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PLAGUE IN THE UNITED STATES

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HUMAN CASES

The questions of when and how plague was introduced into the United States and whence it came will probably forever remain unanswered. There are certain known facts bearing upon the prevalence and epidemiology of the disease that may serve as a guide to speculation regarding these questions, but there is nothing more specific upon which to base the answers or build the structural evidence for sound logical deduction.

Plague had been quiescent for many years prior to 1894, when the latest and greatest pandemic in the Orient began its spread from Yunnan Province in China, first to Hong Kong, thence all over Asia within the next 2 years, then to Africa, western Europe, Hawaii, to South America in 1899, and to Australia either late in 1899 or early in 1900. It was known that plague infection was carried by rats and fleas on vessels and that human cases occurred on some of the vessels.

The first recorded appearance of plague in the United States, as well as on the North American continent, occurred in San Francisco, Calif., on March 6, 1900. On that date the body of a Chinese man who had died of the disease was discovered in the Chinese quarter of the city. A few days later, on March 11, the diagnosis of plague was proved, bacteriologically and by animal inoculation, by both the San Francisco Board of Health laboratory and officers of the United States Public Health Service.

In view of the fact that rat plague may exist in a city for some time without the development of the disease in human beings, as was found to be the case later in Seattle, Wash., and other cities, it is quite possible that the infection had been present among rats in San Francisco for many weeks or months prior to the discovery of the first human case.

The Annual Report of the Surgeon General of the Public Health Service for the fiscal year 1900 stated: "While during the year this

disease [bubonic plague] has made its appearance on vessels at several national and local quarantine stations in the United States, namely, Port Townsend, San Francisco, and New York, it was reported present in only one of these cities—San Francisco—and the time and method of its entrance have not as yet been determined." If the writer of that statement offered it somewhat apologetically, he need not have done so; for those facts have not yet been determined, and they are likely to remain forever locked in the historical vaults of the unknown, affording subjects for epidemiological theorization.

The account of the first appearance of the disease in this country and the fight made against it by public health officials, Federal and local, is a dramatic episode in the history of public health in the United States that is preserved in official records and in the files of the San Francisco newspapers. The existence of plague in San Francisco was firmly denied for months by many intelligent and well-meaning but uninformed persons—some of them doctors and health officials—as well as by others whose action was probably based on commercial interests; and the work of controlling the disease was hindered by the strong opposition interposed by newspapers, public officials, influential private citizens, and even the courts. It was only after a report had been made in 1901 by a special commission of impartial experts, appointed by the Surgeon General of the United States Public Health Service, that the matter was finally settled. The existence of human plague in San Francisco was not further vigorously denied, and the work of control was allowed to proceed unimpeded.

Human cases of plague continued to appear in San Francisco, and 121 cases with 113 deaths, principally in Chinese and Japanese and confined to the Chinese quarter of the city, had been reported up to February 1904, in which month the last case in this first outbreak was recorded. The work of cleaning up the infected area in Chinatown and getting rid of the rats terminated the epidemic and brought down the curtain on the first and most dramatic act in the history of plague in the United States. It provided an intermission, but did not end the play.

In May of 1907, a year after the earthquake and fire, plague was again discovered in San Francisco. A sailor taken to the Public Health Service Marine Hospital from a tug in the bay was found to be suffering from the disease, but he died in the hospital before any personal history could be obtained, and the tug was later lost at sea. On August 12, 1907, the second case of the second outbreak appeared, which was followed by 13 other cases before the end of the month. The first experience with plague was still fresh in the minds of the people, and so the efforts devoted to suppressing this second outbreak received the unanimous support of all interests and the epidemic was abated within a little more than a year; but during that period there

were reported 159 cases with 77 deaths. This time the cases were not confined to the Chinese quarter but were scattered throughout the city. The last case in this series in San Francisco occurred on June 30, 1908.

At about the time of this second outbreak, plague cases also occurred in localities adjacent to San Francisco. In 1907, 12 cases were reported in Oakland, 1 case in Berkeley, and 3 cases in Contra Costa County; and in 1908, 1 case was reported in Oakland, 2 cases in Contra Costa County, and 1 case in Los Angeles. In the latter year, plague was demonstrated in ground squirrels in Contra Costa County, the first proof that the infection had spread to these wild rodents in California.

During October 1907, human plague made its first appearance in Seattle, Wash. In 3 fatal cases the disease was proved bacteriologically, although an officer of the Public Health Service reported later that there were 7 cases and 7 deaths during this outbreak. According to the records, however, only 3 cases were positively diagnosed as plague. The source of the infection in Seattle is not known. It is possible that it came from San Francisco, as the port of Seattle was protected from Oriental and Hawaiian infection by quarantine restrictions. On the other hand, it may have been introduced direct from the Orient, as it has been pointed out that quarantine did not prevent the introduction of the disease into San Francisco in 1900, and cargoes of vessels arriving in Seattle from the Orient were generally more rat-attractive than those from San Francisco. Rat plague persisted in Seattle for 10 years subsequent to 1907, without the development of a human case, so far as known.

During the period 1908–1914, plague appeared in other localities in California, with a total of 22 human cases and 10 deaths occurring in San Francisco (city and county) and 8 other counties. Of these cases, 5 occurred in San Francisco, 3 in Oakland, 6 in Contra Costa County, just across the bay from San Francisco, and 1 case was reported in Los Angeles. During this period the area of human infection had extended into rural sections of the State as far south and east as San Benito and San Joaquin Counties, and the infection was found in rodents (rats and ground squirrels) during this period in many other counties of the State. Infected rats were found also in Seattle, Wash., during these years and in New Orleans, La., in 1912 and 1914.

The next outbreak of human plague in the United States occurred in New Orleans in 1914, with 30 cases and 10 deaths reported from June 21 to September 8. The first case occurred in a native of Sweden, who had resided in the city only since June 16. A history of previous residence was not obtained. Infected rats had been found in the city as early as 1912. Intensive plague-suppressive measures were instituted immediately on the appearance of human cases and the

plague-infection index in rats dropped rapidly in the following years. An additional mild case of plague occurred in the city in 1915, but no further case appeared until 1919–20, when another outbreak occurred with 22 cases and 8 deaths. No further cases have been reported in that city to date.

During the short period August 15–September 11, 1919, 13 cases of rapidly fatal pneumonic plague occurred in Oakland, Calif., the first outbreak of this type of the disease reported in the United States, although pneumonic cases had been reported in the first San Francisco epidemic. On the basis of bacteriological evidence, history of contacts, and clinical data all cases were attributed to plague. The first case in this Oakland epidemic appeared in a man who had been squirrel hunting on August 11 and 13 and became ill on August 15.

In 1920, human cases of plague appeared in Pensacola, Fla., and Galveston and Beaumont, Tex.

The only recorded appearance of plague in Pensacola, Fla., occurred during the period May 31–August 31, 1920. On June 11, the Public Health Service quarantine officer reported a suspected case of the disease. A careful history of the patient revealed that he had not been out of Pensacola nor on board a ship during the preceding 6 months, and as other cases made their appearance it was evident that the infection had been contracted locally. Also, a review of the city death records and subsequent investigation revealed that a fatal case of plague had occurred in the city on May 31. During the following 3 months, 10 cases with 3 deaths were reported.

In the same year, from June 16 to November 14, 18 cases of plague with 12 deaths occurred in Galveston, Tex. Plague eradicative measures were adopted, and no instance of rodent infection was found after May 29, 1922, when the last plague-infected rat was trapped in Galveston. To date, no further human cases have been reported there.

About the same time, from June 19 to August 23, 1920, 14 cases of plague with 6 deaths were reported in Beaumont, Tex. Intensive plague-suppressive measures were instituted, and the infection in rodents was soon brought under control. No further case of plague has appeared in Beaumont. In the same year, 1 fatal case occurred in Port Arthur, Tex., the only case that has been reported there, and another in Alameda County, Calif.

In 1921, New Orleans reported 3 cases with 3 deaths, and San Benito County, Calif., 3 cases with 1 death. In 1922, 1 case each, with no death, was reported in Elmhurst (Oakland) and Santa Cruz, Calif.; and in 1923, 1 case was reported in San Francisco.

The next outbreak of plague was that which occurred in Los Angeles, Calif., in 1924–25. During the period November 1, 1924–January 5, 1925, 41 cases with 34 deaths were recorded in that city, 33 cases of the pneumonic type, with 31 deaths, and 8 cases of the bubonic form

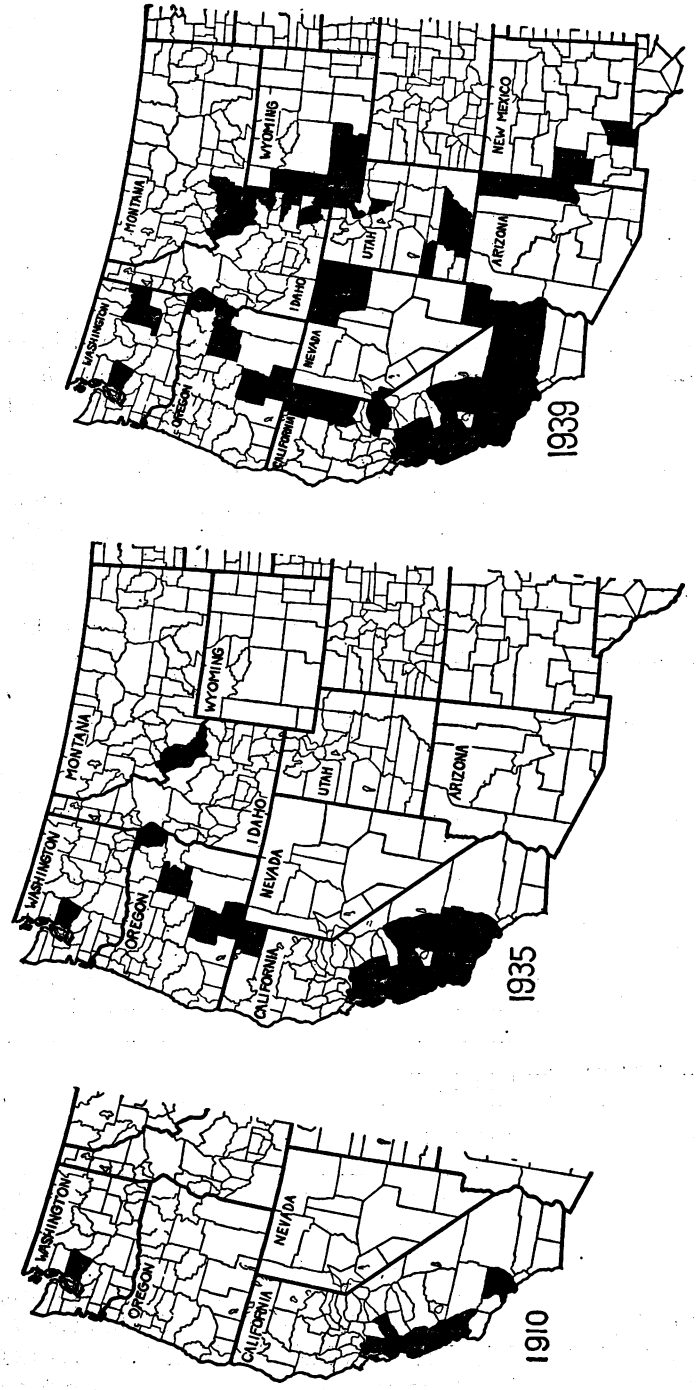

FIGURE 1.—Extension of known areas of plague infection in the western States.

with 3 deaths. Two sources of infection were considered: (*a*) The introduction of the disease from foreign ports through San Pedro (Los Angeles harbor) and (*b*) the transmission of the infection from ground squirrels to rats and thence to human beings. As intensive trapping operations in San Pedro disclosed no plague-infected rats there, greater weight was given the other possible source. Rats were found to be numerous in Los Angeles, infected ground squirrels were discovered there, and contact between the two species existed in many parts of the city. Furthermore, during the year there had been a virulent outbreak of plague in ground squirrels in San Luis Obispo County to the north of Los Angeles. Additional significance was given to this source by the type of the disease in man. The "marmot type" was suggested by the preponderance of lung involvement in the human cases; and the guinea pigs inoculated for confirmation also showed a predominance of lung lesions.

