richmond	1	0	35	4	3	2	7	0	4	0	0	2
Roanoke	0	0	------	0	0	0	1	0	1	0	0	1
West Virginia:												
Charleston	0	0	------	0	0	0	0	0	2	0	0	0
North Carolina:												
Winston-Salem	0	0	3	0	28	0	1	0	3	0	0	0
South Carolina:												
Charleston	0	0	547	1	1	0	3	0	0	0	0	0
Georgia:												
Atlanta	0	0	238	1	4	0	9	0	0	0	0	0
Brunswick	0	0	------	0	15	0	1	0	0	0	0	0
Savannah	0	0	288	4	0	1	1	0	1	0	0	0
Florida:												
Tampa	1	0	------	0	0	0	3	0	2	0	0	0
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	38	7	0	3	8	0	7	0	0	3
Nashville	0	0	------	2	0	1	3	0	1	0	0	3
Alabama:												
Birmingham	0	0	150	5	27	0	3	0	2	0	0	2
Mobile	0	0	40	3	0	2	3	0	0	0	0	0
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	25	0	0	0	0	0	0	0	0	0
Louisiana:												
New Orleans	3	0	18	2	3	2	16	2	4	0	2	1
Shreveport	0	0	------	1	0	0	6	0	0	0	0	0
Texas:												
Dallas	0	0	9	4	0	0	3	0	1	0	0	0
Galveston	1	0	------	0	0	0	0	0	0	0	0	0
Houston	5	0	------	1	2	1	4	0	4	0	0	0
San Antonio	1	0	------	3	0	0	5	1	1	0	0	1
MOUNTAIN												
Montana:												
Billings	1	0	------	1	1	0	0	0	0	0	0	0
Great Falls	0	0	478	1	29	0	2	0	8	0	0	0
Helena	0	0	------	0	0	0	0	0	2	0	0	0
Missoula	0	0	624	0	0	0	2	0	2	0	0	0
Idaho:												
Boise	0	1	11	0	0	0	0	0	2	0	0	0
Colorado:												
Denver	1	0	100	1	1	0	20	0	10	0	0	16
Pueblo	0	0	------	0	151	0	2	0	1	0	0	7
Utah:												
Salt Lake City	0	0	------	4	2	0	3	1	31	0	0	5

City reports for week ended December 18, 1943—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle	3	0	-----	2	6	0	6	0	7	0	1	1
Spokane	0	0	7	3	13	1	1	0	9	0	0	3
Tacoma	1	0	------	0	4	1	0	0	30	0	0	3
California:												
Los Angeles	6	0	368	6	36	4	31	3	28	0	0	5
Sacramento	0	0	8	0	0	0	5	1	4	0	0	1
San Francisco	0	0	119	1	1	1	12	0	31	0	1	10
Total	84	6	5,519	220	1,818	150	918	17	934	0	15	369
Corresponding week, 1942	84	4	140	42	1,253	42	485	18	892	0	9	1,006
Average, 1938–42	102	------	872	[1] 41	[2] 1,142	------	[1] 429	------	915	7	18	1,099

Anthrax.—Cases: Philadelphia, 1.
Dysentery, amebic.—Cases: New York, 2; Detroit, 1; St. Louis, 1; Los Angeles, 1.
Dysentery, bacillary.—Cases: Worcester, 3; New York, 15; Chicago, 1; Detroit, 1; Charleston, S. C., 3; Los Angeles, 8.
Dysentery, unspecified.—Cases: Boston, 1; Richmond, 1; Memphis, 1; San Antonio, 4.
Tularemia.—Cases: Chicago, 2.
Typhus fever.—Cases: Charleston, S. C., 1; Savannah, 2; Tampa, 1; Mobile, 3; New Orleans, 2; Shreveport, 1; Houston, 3; San Antonio, 1; Los Angeles, 1.

[1] 3-year average, 1940–42.
[2] 5-year median.

Rates (annual basis) per 100,000 population, by geographic groups, for the 86 cities in the preceding table (estimated population, 1942, 34,560,200)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles, case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England	12.4	5.0	124.2	12.4	281	22.4	141.6	7.5	335	0.0	2.5	57
Middle Atlantic	10.3	1.3	206.9	24.1	227	21.4	146.3	2.2	100	0.0	2.2	41
East North Central	9.4	0.0	187.0	27.6	239	25.3	115.3	0.0	116	0.0	1.2	65
West North Central	23.5	0.0	154.4	80.1	285	39.1	213.0	2.0	258	0.0	3.9	64
South Atlantic	10.6	0.0	4622.9	46.0	651	24.8	164.5	0.0	104	0.0	1.8	88
East South Central	0.0	0.0	1354.2	101.0	160	35.6	101.0	0.0	59	0.0	0.0	48
West South Central	29.3	0.0	152.5	32.3	15	8.8	99.7	8.8	29	0.0	5.9	6
Mountain	16.1	8.0	9751.7	56.3	1479	0.0	233.1	8.0	450	0.0	0.0	225
Pacific	17.5	0.0	877.3	21.0	105	12.2	96.1	7.0	191	0.0	3.5	40
Total	12.7	0.9	832.7	33.2	274	22.6	138.5	2.6	141	0.0	2.3	56

TERRITORIES AND POSSESSIONS

Hawaii Territory

Honolulu—Dengue fever.—During the week ended December 18, 1943, 24 cases of dengue fever were reported in Honolulu, T. H., bringing the total number of new cases to date to 1,308.