TABLE 1.—*Cases of human plague in the United States* [1]

Year	California		Washington		Louisiana		Florida		Texas		Oregon		Utah		Nevada		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1900	22	22	----	----	----	----	----	----	----	----	----	----	----	----	----	----	22	22
1901	30	26	----	----	----	----	----	----	----	----	----	----	----	----	----	----	30	26
1902	41	41	----	----	----	----	----	----	----	----	----	----	----	----	----	----	41	41
1903	17	17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	17	17
1904	10	8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	10	8
1907	178	87	3	3	----	----	----	----	----	----	----	----	----	----	----	----	181	90
1908	8	5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9	5
1909	3	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	3	1
1910	3	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	3	1
1911	4	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	4	1
1913	2	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2	2
1914	1	0	----	----	30	10	----	----	----	----	----	----	----	----	----	----	31	10
1915	1	1	----	----	1	0	----	----	----	----	----	----	----	----	----	----	2	1
1919	13	13	----	----	15	5	----	----	----	----	----	----	----	----	----	----	28	18
1920	1	1	----	----	7	3	10	4	33	19	----	----	----	----	----	----	51	27
1921	3	1	----	----	3	3	----	----	----	----	----	----	----	----	----	----	6	4
1922	2	0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2	0
1923	1	0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	0
1924	41	34	----	----	----	----	----	----	----	----	----	----	----	----	----	----	41	34
1925	1	0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	0
1927	1	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	1
1928	3	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	3	2
1933	1	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	1
1934	1	0	----	----	----	----	----	----	----	----	1	1	----	----	----	----	2	1
1936	3	0	----	----	----	----	----	----	----	----	----	----	1	0	----	----	4	0
1937	1	1	----	----	----	----	----	----	----	----	----	----	----	----	1	0	2	1
1938	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0	0
1939	----	----	----	----	----	----	----	----	----	----	----	----	1	0	----	----	1	0
Total	392	265	3	3	56	21	10	4	33	19	1	1	2	0	1	0	499	314

[1] The annual figures for California for the years 1900–1908 were secured from various sources, some of which overlapped and required adjustment; therefore they may not agree with previously published figures. It is believed, however, that they are as nearly accurate as possible. Owing to conditions in the Chinese quarter of San Francisco, it is not to be expected that the records of cases or deaths in the first outbreak are complete, and probably some cases, in Chinese at least, were not recorded in the second epidemic in 1907. The last reported human case to Jan. 1, 1940, occurred in Millard County, Utah, December 4, 1939.

Since 1924 and through 1939 only 15 cases of plague, with 6 deaths, have been reported in the United States, of which all but 4 cases and 1 death occurred in California. Two cases have been reported during

that period in Utah (1936, 1939), 1 case has been reported in Nevada (1937), and 1 case with 1 death was reported in Oregon (1934). The cases in California were reported in 8 counties, namely, Los Angeles (1925, 1933), Contra Costa (1927), Santa Cruz (1928), Monterey (1928, 1936), Santa Barbara (1928), Tulare (1934), Sonoma (1936), Placer (1936), and Fresno (1937).

From the time of the first appearance of plague in the United States in 1900 to January 1, 1940, there have been recorded 499 cases with 314 deaths. These figures may not agree with those presented elsewhere, as they have been compiled from various sources; and it may be reasonable to assume that, because of conditions existing in the Chinese quarter of San Francisco during the first plague epidemic in that city, and other difficulties which hampered the work of investigation and control, a complete record of cases in Chinese was not secured. Human cases of the disease in the United States have been reported in 8 States, in chronological order of first appearance as follows: California, 1900; Washington, 1907; Louisiana, 1914; Florida, 1920; Texas, 1920; Oregon, 1934; Utah, 1936; Nevada, 1937. The last human case of plague in the United States, up to January 1, 1940, was reported in Millard County, Utah, on December 4, 1939.

PLAGUE INFECTION IN WILD RODENTS, RODENT PARASITES, AND RABBITS

With only 8 cases of human plague reported in the United States during the 10-year period 1930–1939, the disease in human beings in this country may be thought to have become merely a matter of academic interest; but when the situation is viewed in the light of the expanding areas in which plague-infected wild rodents and insect parasites have been found in recent years, the disease assumes significant public health importance and becomes a problem fraught with potential danger. Within 10 years after plague first appeared in San Francisco, the infection was proved to exist in the ground squirrels in 9 California counties (not including San Francisco city and county), extending as far east as Stanislaus County and as far south as Los Angeles County, over 400 miles from San Francisco; and up to January 1, 1940, the infection has been found in wild rodents or their parasites in States as far north as Washington and Montana and as far east and south as New Mexico.

Plague-infected rats were found in San Francisco during the first plague epidemic, and systematic efforts were made by the local health authorities, in cooperation with the Public Health Service, to destroy them, to eliminate rat harborage, and to ratproof old buildings, especially in the Chinese quarter. Notwithstanding these plague-preventive measures, the infection probably continued in these rodents in San Francisco and increased after the relaxation of sup-

pressive measures to bring about a new human epidemic in 1907, following the earthquake and fire, which provided more favorable conditions of rodent and flea ecology.

The first demonstration of plague infection in ground squirrels in the United States was made in California in 1908, in Contra Costa County, across the bay from, and to the east of San Francisco, and in Los Angeles County. In Los Angeles, the infection was found that year in a ground squirrel which had bitten a boy who later developed plague. In 1909 and 1910, infected ground squirrels were found in seven other counties in California, in 1911 in three additional counties, in 1916 in San Mateo County, the north of which borders San Francisco (city and county), in 1917 in San Francisco, in 1925 in Oakland, and in 1928 in Ventura County.

In 1934 epizootics of plague were reported in ground squirrels in the Sierra Nevada Mountain areas of eastern California, in Kern and Tulare Counties, and in Modoc County at the extreme northwest corner of the State, bordering on Oregon; and in that year a fatal human case was reported in Lake County, Oreg., which is bordered by Modoc County, California, on the south.

Since 1900, field investigations of plague and plague-suppressive measures have been conducted continuously, though with varying degrees of intensity, in California by the State and local health authorities in cooperation with the United States Public Health Service, and since 1934 extensive field investigations have been conducted by the United States Public Health Service in cooperation with the health departments of five States. These studies have resulted in the discovery of wild-rodent plague in nine of the far western States, in addition to California, as follows: In Oregon and Montana in 1935; in Utah, Idaho, and Nevada in 1936; and in Washington State, Wyoming, New Mexico, and Arizona in 1938. In May 1939 plague infection was proved in tissue from a kangaroo rat trapped on April 15 about 10 miles west of Las Cruces, Dona Ana County, N. Mex. It is believed that this is the farthest east and south that plague has been demonstrated in wild rodents in the United States, and the first instance of the proof of plague among kangaroo rats in this country.

On June 19, 1939, Surgeon C. R. Eskey reported plague infection proved in the tissue of a cottontail rabbit, taken May 27, in Lincoln County, Wash. This was believed by Doctor Eskey to be the first demonstration of plague in a rabbit in nature.

In 1936 the method of parasite inoculation of experimental animals was adopted by the United States Public Health Service investigators as a routine procedure for locating plague infection among wild rodents. In that year this method was first used by Surgeon C. R. Eskey in demonstrating infection in fleas collected from ground

squirrels in northern Nevada. Since then, and up to the middle of 1939, over 4,000 inoculation tests had been made of more than 200,000 parasites, principally fleas, collected from wild rodents.

To January 1, 1940, plague infection has been demonstrated in 14 species of ground squirrels, in red squirrels, tree squirrels, and flying squirrels, in wood rats, kangaroo rats, field mice, prairie dogs, chipmunks, marmots, and a cottontail rabbit in western United States, and in fleas, lice, and ticks from wild rodents. By inoculation tests of parasites, plague infection has been proved in approximately 100 pooled inoculations of fleas, 6 inoculations of lice, and 2 inoculations of ticks. In many instances flea infection was demonstrated while lice and ticks from the same groups of animal hosts were not found infected. On the other hand, one inoculation of ticks and one of lice produced plague infection in test animals when the fleas from the same hosts were not found infectious.

From the available evidence and the records it appears that plague infection has spread from the rats in San Francisco first to the ground squirrels and then to other wild rodents in western United States. It may also have spread from the rats in Seattle, Wash.; but in view of the early discovery of the infection in the ground squirrels of the San Francisco Bay region, the gradual extension thence north, east, and south, the large numbers of such native rodents in California, and the favorable natural opportunities for them to maintain a reservoir of infection and to extend it, among their own species and to other species, it would appear that this has been the important source of the extension of the disease north, east, and south to the other western States. It is possible that scavenger birds have played some part in spreading the infection, as fleas and ticks have been found in the nests of the burrowing owl, which is a constant companion of the ground squirrel and is frequently a joint tenant in the burrows of this rodent. Casts from such predatory birds which have been fed plague-infected guinea pig tissue have been shown to be consistently infectious, and avian red cells have been found in the intestinal contents of ticks from the burrows and nests of the western burrowing owl. However spread, it can be said that wild rodent plague has apparently been gradually extending eastward from the Pacific Coast.

Whether or not the wild rodents inhabiting the States east of the Rocky Mountains will maintain the infection and disseminate it farther east can only be surmised. The present known foci in this region are fortunately removed from thickly populated metropolitan areas, and the density of the rodent population and probably the index of infection are low. However, as the records show, wild rodent plague may spread unnoticed over great areas unless intensive investigative measures are taken to detect its presence, and it may continue to spread unless suppressive measures are adopted to prevent

it. It is evident that farther spread of the infection eastward, through a rodent and human population of insufficient density to give rise to explosive epidemics, will eventually bring the disease within striking distance of the rat and human populations of large cities. Then, through a reversal of the original sequence of spread, the disease may become epidemic in any city near the approaching danger zone which has a sufficiently high population of rats and a sufficiently high flea index to provide favorable conditions for human infection.

In view of the relatively small numbers of cases of plague and deaths from the disease in the United States during the past 40 years, it might appear to some persons that too much prominence has been accorded it and too much effort devoted to it as a public health problem in this country; but it still holds our interest, because it scaled the barrier of quarantine, because of its persistence and gradual biological and geographic spread, and because of the difficulty in eradicating it entirely in vast areas of low biological density. In rural areas where the disease is maintained in wild rodents, it occasionally takes a human life, and it remains like a smouldering fire, ready to burst into flame at any place where the smoke of infection appears and adequate protective measures have not been applied. With full knowledge of how to prevent and control the disease, however, plague in epidemic form should never again be permitted to occur in any locality in the United States.

TABLE 2.—*Chronological record of plague infection*[1] *in rodents, rodent parasites, and rabbits in counties of the western States as reported to the United States Public Health Service*

Year	State and County or City	Infection found in—
1902	California: San Francisco	Rats.
1903	do	Do
1904	do	Do.
1907	Washington: Seattle	Do.
	California:	
	Oakland	Do.
	San Francisco	Do.
1908	California:	
	Contra Costa County	Ground squirrels and rats.
	Los Angeles	Ground squirrels.
	Oakland	Rats.
	San Francisco	Do.
	Washington: Seattle	Do.
1909	California:	
	Alameda County	Do.[2]
	Contra Costa County	Ground squirrels.
	Santa Clara County	Do.
	Santa Cruz County	Do.
1910	California:	
	Alameda County	Do.
	Contra Costa County	Do.
	Monterey County	Do.
	San Benito County	Do.
	Santa Clara County	Do.
	Santa Cruz County	Do.
	San Luis Obispo County	Do.
	Stanislaus County	Do.
	Washington: Seattle	Rats.

[1] As the method of mass or pooled inoculation was used to determine plague infection in most instances, individual infection in each species of animal or parasite was not proved in every instance here recorded, although it has been demonstrated separately in each species.

[2] Plague infection found in a wood rat on Oct. 17, 1909.

TABLE 2.—*Chronological record of plague infection in rodents, rodent parasites, and rabbits in counties of the western States as reported to the United States Public Health Service*—Continued

Year	State and County or City	Infection found in—
1911	California:	
	Alameda County	Ground squirrels.
	Contra Costa County	Do.
	Fresno County	Do.
	Merced County	Do.
	Monterey County	Do.
	San Benito County	Do.
	Santa Barbara County	Do.
	San Joaquin County	Do.
	Stanislaus County	Do.
	Washington: Seattle	Rats.
1912	California:	
	Alameda County	Wood rat and ground squirrels.
	Contra Costa County	Ground squirrels.
	Louisiana: New Orleans	Rats.
1913	California:	
	Alameda County	Ground squirrels.
	Contra Costa County	Do.
	San Benito County	Do.
	Santa Clara County	Do.
	Washington: Seattle	Rats.
1914	California:	
	Alameda County	Ground squirrels.
	Contra Costa County	Do.
	Monterey County	Do.
	San Benito County	Do.
	Louisiana: New Orleans	Rats.
	Washington: Seattle	Do.
1915	California:	
	Alameda County	Ground squirrels.
	Contra Costa County	Do.
	San Benito County	Do.
	Louisiana: New Orleans	Rats.
	Washington: Seattle	Do.
1916	California:	
	Alameda County	Ground squirrels.
	Contra Costa County	Do.
	Merced County	Do.
	Monterey County	Do.
	San Benito County	Do.
	San Mateo County	Do.
	Santa Clara County	Do.
	Santa Cruz County	Do.
	Louisiana:	
	New Orleans	Rats.
	Jefferson Parish	Do.
	St. Bernard Parish	Do.
	Washington: Seattle	Do.
1917	California:	
	Alameda County	Ground squirrels.
	San Benito County	Do.
	San Francisco	Do.
	San Mateo County	Do.
	Santa Cruz County	Do.
	Louisiana:	
	Jefferson Parish	Rats.
	New Orleans	Do.
	Washington: Seattle	Do.
1918	California:	
	Alameda County	Ground squirrels.
	Contra Costa County	Do.
	San Mateo County	Do.
1919	California:	
	Alameda County	Do.
	Contra Costa County	Do.
	San Mateo County	Do.
1920	California:	
	Alameda County	Do.
	Contra Costa County	Do.
	Merced County	Do.
	Monterey County	Do.
	San Benito County	Do.
	San Joaquin County	Do.
	Santa Clara County	Do.
	Santa Cruz County	Do.
	Stanislaus County	Do.
	Florida: Pensacola	Rats.
	Louisiana: New Orleans	Do.
	Texas:	
	Beaumont	Do.
	Galveston	Do.
	Port Arthur	Do.

TABLE 2.—*Chronological record of plague infection in rodents, rodent parasites, and rabbits in counties of the western States as reported to the United States Public Health Service*—Continued

Year	State and County or City	Infection found in—
1921	California: San Benito County	Ground squirrels.
	Florida: Pensacola	Rats.
	Louisiana: New Orleans	Do.
	Texas: Galveston	Do.
1922	California:	
	Alameda County	Ground squirrels.
	Santa Cruz County	Do.
	Texas: Galveston	Rats.
1923	California: Contra Costa County	Ground squirrels.
1924	California:	
	Los Angeles	Rats.
	Oakland	Do.
	San Benito County	Ground squirrels.
	San Luis Obispo County	Do.
1925	California:	
	Los Angeles	Rats.
	Oakland	Ground squirrels.
	Louisiana: New Orleans	Rats.
1926	California:	
	Los Angeles	Do.
	San Benito County	Ground squirrels.
1927	California:	
	Contra Costa County	Do.
	Los Angeles	Rats.
1928	California:	
	Alameda County	Ground squirrels.
	Contra Costa County	Do.
	----do	Rats.
	Los Angeles	Ground squirrels.
	Monterey County	Do.
	San Benito County	Do.
	San Luis Obispo County	Do.
	Santa Cruz County	Do.
	Ventura County	Do.
1929	California:	
	Monterey County	Rats.
	----do	Ground squirrels.
	San Benito County	Do.
	San Luis Obispo County	Do.
	Santa Barbara County	Do.
	Santa Clara County	Do.
	----do	Rat.
1931	California:	
	Monterey County	Ground squirrels.
	San Benito County	Do.
1932	California:	
	Los Angeles	Rat.
	San Benito County	Ground squirrel.
1933	California:	
	San Benito County	Do.
	Santa Clara County	Do.
1934	California:	
	Kern County	Ground squirrels.
	Modoc County	Ground squirrels and rat.
	Tulare County	Ground squirrels.
1935	California:	
	Lassen County	Do.
	Modoc County	Field mouse.
	----do	Ground squirrels.
	San Luis Obispo County	Wood rat.
	----do	Ground squirrels.
	Montana: Beaverhead County	Ground squirrel.
	Oregon:	
	Grant County	Do.
	Lake County	Do.
	Wallowa County	Do.
1936	California:	
	Eldorado County	Chipmunk.
	Lassen County	Ground squirrels.
	Modoc County	Fleas from ground squirrels.
	Monterey County	Do.
	San Bernardino County	Do.
	Santa Cruz County	Ground squirrels and fleas from ground squirrels.
	Ventura County	Do.
	Idaho: Bonneville County	Do.
	Montana: Beaverhead County	Marmots and fleas and lice from marmots.
	Nevada: Elko County	Fleas from ground squirrels.
	Utah:	
	Beaver County	Ground squirrels and marmot.
	Garfield County	Prairie dogs and fleas from prairie dogs.

TABLE 2.—*Chronological record of plague infection in rodents, rodent parasites, and rabbits in counties of the western States as reported to the United States Public Health Service*—Continued

Year	State and County or City	Infection found in—
1937	California:	
	Eldorado County	Fleas from ground squirrels.
	Fresno County	Ground squirrels, flying squirrels, chipmunks, and mice, and fleas from ground squirrels, red squirrels, and chipmunks.
	Placer County	Pooled tissue from ground squirrels, chickaree squirrel, chipmunks, wood rats, and alexandrinus rats, and fleas from ground squirrels and chipmunks.
	San Bernardino County	Ground squirrels and fleas from ground squirrels, mice, wood rats, and chipmunks.
	San Mateo County	Fleas, lice, and ticks from ground squirrels.[3]
	Idaho: Bannock County	Ground squirrels and fleas and tick from ground squirrels.
	Montana:	
	Beaverhead County	Ground squirrel.
	Madison County	Do.
	Nevada:	
	Douglas County	Fleas from chipmunks.
	Ormsby County	Fleas from chipmunks and fleas and lice from ground squirrels.
	Oregon:	
	Grant County	Ground squirrel.
	Lake County	Fleas from ground squirrels.
	Wallowa County	Ground squirrels and fleas from ground squirrels.
	Utah:	
	Morgan County	Fleas from ground squirrels.
	Wasatch County	Ground squirrel.
	Washington: Adams County	Fleas and lice from ground squirrels.[4]
1938	Arizona: Apache County	Fleas from prairie dogs.
	California:	
	Eldorado County	Ground squirrels and fleas from ground squirrels.
	Fresno County	Do.
	Plumas County	Ground squirrels.
	San Benito County	Ground squirrels and fleas from ground squirrels.
	San Bernardino County	Do.
	Santa Clara County	Fleas from ground squirrels.
	Santa Cruz County	Ground squirrels and fleas from ground squirrels (some collected from ground squirrel burrows).
	Idaho:	
	Bannock County	Ground squirrels and fleas and lice from ground squirrels and marmots.
	Bear Lake County	Ground squirrels and fleas from ground squirrels.
	Montana:	
	Beaverhead County	Ground squirrels and fleas from ground squirrels.
	Gallatin County	Fleas from ground squirrels.
	Nevada: Clark County	Fleas from desert wood rats.
	New Mexico: Catron County	Prairie dogs and fleas from prairie dogs, field mice, and ground squirrels.[5]
	Oregon:	
	Baker County	Ground squirrels and fleas from ground squirrels.
	Grant County	Ground squirrels and fleas, louse, and tick from ground squirrels.
	Utah:	
	Kane County	Fleas from desert wood rats.
	Rich County	Fleas from ground squirrels.
	Wasatch County	Ground squirrel.
	Washington:	
	Adams County	Ground squirrels and fleas and lice from ground squirrels.
	Lincoln County	Ground squirrels.

[3] Collected in September 1936 and stored in icebox until July 1937.

[4] It is believed that this was the first positive evidence that plague existed in the wild rodents of Washington State and that the locality in which the infected fleas and lice were collected is the most northern point in the United States in which wild rodent plague has been found.

[5] Infection proved in prairie dogs and fleas from prairie dogs on August 20, 1938. This is believed to be the first evidence of plague in wild rodents in New Mexico.

TABLE 2.—*Chronological record of plague infection in rodents, rodent parasites, and rabbits in counties of the western States as reported to the United States Public Health Service*—Continued

Year	State and County or City	Infection found in—
1938	Wyoming:	
	Lincoln County	Ground squirrels and fleas, lice, and ticks from ground squirrels.
	Sublette County	Fleas and lice from ground squirrels.
	Uinta County	Ground squirrels [6] and fleas from ground squirrels and prairie dogs.
1939 [7]	California:	
	Contra Costa County	Fleas from ground squirrels.
	Eldorado County	Do.
	San Benito County	Ground squirrel.
	Ventura County	Ground squirrels and fleas from ground squirrels.
	Idaho: Fremont County	Fleas from ground squirrels.
	Montana: Beaverhead County	Ground squirrel and fleas from ground squirrels.
	Nevada: Clark County	Fleas from desert wood rats.
	New Mexico: Dona Ana County	Kangaroo rat.[8]
	Oregon:	
	Grant County	Fleas from ground squirrels.
	Wallowa County	Ground squirrels and fleas from ground squirrels.
	Washington:	
	Adams County	Fleas and lice from ground squirrels.
	Lincoln County	Cottontail rabbit [9] and fleas from ground squirrels.
	Wyoming: Sweetwater County	Fleas from prairie dogs.