Plague (human).—On December 19, 1943, 1 death from human plague occurred in Kalopa, Hamakua District, Island of Hawaii, T. H. This brings the total number of deaths from plague in Hamakua District to 6, the previous deaths occurring on March 5, March 28, April 11, May 3, and August 22, 1943.

Plague (rodent).—Rats proved positive for plague have been reported in Hawaii Territory as follows: Island of Hawaii—Kapulena area, 1 rat on November 23, 1943; Paauhau area, 1 rat on November 11, November 26, and November 27, 1943, respectively; Maui Island—Makawao, 2 rats on November 25, 1943.

DEATHS DURING WEEK ENDED DECEMBER 25, 1943

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Dec. 25, 1943	Corresponding week, 1942
Data for 90 large cities of the United States:		
Total deaths	12,646	8,879
Average for 3 prior years	8,739	
Total deaths, first 51 weeks of year	469,290	433,740
Deaths under 1 year of age	632	596
Average for 3 prior years	554	
Deaths under 1 year of age, first 51 weeks of year	33,089	30,048
Data from industrial insurance companies:		
Policies in force	66,110,248	65,277,668
Number of death claims	12,123	8,972
Death claims per 1,000 policies in force, annual rate	9.6	7.2
Death claims per 1,000 policies, first 51 weeks of year, annual rate	9.6	9.1

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended December 4, 1943.—During the week ended December 4, 1943, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		16		353	693	72	96	115	139	1,484
Diphtheria		9	3	33	1	5	1			52
Dysentery (bacillary)				9						9
German measles		2		7	13			2	8	32
Influenza	2	212	20		195	30		3	44	506
Measles		2	1	415	209	11	2	43	19	702
Meningitis, meningococcus				5	2	2		2	1	12
Mumps		30		46	85	30	4	20	67	282
Poliomyelitis				1	1	1				3
Scarlet fever		18	7	151	137	33	21	25	34	426
Tuberculosis (all forms)		5	11	118	43	12	25	3	63	280
Typhoid and paratyphoid fever		6		12						18
Undulant fever					1			1	1	3
Whooping cough				177	198	23	6	16	18	438

CUBA

Habana—Communicable diseases—4 weeks ended December 11, 1943.—During the 4 weeks ended December 11, 1943, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria	23		Measles	16	
Leprosy	1		Tuberculosis	6	
Malaria	3		Typhoid fever	21	1

Provinces—Notifiable diseases—4 weeks ended December 4, 1943.—During the 4 weeks ended December 4, 1943, cases of certain notifiable diseases were reported in the Provinces of Cuba as follows:

Disease	Pinar del Rio	Habana [1]	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cancer	2	1	7	4		14	28
Diphtheria		30	2	1		1	34
Hookworm disease		4					4
Leprosy		2			1		3
Malaria	77	21	20	46	15	297	476
Measles		17					17
Scarlet fever						1	1
Tetanus, infantile						1	1
Tuberculosis	20	12	14	39	15	34	124
Typhoid fever	15	38	9	33	4	22	121
Whooping cough	2						2

[1] Includes the city of Habana.

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual prevalence, only those places are included which had not previously reported any of the above-named diseases, except yellow fever, during the current year. All reports of yellow fever are published currently.

A cumulative table showing the reported prevalence of these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday of each month.

(Few reports are available from the invaded countries of Europe and other nations in war zones.)

Plague

Peru.—During the month of October 1943, plague was reported in Peru as follows: Libertad Department, 1 case; Lima Department, 4 cases, 4 deaths; Piura Department, 3 cases.

Smallpox

Algeria.—During the period October 21–31, 1943, 72 cases of smallpox were reported in Algeria.

Basutoland.—During the month of July 1943, 42 cases of smallpox were reported in Basutoland.

British East Africa—Kenya.—Smallpox has been reported in Kenya, British East Africa, as follows: Weeks ended November 20, 1943, 164 cases, November 27, 1943, 218 cases.

Indochina (French).—For the period November 11–20, 1943, 83 cases of smallpox were reported in French Indochina.

Niger Territory.—For the period November 1–10, 1943, 18 cases of smallpox were reported in Niger Territory.

Sudan (French).—For the period October 21–31, 1943, 58 cases of smallpox with 3 deaths were reported in French Sudan.

Typhus Fever

Algeria.—For the period October 21–31, 1943, 17 cases of typhus fever were reported in Algeria.

Hungary.—During the week ended November 27, 1943, 17 cases of typhus fever were reported in Hungary.

Rumania.—Typhus fever has been reported in Rumania as follows: For the period November 24–30, 1943, 81 cases; for the period December 1–7, 1943, 143 cases.

Slovakia.—During the week ended November 20, 1943, 15 cases of typhus fever were reported in Slovakia.

Tunisia.—For the month of November 1943, 31 cases of typhus fever were reported in Tunisia.

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