[6] On July 8, 1938, plague infection was proved in a ground squirrel and a pool of 19 fleas from ground squirrels taken in Uinta County. This is believed to be the first positive demonstration of wild rodent plague in this State.

[7] In December 1939, a human case of plague was reported in Millard County, Utah. The patient was engaged in trapping and skinning bobcats (wild cats) and coyotes, and occasionally handled rabbits.

[8] The farthest south and east that plague infection had been demonstrated in wild rodents in the United States up to 1940.

[9] Believed to be the first demonstration of plague infection in a rabbit.

The following is a list of wild rodents and rabbits of the western States which have been found plague-infected or are known to suffer from spontaneous plague:[1]

Order RODENTIA. Family SCIURIDAE

Genus *Citellus*. Ground squirrel.

1. *Citellus armatus*. Uinta ground squirrel.
2. *Citellus beecheyi beecheyi*. California ground squirrel.
3. *Citellus beecheyi fisheri*. Fisher's ground squirrel.
4. *Citellus beldingi oregonus*. Oregon ground squirrel.
5. *Citellus columbianus columbianus*. Columbian ground squirrel.
6. *Citellus columbianus ruficaudus*. Blue Mountain ground squirrel.
7. *Citellus lateralis chrysodeirus*. Golden mantled ground squirrel.
8. *Citellus richardsonii elegans*. Wyoming ground squirrel.
9. *Citellus richardsonii nevadensus*. Nevada ground squirrel.
10. *Citellus richardsonii richardsonii*. Richardson's ground squirrel.[2]
11. *Citellus variegatus grammurus*. Say's rock squirrel.
12. *Citellus variegatus utah*. Utah rock squirrel.
13. *Citellus washingtoni loringi*. Loring's ground squirrel.
14. *Citellus washingtoni washingtoni*. Washington ground squirrel.[2]

[1] Furnished by Surgeon L. B. Byington, Plague Suppressive Measures Laboratory, San Francisco, Calif.

[2] Identification in question owing to change in nomenclature.

Genus *Tamiasciurus*. Red squirrel.

Tree squirrels

15. *Tamiasciurus douglasii albolimbatus*. California chickaree.[3]

Genus *Glaucomys*. Flying squirrel.

16. *Glaucomys sabrinis lascivus*. Sierra flying squirrel.[3]

Genus *Eutamias*. Western chipmunk.

17. *Eutamias quadrivittatus frater*. Tahoe chipmunk.

Genus *Cynomys*. Prairie dog.

18. *Cynomys gunnisoni zuniensis*. Zuni prairie dog.
19. *Cynomys leucurus*. White-tailed prairie dog.
20. *Cynomys parvidens*. Utah prairie dog.

Genus *Marmota*. Marmot.

21. *Marmota flaviventris engelhardti*. Engelhardt marmot.
22. *Marmota flaviventris nosophora*. Golden mantled marmot.

Family CRICETIDAE. Native rats and mice.

Genus *Neotoma*. Wood rat.

23. *Neotoma cinerea occidentalis*. Western bushy-tailed wood rat.[3]
24. *Neotoma fuscipes mohavensis*. Mohave Desert wood rat.[3]
25. *Neotoma lepida intermedia*. Rhoads wood rat.[3]
26. *Neotoma lepida lepida*. Desert wood rat.

Genus *Peromyscus*. White-footed mouse.

27. *Peromyscus truei gilberti*. Gilbert's white-footed mouse.[3]
28. *Peromyscus truei truei*. True white-footed mouse.

Family HETEROMYIDAE. Pocket rats and pocket mice.

Genus *Dipodomys*. Pocket rat, kangaroo rat.

29. *Dipodomys ordii ordii*. Ord's kangaroo rat.

Order LAGOMORPHA. Hares, rabbits, and pikas.

Family LEPORIDAE: Hares and rabbits.

30. *Sylvilagus nuttallii nuttallii*. Washington cottontail rabbit.

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[3] Reported by Dr. Karl Meyer, University of California.

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CLOTHING FOR PROTECTION AGAINST OCCUPATIONAL SKIN IRRITANTS

By Louis Schwartz, *Medical Director*, Leon H. Warren, *Acting Assistant Surgeon*, and Frederick H. Goldman, *Associate Chemist, United States Public Health Service*

The wearing of protective clothing is one of the methods for the prevention of occupational dermatitis. Details as to designs and fabrics most suitable for such clothing are not found in medical literature. The present study is an attempt to find fabrics most satisfactory for protection against the various types of occupational skin irritants and to suggest such designs as will be most protective and practical.

Clothing made of fabrics permeable to liquids or gases offers protection only if frequently changed and cleaned, because if exposed for any length of time to the chemicals from which they are to protect the skin, they become saturated and are apt to act as a poultice of these irritants. For this reason fabrics impermeable to chemicals are to be preferred. Rubber and oilcloth have been used for this purpose, but they have many disadvantages. Rubber is heavy and workers are prejudiced against its use because it is well known that rubber increases the amount of perspiration and prevents its evaporation. Besides, rubber is attacked by many of the industrial solvents such as the petroleum solvents, carbon bisulfide, the chlorinated hydrocarbons, and so forth. The rubber compounds are also known to produce dermatitis. Oilcloth is usually heavy, rather unpliable, inflammable, and is attacked by even more substances than is rubber.

There are now obtainable on the market many synthetic resins which can be either laminated or calendered onto fabrics, making

them impermeable to fumes, dusts, and certain liquids. Some of these resins can also be plasticized so as to form films of sufficient strength and pliability to make suitable impermeable protective clothing.

Seventeen samples of impermeable fabrics and films were obtained and tested for their suitability as protective clothing. The tests consisted in exposing the materials to the action of (1) carbon tetrachloride, (2) ethylene dichloride, (3) ligroin, (4) mineral oil, (5) vegetable oil, (6) ethyl alcohol, (7) 20 percent commercial hydrochloric acid, and (8) 40 percent solution of potassium hydroxide.

It was first thought that these fabrics could be fitted into a glass funnel much like a piece of filter paper and the test solutions poured onto the fabric, the stem of the funnel being immersed in a solution of a test reagent. It was soon found, however, that many of the materials would not stand being folded into a funnel shape without cracking or breaking. While this fault of the material would render it unsuitable for clothing, nevertheless we desired to test the permeability of such materials to our test solutions. Therefore, an apparatus was devised in which these tests could be performed without damaging the material. The apparatus (fig. 1) consisted of two brass cylinders with flanges and gaskets, between which the piece of fabric to be tested could be inserted and then the cylinders could be tightly screwed together. The testing liquid was placed on the fabric in the upper cylinder and the lower cylinder was immersed in an indicator solution so that any of the liquid which might go through the fabric could be detected. The solution was allowed to stay on the fabric for 16 hours. All of the fabrics tested were impervious to mineral oil, vegetable oil, and alcohol. Only one of them was impervious to carbon tetrachloride and none to ethylene dichloride. All of the fabrics that were laminated or impregnated with films of the resins showed more permeability than did the films themselves. This can be accounted for by the fact that capillary seepage took place through particles of the nap of the fabric which were not sufficiently covered by the film of resin.

For the reasons previously stated, oilcloth was not desirable for this type of protective clothing; therefore, the two samples of oilcloth will not be considered. Moreover, the tests made with them showed that they were permeable to all the test solvents except mineral oil, vegetable oil, and alcohol.

The fabric laminated with cellophane, while impermeable to ligroin, mineral oil, alcohol, and vegetable oil, was not suitable for protective clothing because it cracked when folded and became permeable to anything through the cracks. In addition, it is highly inflammable.

The fabric impregnated with a plasticized resin consisting of vinyl

chloride and vinylidin chloride was permeable to all solvents with which it was tested. This was because of the nap which came through the thin coating of resin. Seven other fabrics laminated with various thicknesses of a plasticized[1] resin consisting of a copolymer of vinyl chloride and vinyl acetate were permeable to the same solvents. Three of these were also tested with alcohol and vegetable oil and found to be impermeable. The film of this copolymer, however, was impermeable to carbon tetrachloride, mineral oil, acid, alcohol, and vegetable oil. A sample of a film made of a plasticized polymer of vinyl chloride resisted the action of mineral oil, acid, alkali, alcohol, and vegetable oil, as did a sample of fabric coated with three layers of this material.

Table 1 shows the results of these tests, the plus sign (+) meaning that the fabric was permeable and the minus sign (−) indicating that it was not. It will be noted that fabrics 1 and 2 show the greatest resistance against these solvents, being permeable only to carbon tetrachloride and ethylene dichloride. These two materials consist of rubber chloride containing an antioxidant and differ from each other in that one of them is an unstretched film and the other is a lighter double stretched film.

TABLE 1.—*Result of exposing materials to solvents for 16 hours*

Material	Ligroin	20 percent HCl	40 percent KOH	Alcohol	Mineral oil	Vegetable oil	CCl_4	Ethylene dichloride
1. Pliofilm. Rubber hydrochloride 240 laminated clear. Antioxidant	−	−	−	−	−	−	+	+
2. Pliofilm. 150 double stretched clear	−	−	−	−	−	−	+	+
3. Vinylite. A copolymer of vinyl chloride and vinyl acetate	+	−	+	−	−	−	−	+
4. Koroseal. A polymer of vinyl chloride	+	−	−	−	−	−	+	+
5. Koroseal coated onto fabric	+	−	−	−	−	−	+	+
6. Fabric coated with a mixture of vinyl chloride and vinylidin chloride resin	+	(1)	+	(1)	(1)	(1)	+	(1)
7. Sample No. 3 of fabric calendered with a vinylite film	+	(1)	+	(1)	(1)	(1)	+	(1)
8. Sample No. 4 of the above resin	+	(1)	+	(1)	(1)	(1)	+	(1)
9. Sample No. 2 of the above resin	+	(1)	+	(1)	(1)	(1)	+	(1)
10. Sample No. 1 of the above resin	+	(1)	+	(1)	(1)	(1)	+	(1)
11. Synflex. Fabric coated with vinylite resin. 133A—heaviest coating	+	(1)	+	−	(1)	−	+	(1)
12. Synflex. 133B—lighter coating	+	(1)	+	−	(1)	−	+	(1)
13. Synflex. 133C—lightest coating	+	(1)	+	−	(1)	−	+	(1)
14. Fabrilite. 2 Green C R 6539 oilcloth	(1)	+	+	(1)	(1)	(1)	(1)	(1)
15. Standard oilcloth	(1)	−	+	(1)	(1)	(1)	(1)	(1)
16. Standard oiled green unfinished	(1)	+	+	(1)	(1)	(1)	(1)	(1)
17. 300 P. T. cellophane laminated on a closely woven white fabric	−	+	+	−	−	−	+	+

[1] Not tested.

+=permeable.
−=impermeable.

Both the tested films and fabrics coated with the synthetic resins give protection against mild acids, mild alkalies, alcohol, and oils,

[1] Plasticizers such as castor oil, glycol wax, dimethyl cellosolve phthalate, dimethyl cellosolve oleate, tricresyl phosphate, and dibutyl phthalate are used. In addition to this, some of the resins contain stabilizers and antioxidants.

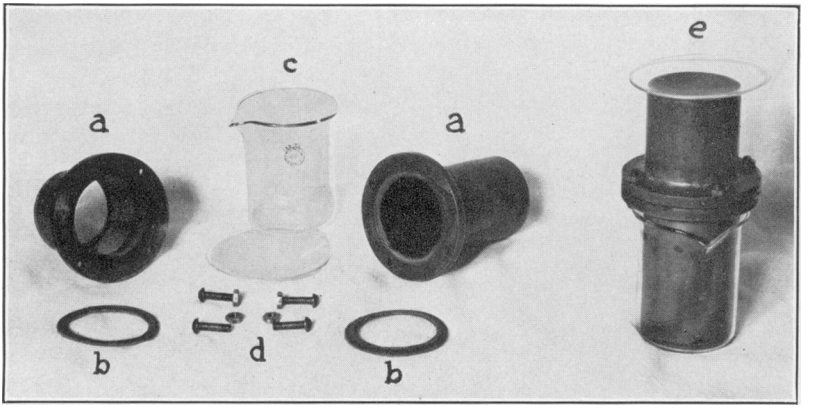

FIGURE 1.—Apparatus for testing fabrics: (*a*) Sections of testing cylinder, (*b*) gaskets, (*c*) beaker of testing solution, (*d*) assembly bolts and nuts, (*e*) assembled cylinder.

FIGURE 2.—Protective hood, sleeves, gloves, and apron. Note sleeves secured over gloves, neck protected by hood, and apron extending to neck.

and are impermeable to dust; therefore they can be used for protective clothing in such industries as fruit and vegetable canning, in resin molding where the exposure is to oils, and in other occupations where the skin hazards are maceration or only mild irritants and sensitizers.

All of these materials are light in weight, transparent, and although they increase and retain perspiration they do not give the cold, clammy feeling of rubber clothing and the workers are not prejudiced against their use. These materials not only prevent irritants from coming in contact with the skin, but also protect the clothing beneath them. They are not inflammable, can be easily washed with ordinary soap and water, but must not be pressed with a hot iron. With ordinary care they will last a number of months in rough occupations, or longer if not subjected to rough usage. Some of these resins will soon be available in the form of gloves, having pliability and elasticity comparable to rubber. Such gloves may be used in occupations where rubber is attacked by the chemicals used, or in cases where the worker is allergic to rubber or its compounds.

In many industries only the hands and the forearms need to be protected. In such cases rubber gloves can be worn under sleeves made from these materials. In other industries aprons and hoods may also be necessary to protect the front part of the body (fig. 2). In still other industries, for instance spray painting, it may be necessary to wear coveralls, gloves, and hoods.

SUGGESTED DESIGNS FOR PROTECTIVE CLOTHING

Gloves.—Gloves should fit fairly snug, should not be cumbersome, and should extend a sufficient distance beyond the wrist so that they fit under the sleeves.

Sleeves.—Sleeves should reach from the wrist to the armpit. They should be fastened at the wrists and at the upper ends. They should fit over the gloves and should be sufficiently roomy to allow for flexing of the elbows without sliding up and down the arm.

Aprons.—Aprons should be full and should cover the front of the body from well below the knee to the neck. They should be fastened around the neck and waist.

Hoods.—Hoods should fit over the head and come down to the shoulders, protecting the collar line. They can be made with openings at the eyes, nostrils, and mouth. In occupations where it is necessary to protect against the inhalation of poisonous chemicals, the hood can be entirely closed, except for an opening at the mouth, the edges of which should be so constructed that a removable air filter can be fitted into it. At the top of such a hood there should be fitted a flap valve to allow the escape of expired air.

Coveralls.—Coveralls should fit snug at the neck and may have zipper fronts, or can be so constructed that the front is a continuous

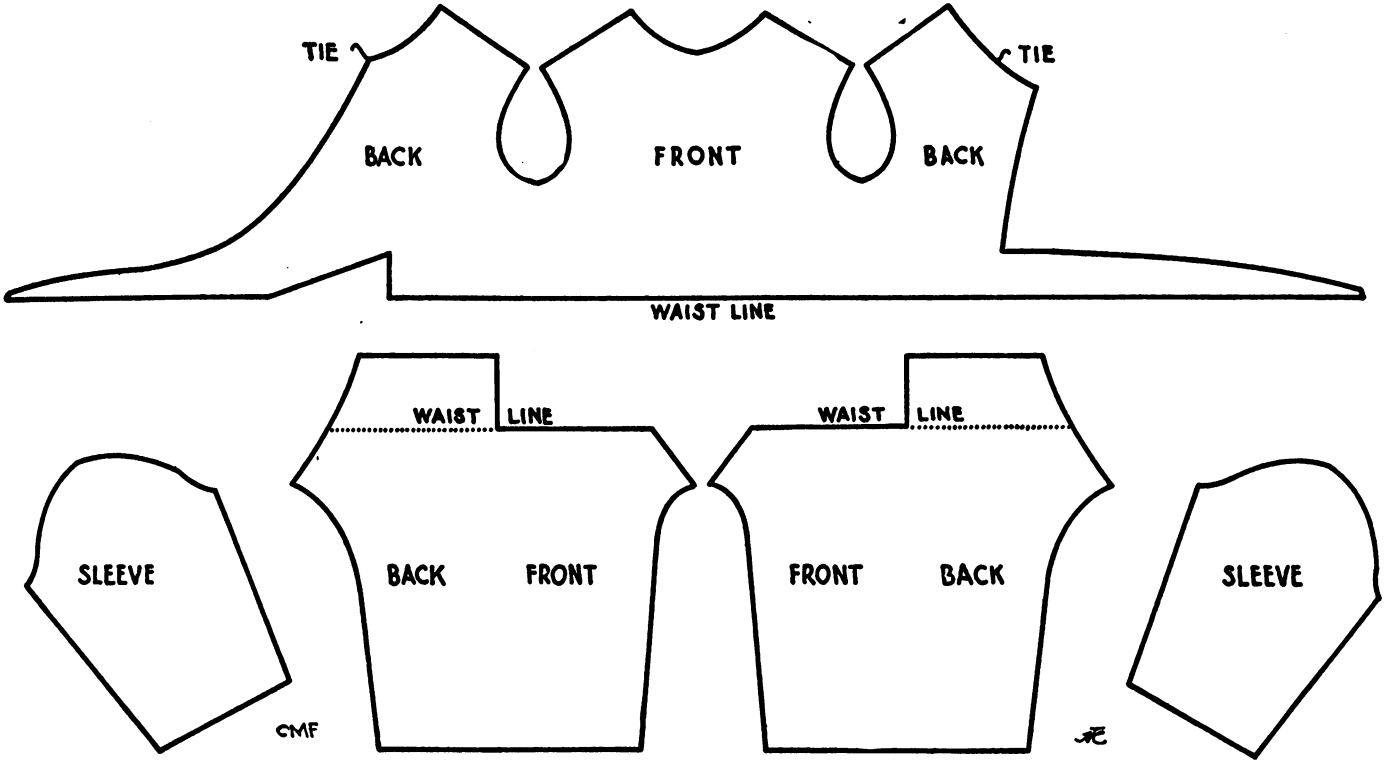

FIGURE 3.—Design for coveralls.

piece of material (except the fly). The bodies of such coveralls should be so made that they wrap around the back, one side over the other, and tie in front at the waist (fig. 3).

SUMMARY

Resin films and fabrics coated with them were tested for suitability for clothing for protection against occupational skin irritants. Of the materials tested, Pliofilm, Vinylite, and Koroseal were found most suitable. Designs for such protective clothing are outlined.

DISABLING MORBIDITY AMONG MALE AND FEMALE EMPLOYEES IN MAIL ORDER STORES, 1930–34, INCLUSIVE[1]

By HUGH P. BRINTON, *Associate Statistician*, and ELIZABETH S. FRASIER, *Junior Statistician, United States Public Health Service*

Sickness and nonindustrial injuries causing disability lasting 8 calendar days or longer among workers in mail order stores are the subject of this the ninth report of the series (*1–8*). The supporting data are drawn from material collected by the Occupational Morbidity and Mortality Study of the National Health Survey, a survey made possible by a grant from the Works Progress Administration in 1935. The data were transcribed from sick benefit organization records of 8,006 members who were employed in 4 mail order stores during the period 1930–34. The number of months of membership, cases of disability, days of disability, and deaths may be summarized as follows:

Sex	Number of months of membership	Number of cases of disability	Number of days of disability	Number of deaths
Total	300,955	1,899	53,656	31
	White			
Male	117,698	575	15,990	19
Female	179,797	1,302	37,306	11
	Negro			
Male	2,913	19	317	1
Female	240	1	8	----
	Other			
Male	15	----	----	----
Female	60	1	12	----
	Unknown			
Male	83	----	----	----
Female	146	1	23	----

[1] From the Division of Industrial Hygiene, National Institute of Health, Washington, D. C.

Acknowledgment is made to Dr. W. M. Gafafer for suggestions and criticism.

The labor turn-over of employment is evidenced by the fact that the average length of membership during the 5 years was 38 months. Had the membership been continuous during the 60 months it would have resulted in a total of 480,360 months instead of the 300,955 months shown in this report.

The analysis which follows will be limited to white males and white females, since they represent 98.9 percent of the total months of membership. It will be noted that the data make available an unusually large proportion of membership among white females which permits a comparison by sex in some detail.

Type of sick benefit organization.—In the 4 mail order stores studied 1 provided sick benefits through a company operated sick benefit plan and 3 through an employees' mutual benefit society. In the first store membership in the sick benefit organization was automatic for all employees who had worked 6 months. The waiting period and the maximum benefit period varied with the length of service according to the following schedule: Employees with 5 or more years of continuous service were allowed full salary after a waiting period of 2 days for a maximum benefit period of 10 weeks, employees with 2 to 5 years of service had a waiting period of 7 days and a maximum benefit period of 8 weeks, while those employees with 6 months to 2 years of service had a waiting period of 7 days and a maximum benefit period of 3 weeks. Benefits were refused for disabilities connected with sunburn or results therefrom, nervousness where there was no organic trouble, contagious or infectious skin disorders, and for ailments present when the employee was first engaged.

In the other 3 mail order stores the waiting period was 3 days and the maximum benefit period 13 weeks. Membership was on a voluntary basis with eligibility after 30 days in 2 stores and after 90 days in the third store. In each store a member did not become eligible to receive sick benefits until a month after joining the association. There were several classes of membership in the sick benefit organizations, based on the salary received, which required different dues and offered different amounts of aid during disability.

In 3 stores membership ceased immediately at the termination of service with the company. One store, in the event of a temporary lay-off, allowed membership to continue as long as the employee's name remained on the pay roll. Benefits were refused in each of the 4 stores for disabilities connected with the improper use of stimulants or narcotics, unlawful acts, and maternity cases. Additional causes for refusal of benefits were listed in certain stores.

Standardization of waiting and maximum benefit periods.—The data for all 4 sick benefit organizations are presented according to certain standard conditions necessitated by the variations in the length of the waiting and maximum benefit periods. The method used has been described in preceding papers of this series (*4*, *5*). In the present study only one company, and then limited to employees with 6 months to 5 years of service, required a waiting period as long as the standard, namely, 7 days. The others required a shorter period but the cases lasting 7 days and less were excluded when the data were brought into conformity with standard conditions; the maximum benefit periods were either equal to or less than the standard of 13 weeks, necessitating in the latter instance the extension to 13 weeks of cases reaching maximum benefit.

Occupational classification.—The occupational groups in mail order stores have a somewhat different distribution than that in many industries. There is one group, office workers, representing a large

proportion of all male and female employees. Contrasted with this group, which is subject to the same general environmental conditions, although diversified with respect to specific tasks, are 5 other groups among males and 2 other groups among females. The very great variety of specific occupations included within these broad groups is shown in table 1. It will be observed that, although certain general rates are given for each of the broad occupational groups, the detailed analysis is confined to office workers as contrasted with workers in all other occupations. Little reliance can be placed on comparison by sex of all other occupations, since very different environmental conditions and economic status are represented in the male as compared with the female group.

TABLE 1.—*Specific occupations comprising each occupational group, mail order stores*

Occupational group	Specific occupation
	White males
Office workers	Accountants, addressers, adjusters, auditors, billers, bookkeepers, cashiers, complaint clerks, copy readers, credit managers, dispatchers, estimators, export clerks, filing clerks, index clerks, information clerks, inspectors, invoice clerks, mail clerks, office machine operators, order clerks, pay roll clerks, pre-adjusters, pricers, purchasing agents, rate clerks, receiving clerks, refund clerks, shipping clerks, sorters, statisticians, stock clerks, storekeepers, superintendents, tag writers, timekeepers, traffic managers, treasurers, weighers.
Foremen	Department heads, division foremen, floormen, night foremen, supervisors, trainers.
Stock handlers, truckers, wrappers, and packers.	Bundlers, car unloaders, chute men, labelers, mail loaders, packers, sealers, supply men, ticket sorters, truckers, warehousemen, wrappers.
Repairmen and carpenters.	Box makers, cabinetmakers, carpenters, craters, electrical mechanics, framers, furniture repairmen, gunsmiths, locksmiths, mechanics, merchandise repairmen, nailers, radio mechanics, sawyers, shoemakers, staplers.
Laborers, watchmen, and janitors.	Car cleaners, clean-up laborers, janitors, pit sweepers, police, porters, street cleaners, tunnel men, utility men, watchmen, yardmen.
All others	Barbers, buyers, chauffeurs, coal heavers, draftsmen, electricians, elevator operators, engineers, engravers, filling-station attendants, firemen, machinists, millwrights, oilers, painters, paint makers, plumbers, pressers, salesmen, sign painters, steamfitters, tailors, truck drivers, waiters, wallpaper printers, window trimmers.
	White females
Office workers	Addressers, adjusters, billers, bookkeepers, cashiers, complaint clerks, copy readers, dispatchers, estimators, export clerks, filing clerks, index clerks, information clerks, inspectors, invoice clerks, mail clerks, office machine operators, order clerks, pay roll clerks, preadjusters, pricers, rate clerks, receiving clerks, refund clerks, secretaries, shipping clerks, sorters, statisticians, stenographers, stock clerks, tag writers, timekeepers, typists, weighers.
Stock handlers, wrappers, and packers.	Bundlers, labelers, packers, sealers, ticket sorters, wrappers.
All others	Buyers, cooks, dishwashers, elevator operators, foreladies, janitresses, laundresses, maids, matrons, nurses, saleswomen, seamstresses, shade sewers, telephone operators, waitresses, wallpaper trimmers, washroom attendants.

ANALYSIS OF THE DATA

Age distribution by occupational group.—A comparison of the age distribution of gainful workers in wholesale and retail trade, except automobile agencies and filling stations, as given in the United States

census of 1930 (*9*, pp. 570–571), with the age distribution of the membership in the present study is shown in the following table:

Age in years	Percentage distribution			
	Male		Female	
	Wholesale and retail trade, U. S. census 1930	Mail order stores	Wholesale and retail trade, U. S. census 1930	Mail order stores
Total, known ages	100.0	100.0	100.0	100.0
Under 25	20.2	20.5	40.1	42.8
25–34	25.3	31.9	25.2	41.1
35–44	23.3	24.4	18.5	11.2
45–54	17.0	17.6	10.9	4.2
55–64	9.8	4.8	4.2	.7
65 and over	4.4	.8	1.1	(1)

[1] Less than 0.1 of 1 percent.

It will be observed that for males there was a greater proportion in the middle age group, 25–34 years, in mail order stores than in the census data, while the reverse was true for males 55 years of age and over. Studies made of the soap industry (*5*) and the slaughter and meat packing industry (*8*) showed similar relations between the census and the report data. However, the present study showed little difference in the proportion under 25 years of age. The other studies showed the proportion in this age group to be much larger than in the census.

Among females there is a greater concentration in the age group 25–34 years than among males in this study or among either sex in the census figures. For each age group beginning with 35–44 years and continuing through 65 years and over the census data show a greater proportion of female workers.

Table 2 shows the percentage distribution of months of membership by age and sex, according to occupational group, among white employees in mail order stores. For both sexes office workers constitute the youngest group with 68.6 percent under 35 years for white males and 87.5 percent in the same age group for white females. The corresponding percentages for workers 45 years of age and over are 14.8 and 3.1, respectively. The proportion of female office workers under 25 years of age is 43 percent greater than the proportion of male office workers under that age.

Certain occupational groups among males have a membership older than the average. For example, 55.4 percent of the laborers, watchmen, and janitors, 39.6 percent of the foremen, and 37.3 percent of the repairmen and carpenters are 45 years of age and over. The first group has 18.1 percent of its membership under 35 years of age which is less than one-third the proportion of office workers who are found in this age group.

TABLE 2.—*Percentage distribution of months of membership by age and sex according to occupational group, white employees in mail order stores, 1930–34, inclusive*

Occupational group	All known ages (100 percent)	Age in years as of July 1, 1932					
		Under 25	25–34	35–44	45–54	55–64	65 and over
	White males						
All occupations	115,522	20.5	31.9	24.4	17.6	4.8	0.8
Office workers	38,154	31.8	36.8	16.6	11.5	2.6	.7
Foremen	2,756	7.4	22.9	30.1	31.6	7.4	.6
Stock handlers, truckers, wrappers, and packers	32,152	25.2	34.9	23.3	13.4	2.6	.6
Repairmen and carpenters	4,792	8.3	18.5	35.9	26.1	10.6	.6
Laborers, watchmen, and janitors	9,057	1.3	16.8	26.5	42.4	10.9	2.1
All others	28,611	9.5	29.9	32.8	19.8	7.2	.8
	White females						
All occupations	177,436	42.8	41.1	11.2	4.2	0.7	(1)
Office workers	156,843	45.4	42.1	9.4	2.6	.4	0.1
Stock handlers, wrappers, and packers	9,143	34.0	34.3	17.7	12.8	1.2	----
All others	11,450	14.4	32.0	31.2	18.8	3.6	----

[1] Less than 0.1 of 1 percent.

Frequency of disabilities by duration.—Table 3 shows by sex for two broad age groups the frequency of cases of disability of different durations. For nearly all durations the increase in rate with age is more marked for males than for females. For both sexes there is a greater percentage increase in rate for cases which have a relatively long duration. In other words, there is a disproportionate number of long cases among the older members of the sick benefit organization.

Another method of treating these data is by determining the percentage of cases of a given duration. Thus, it appears that cases lasting less than 29 days among males represented 71.5 percent of the total cases among the younger group and 67.3 percent among the older group, while among females the corresponding percentages were 70.2 and 61.7. Advancing age among males did not produce as great an increase in cases of longer duration as among females.

Selected indexes by age group and sex.—In considering the morbidity indexes for mail order store employees it should be remembered that white-collar workers predominate. Hence these rates as a whole should not be compared with other industries which include any considerable number of unskilled employees engaged in heavy manual labor. Comparisons are advisable only with groups of like economic and social status.

Table 4 shows that the annual number of cases per 1,000 increases with advancing age after the youngest age group for males and for each age group (except 45–54 years) among females. A similar trend with no exception among females is observed for annual number of days of disability per person and average number of days per case.

According to all three indexes the youngest age group for males has a more unfavorable rate than the next older age group.

TABLE 3.—*Frequency of sickness and nonindustrial injuries causing disability lasting 8 calendar days or longer, by sex, for the age groups under 35 years and 35 years and over, according to duration in calendar days, white employees in mail order stores, 1930–34, inclusive*

Duration of case in calendar days [1]	Age in years as of July 1, 1932			
	Males		Females	
	Under 35 years	35 years and over	Under 35 years	35 years and over
	Annual number of cases per 1,000 persons			
All durations	52.9	64.1	85.2	93.1
8–14	25.2	28.4	39.0	36.5
15–28	12.7	14.8	20.8	20.9
29–49	8.3	8.1	13.1	15.5
50–91	4.1	8.7	7.1	10.5
92–182	1.8	3.7	3.7	6.7
183–364	.8	.4	.8	*1.7*
365 and over			.7	*1.3*
	Number of cases			
All durations	267	294	1,056	222
8–14	127	130	483	87
15–28	64	68	258	50
29–49	42	37	162	37
50–91	21	40	88	25
92–182	9	17	46	16
183–364	4	2	10	4
365 and over			9	3
Number of person-years of membership	5,042.6	4,584.2	12,400.5	2,385.8

[1] Includes not-ended, maximum-benefit, and unknown-termination cases.

Italicized rates are based on less than 5 cases.

A comparison of two age groups, namely, under 25 years and 55 years of age and over shows that the ratio of the female rate to the male rate (always more than one) becomes greater at the older age for days of disability per person and average days per case, while it decreases for the annual number of cases per 1,000 persons. This would indicate that it is the length rather than the frequency of female cases which results in their more unfavorable rates when old. For example, with respect to frequency the percentage increase in rate from under 25 years of age to 55 years and over is 54 percent for males and 36 percent for females; but for days of disability per person the increase in rate is 117 percent for males and 138 percent for females, while the corresponding increase for the average days per case is 41 and 75 percent, respectively.

Frequency of disabilities by detailed diagnosis groups.—The annual number of cases per 1,000 for white males and white females of all ages is shown according to detailed diagnosis groups in table 5. While

for all diagnoses the female rate was 48 percent in excess of the corresponding male rate, yet there were specific diagnosis groups for which the male rate was in excess. The male rate was higher for nonindustrial injuries, pneumonia, ulcer of the stomach or duodenum, hernia, diseases of the circulatory system, rheumatic diseases, and other infectious and parasitic diseases. For the most part these are the same diagnoses which were found to have an excess among males in previous studies (*5*, *8*). These diagnoses in general probably reflect the more strenuous work and the more adverse environmental conditions under which males are likely to labor.

TABLE 4.—*Summary of selected morbidity indexes for different age groups, according to sex, white employees in mail order stores, 1930–34, inclusive*

Sex	All ages [1]	Age in years as of July 1, 1932					
		Under 25	25–34	35–44	45–54	55–64	65 and over
	Annual number of cases per 1,000 persons [2]						
Male	58.6	55.2	51.5	52.0	74.3	77.4	131.6
Female	86.9	78.0	92.6	93.3	90.2	101.4	*209.0*
	Annual number of days of disability per person						
Male	1.63	1.43	1.31	1.37	2.18	2.71	5.51
Female	2.49	2.12	2.56	2.92	3.07	4.88	8.40
	Average number of days per case [3]						
Male	27.8	25.9	25.4	26.4	29.4	35.0	41.9
Female	28.7	27.2	27.6	31.4	34.0	48.1	*43.0*
	Number of cases beginning during 1930–34, inclusive						
Male	575	109	158	122	126	36	10
Female	1,302	494	562	155	56	10	1
	Number of calendar days of disability						
Male	15,990	2,827	4,017	3,224	3,700	1,259	419
Female	87,306	13,449	15,517	4,860	1,906	481	42
	Number of deaths						
Male	19	1		4	8	3	3
Female	11		8	1	2		
	Number of person-years of membership						
Male	9,808.2	1,972.9	3,069.7	2,346.0	1,696.9	465.3	76.0
Female	14,983.1	6,330.3	6,070.2	1,661.7	620.5	98.6	5.0

[1] Includes a negligible number of persons of unknown age.

[2] Cases include only those which began during the study period, but days of disability include days for cases which began prior to, as well as during, the study period. This seeming excess of days of disability is compensated in part by the fact that days subsequent to 1934 are not included, even though some cases had not ended or reached 91 days at the close of the study period.

[3] Includes all days of disability during the study period, regardless of when the disability began. Disabilities which reached 91 days or over were arbitrarily terminated at 91 days.

Italicized rates are based on less than 5 cases.

TABLE 5.—*Frequency of sickness and nonindustrial injuries causing disability lasting 8 calendar days or longer, by sex, according to detailed diagnosis groups, white employees in mail order stores, 1930–34, inclusive*

Diagnosis	Annual number of cases per 1,000 persons		Number of cases	
	Males	Females	Males	Females
Total, all diagnoses	58.6	86.9	575	1,302
Nonindustrial injuries	6.8	4.0	67	60
Sickness	51.8	82.9	508	1,242
Respiratory diseases	23.4	45.5	230	682
Diseases of the pharynx and tonsils	3.0	7.6	29	114
Bronchitis, acute and chronic	2.6	3.3	26	50
Other diseases of the upper respiratory tract	6.3	14.3	62	215
Influenza, grippe	8.9	17.6	87	263
Pneumonia, all forms	.8	.7	8	10
Pleurisy	1.0	1.1	10	17
Respiratory tuberculosis	.5	.7	5	10
Other respiratory diseases	*.3*	*.2*	3	3
Digestive diseases	9.4	13.7	92	205
Diseases of the teeth and gums	.6	1.1	6	16
Ulcer of the stomach or duodenum	.7	.4	7	6
Other diseases of the stomach, cancer excepted	1.9	2.9	18	44
Diarrhea, enteritis	.6	1.1	6	17
Appendicitis, with or without appendectomy	3.3	6.8	32	101
Hernia	1.1	*.2*	11	3
Other digestive diseases	1.2	1.2	12	18
Nonrespiratory-nondigestive diseases	14.4	18.5	141	277
Diseases of the circulatory system	2.4	1.6	23	24
Genitourinary diseases	1.0	2.3	10	35
Rheumatic diseases [1]	4.6	2.8	45	42
Diseases of the nervous system [2]	.6	4.4	6	66
Diseases of the skin	.9	1.7	9	25
Other infectious and parasitic diseases	2.2	2.0	22	30
Other nonrespiratory-nondigestive diseases	2.7	3.7	26	55
Ill-defined or unknown diagnoses	4.6	5.2	45	78
Number of person-years of membership			9,808.2	14,983.1

[1] Including acute and chronic rheumatism, lumbago, neuralgia, neuritis, and sciatica.
[2] Exclusive of neuralgia, neuritis, and sciatica.

NOTES.—See footnote 2, table 4.
Italicized rates are based on less than 5 cases.

The five cause groups which showed the greatest excess for the female as compared with the male rate were, in descending order of magnitude, as follows: Diseases of the nervous system, 633 percent; diseases of the pharynx and tonsils, 153 percent; genitourinary diseases, 130 percent; appendicitis, with or without appendectomy, 106 percent; and influenza and grippe, 98 percent.

Many of the above diagnoses are not numerically of great importance when total frequency rates are considered. The broad diagnosis group which does have the most influence in producing a higher total rate for females is the respiratory group. Among females 55.7 percent of all cases with known diagnoses fell into this category while among males this percentage was 43.4. The proportion of digestive disease cases showed a difference between the sexes of less than one percent; males had a larger percentage of cases for nonindustrial injuries and nonrespiratory-nondigestive diseases, although the male frequency rate for the latter group was slightly lower than the female frequency rate.

Rates by occupation.—The frequency rate, the number of days of disability per person, and the number of days per case are shown according to occupational group in table 6. Among males the occupational group with the highest age-standardized frequency rate (83.7) was laborers, watchmen, and janitors. Following this group were repairmen and carpenters (78.8) and office workers (69.0). There were only 2 specific occupational groups among females, namely, office workers (93.2) and stock handlers, wrappers, and packers (76.9). The former was 35 percent higher than the corresponding rate for males while the latter was 26 percent higher.

TABLE 6.—*Frequency of sickness and nonindustrial injuries causing disability lasting 8 calendar days or longer, annual number of days of disability per person, and average number of days per case, according to occupational group and sex, white employees in mail order stores, 1930–34, inclusive*

Occupational group [1]	Annual number of cases per 1,000 persons		Annual number of days of disability per person	Average number of days per case	Number of cases beginning during 1930–34, inclusive	Number of calendar days of disability	Number of person-years of membership
	Standardized rate [2]	Crude rate					
	Males						
All occupations	63.4	58.6	1.63	27.8	575	15,990	9,808.2
Laborers, watchmen, and janitors	83.7	87.0	2.99	34.4	68	2,341	781.9
Repairmen and carpenters	78.8	76.1	2.04	26.8	32	857	420.5
Office workers	69.0	61.7	1.60	25.9	200	5,185	3,243.9
Foremen	66.1	64.2	2.04	31.7	15	476	233.6
Stock handlers, truckers, wrappers, and packers	61.2	54.9	1.68	30.6	149	4,554	2,713.9
All others	49.3	46.0	1.07	23.2	111	2,577	2,414.4
	Females						
All occupations	90.0	86.9	2.49	28.7	1,302	37,306	14,983.1
Office workers	93.2	89.0	2.52	28.3	1,178	33,357	13,237.8
Stock handlers, wrappers, and packers	76.9	74.8	2.23	29.8	57	1,700	761.9
All others	67.7	68.1	2.29	33.6	67	2,249	983.4

[1] See table 1.
[2] Age standardized according to the total gainfully employed workers of specified sex in the United States (*9*, p. 117).

NOTE.—See footnotes 2 and 3, table 4.

The annual number of days of disability per person among males ranged from 2.99 for laborers, watchmen, and janitors to 1.60 for office workers. Foremen, and repairmen and carpenters each had a rate of 2.04 days per person. Female office workers showed a rate of 2.52 and stock handlers, wrappers, and packers a rate of 2.23, the excess over the corresponding rates for males being 57 percent and 33 percent, respectively.

In the average number of days per case, laborers, watchmen, and janitors were again highest with 34.4, and office workers lowest with

25.9 days. The length of case among female office workers was less than 10 percent higher than among males, while among stock handlers, wrappers, and packers, females had actually a shorter average case than males.

Frequency of disabilities among office workers and all other workers.—A comparison of sickness and nonindustrial injuries in mail order stores is limited to office workers and all other workers. In table 7 this information is given for persons under 35 years of age and those 35 years and over. Frequency rates for male office workers when all diagnoses are considered show little difference with advancing age, the rate being approximately 60 in the younger and older groups. However, the rate for nonrespiratory-nondigestive disease is 56 percent greater for older males, while for digestive diseases it is 59 percent less. Female office workers show an increase in rate with age of 62 percent for nonrespiratory-nondigestive diseases, but for the other three broad diagnosis groups the increase is less, ranging from 2 to 7 percent. Among office workers, with the exception of digestive diseases, there is apparent no great sex difference in the rate of change with age.

TABLE 7.—*Frequency of sickness and nonindustrial injuries causing disability lasting 8 calendar days or longer for broad diagnosis groups by age, under 35 years and 35 years and over, for office workers and all other workers, by sex, white employees in mail order stores, 1930–34, inclusive*

Occupational group	All sickness and nonindustrial injuries [1]		Nonindustrial injuries		Sickness					
					Respiratory diseases		Digestive diseases		Nonrespiratory-nondigestive diseases	
	Under 35 years	35 years and over	Under 35 years	35 years and over	Under 35 years	35 years and over	Under 35 years	35 years and over	Under 35 years	35 years and over
	Annual number of cases per 1,000 males									
Office workers	60.1	59.1	8.3	8.0	23.8	26.0	14.7	6.0	9.6	15.0
All others	47.5	65.5	4.9	7.5	18.2	26.5	10.5	6.1	9.4	20.4
Ratio: office workers to all others	1.27	.90	1.69	1.07	1.31	.98	1.40	.98	1.02	.74
	Annual number of cases per 1,000 females									
Office workers	86.6	102.9	4.2	4.3	46.3	49.6	14.3	15.3	17.0	27.6
All others	68.6	71.6	*2.1*	*2.7*	36.4	31.8	9.4	9.3	15.6	17.2
Ratio: office workers to all others	1.26	1.44	2.00	1.59	1.27	1.56	1.52	1.65	1.09	1.60
	Ratio: female to male									
Office workers	1.44	1.74	.51	.54	1.95	1.91	.97	2.55	1.77	1.84
All others	1.44	1.09	.43	.36	2.00	1.20	.90	1.52	1.66	.84

[1] Includes a negligible number of cases of ill-defined or unknown diagnosis.

NOTES.—See footnote 2, table 4.

Italicized rates are based on less than 5 cases.

Number of person-years of membership: Males, office workers under 35 years of age 2,180.4, 35 years of age and over 999.1; all others under 35 years of age 2,862.2, 35 years of age and over 3,585.1. Females, office workers under 35 years of age 11,438.2, 35 years of age and over 1,632.0; all others under 35 years of age 932.6, 35 years of age and over 753.8.

Male workers other than office workers constitute an older group than office workers; hence a 38-percent increase in rate at age 35 years and over is not unexpected. There is a marked rise in the frequency of disabilities among older males for each diagnosis group except digestive diseases. Among female workers other than office workers age apparently has little influence; indeed, respiratory diseases show a 13 percent decrease at the older age.

In a comparison of office workers with all others it should be remembered that the former are a much more homogeneous class than the latter. Both groups, however, reflect the same general policies with regard to the recording of disabilities which were the current practice in the stores studied. Young male office workers had a greater frequency of sickness than other mail order store workers, while at an older age the reverse was found to hold. The excess in the rate among young male office workers compared with other workers was due to a greater incidence of respiratory diseases, nonindustrial injuries, and digestive diseases; the higher rate among older male nonoffice workers was due to an excess of nonrespiratory-nondigestive diseases.

Female office workers had higher frequency rates than other female workers in both age groups. The greatest excess was for nonindustrial injuries in the age group under 35 years and for digestive diseases in the age group 35 years and over.

Another comparison of interest is the ratio of the female rate to the male rate, specific for occupational and diagnosis group. Among office workers under 35 years of age females have a rate 49 percent lower than males for nonindustrial injuries, a rate almost the same for digestive diseases, and rates for respiratory diseases and nonrespiratory-nondigestive diseases which are 95 percent and 77 percent higher, respectively. Office workers 35 years of age and over have approximately the same female to male ratio as the younger group with the exception of digestive diseases which show an excess among females of 155 percent. The younger group of nonoffice workers reflects the same general pattern as office workers with respect to sex differences in rate. The ratio for all diagnoses is identical. The older group of nonoffice workers shows a tendency for a smaller female to male ratio than for office workers. This is most marked for nonrespiratory-nondigestive diseases where the female rate is lower than the male rate.

Frequency of disabilities according to marital status.—Mortality rates have been observed to vary markedly with marital status, showing for both sexes a much higher rate for single than for married persons. For example, when deaths in Canada and in New York State were placed on an age-specific basis an excess in mortality rate among the single was found for all groups, except females under 25 years of

age who had a higher rate for the married (*10*, *11*). The latter may have been influenced by the hazards of child bearing among young women and the former by the operation of a selective process involving the failure to marry of persons who have serious physical defects. It has not been ascertained whether the mortality rate for single persons would remain higher were such factors made specific as physical rating, occupation, socio-economic status, and environment. An earlier study (*12*) showed, among other things, that for a group of female industrial employees the frequency rate of sickness and non-industrial injuries was greater for married than for single women, the reverse of the relationship usually found for marital status according to mortality rates. For this earlier group, the equivalent of 13,700 women under observation for one year, the frequency of disabilities lasting 7 working days or longer was 72 percent greater for ages under 25 years, and 35 percent greater for 25–44 years, among the married than among the single employees.

The present report is the first of this series in which it was practicable to present information relating to the frequency and severity of disability according to marital status. Only two groups, those married all or most of the time and those single all or most of the time, were considered. Persons who were widowed, divorced, separated, or of unknown marital status, constituting less than 4 percent of the membership, were excluded from all tables.

The frequency of disabilities is considered by specific age groups in the following table:

Marital status	Age in years as of July 1, 1932			
	Under 25	25–34	35–44	45 and over
	Annual number of cases per 1,000 white males			
Single	57.3	52.3	49.8	68.1
Married	53.1	50.3	52.0	77.4
	Annual number of cases per 1,000 white females			
Single	82.7	91.7	82.0	84.8
Married	71.2	90.1	102.8	93.5

The same trend is observed for both sexes, namely, the two age groups under 35 years show a higher rate for single than married persons, while the two age groups 35 years and over show the reverse. Furthermore, the female rate for the single as well as the married is consistently on a higher level than the corresponding male rate.

In table 8 the frequency rates for married and single persons are shown according to broad diagnosis groups. Emphasis should be placed on the age group under 35 years as the rates for ages 35 years and over are based on a membership in which there is a larger per-

centage of older persons among the married than the single. For under 35 years of age both males and females show an excess in the single rate as compared with the married rate for each broad diagnosis group with the exception of respiratory diseases among males. For all sickness and nonindustrial injuries the rate for single persons is 7 percent greater for males and 9 percent greater for females. In each of the 3 diagnosis groups classified under "sickness" the difference between the rates for married and single persons is comparatively slight among females, while among males there is greater variation. Female employees are much more homogeneous with respect to occupation than male employees in mail order stores which may be one factor influencing the more uniform rate among females.

TABLE 8.—*Frequency of sickness and nonindustrial injuries causing disability lasting 8 calendar days or longer for broad diagnosis groups by age, under 35 years and 35 years and over, for married and single employees, by sex, white employees in mail order stores, 1930–34, inclusive*

Marital status [1]	All sickness and nonindustrial injuries [2]		Nonindustrial injuries		Sickness					
					Respiratory diseases		Digestive diseases		Nonrespiratory-nondigestive diseases	
	Under 35 years	35 years and over	Under 35 years	35 years and over	Under 35 years	35 years and over	Under 35 years	35 years and over	Under 35 years	35 years and over
	Annual number of cases per 1,000 males									
Single	54.8	56.0	7.4	*5.5*	18.4	29.7	12.9	*2.2*	11.3	17.6
Married	51.1	65.3	5.8	7.8	21.8	25.3	11.5	7.2	8.0	19.7
Ratio: single to married	1.07	.86	1.28	.42	.84	1.17	1.12	.31	1.41	.89
	Annual number of cases per 1,000 females									
Single	88.2	82.5	4.7	*2.6*	46.9	43.9	14.3	10.5	17.6	19.3
Married	81.2	99.1	3.3	*2.7*	43.7	44.7	13.5	16.1	16.0	27.7
Ratio: single to married	1.09	.83	1.42	.96	1.07	.98	1.06	.65	1.10	.70
	Ratio: female to male									
Single	1.61	1.47	.64	.79	2.55	1.48	1.11	4.77	1.56	1.10
Married	1.59	1.52	.57	.35	2.00	1.77	1.17	2.24	2.00	1.41

[1] Does not include widowed, divorced, separated, or unknown cases.
[2] Includes a negligible number of cases of ill-defined or unknown diagnosis.

NOTES.—See footnote 2, table 4.
Italicized rates are based on less than 5 cases.
Number of person-years of membership: Males, single under 35 years of age 2,555.2, 35 years of age and over 910.3; married under 35 years of age 2,252.5, 35 years of age and over 3,597.4. Females, single under 35 years of age 7,255.2, 35 years of age and over 1,139.5; married under 35 years of age 4,800.2, 35 years of age and over 1,119.7.

Among persons 35 years of age and over there is an excess in the married rate (probably more apparent than real) for both sexes and all diagnosis groups except respiratory diseases among males. The

diagnosis group having the most excessive married rate is digestive diseases for both sexes.

The ratio of the female rate to the male rate among persons under 35 years of age is not greatly different by marital status. For all diagnosis groups the excess in the female rate is 61 percent for single and 59 percent for married persons. Respiratory diseases and nonrespiratory-nondigestive diseases for either marital status in the younger age group show an excess in rate for females of more than 50 percent; for digestive diseases among the married and the single the female excess is less than 18 percent, and for nonindustrial injuries the rate is favorable for females.

Additional comparisons are provided between the rates for married and single persons when the factor of duration in calendar days is added to the calculations. The following table shows by age group and sex the annual number of days of disability per person and the average number of days per case according to marital status.

Marital status and sex	Annual number of days of disability per person		Average number of days per case		Number of person-years of membership	
	Under 35 years	35 years and over	Under 35 years	35 years and over	Under 35 years	35 years and over
Single males	1.41	1.39	25.8	24.7	2,555.2	910.3
Married males	1.35	1.98	26.4	30.4	2,252.5	3,597.4
Single females	2.51	2.68	28.4	32.4	7,255.2	1,139.5
Married females	2.05	3.13	25.3	31.6	4,800.2	1,119.7

From the above table it appears that among males under 35 years there is no significant difference in number of days per person or per case. In general, for the younger age group single persons show slightly higher rates while for the older age group married persons show higher rates. There is very little difference in the average number of days per case either according to marital status or sex. Single males 35 years and over have the shortest case (24.7), on the average, and single females the longest case (32.4).

If frequency rates are calculated for office workers under 35 years of age, thus limiting in some degree the influence of occupation and age, it will be found that the already small difference between the rates for married and single females becomes even smaller, while the corresponding rates for males become slightly farther apart.

SUMMARY

This study of sickness and nonindustrial injuries causing disability lasting 8 calendar days or longer among white workers in mail order stores shows that the annual number of cases per 1,000 was 63.4 among males and 90.0 among females, while the annual number of days of disability per person was 1.63 and 2.49, respectively. The

average number of days per case was 27.8 for males and 28.7 for females.

When the frequency of disabilities among office workers was compared with all other workers in mail order stores it was found that under 35 years of age, office workers had the higher rate regardless of sex. The excess was most pronounced for nonindustrial injuries and digestive diseases.

The frequency rate among female office workers under 35 years of age, when compared with the rate for males in the same group, yielded an excess which was largely due to respiratory diseases and to a lesser extent nonrespiratory-nondigestive diseases. Digestive diseases were nearly the same for both sexes, and nonindustrial injuries were decidedly less frequent among females.

Frequency rates by marital status showed an excess for single persons in the younger age groups and an excess for married persons in the older age groups. When rates specific for age group, sex, and occupation were compared the difference between the rates for married and single persons did not appear to be significant. The commonly observed higher mortality rate for single persons is not so evident with respect to morbidity.

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(*11*) Marriage and long life. Stat. Bull., Metropolitan Life Insurance Company, **18**: 7–10 (February 1937). P. 9.
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COURT DECISION ON PUBLIC HEALTH

Compensation for typhoid fever under workmen's compensation act denied.—(Idaho Supreme Court; *Hoffman et ux.* v. *Consumers Water Co. et al.*, 99 P.2d 919; decided February 23, 1940.) In a proceeding under the Idaho Workmen's Compensation Act it was sought to recover compensation for the death of an employee from typhoid fever. It appeared that the deceased had been employed in cleaning an open irrigation ditch. At the time of the contraction of the disease by the employee the ditch contained muddy pools of waste water in which were dead animals and waste matter. The physicians attending the deceased employee were of the opinion that "the source of the infection which produced the disease came from the ditch" where the deceased worked and their testimony was not contradicted. The industrial accident board denied compensation and the claimants appealed. The question presented to the supreme court was whether the typhoid fever from which the deceased died was an accidental injury incurred in the course of and arising out of his employment. The view taken by the appellate court was that compensation had to be denied as there was no proof of either an accident or an injury resulting from an accident within the meaning of the compensation law. The court said that there was "no evidence whatever the deceased was conscious of mishap, hazard, fortuitous occurrence, or misadventure from or by reason of which he sustained an injury"; nor was there "evidence of an accident resulting in an injury to the deceased which would bring the case at bar within" certain cited cases.

DEATHS DURING WEEK ENDED JUNE 15, 1940

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

	Week ended June 15, 1940	Corresponding week, 1939
Data from 88 large cities of the United States:		
Total deaths	7,956	7,602
Average for 3 prior years	7,623	
Total deaths, first 24 weeks of year	216,208	214,530
Deaths under 1 year of age	520	475
Average for 3 prior years	475	
Deaths under 1 year of age, first 24 weeks of year	12,215	12,599
Data from industrial insurance companies:		
Policies in force	65,298,017	67,194,608
Number of death claims	12,063	10,156
Death claims per 1,000 policies in force, annual rate	9.7	7.9
Death claims per 1,000 policies, first 24 weeks of year, annual rate	10.3	11.3

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 JUNE 22, 1940

Summary

For the week ended June 22 the incidence of each of the nine communicable diseases included in the weekly telegraphic State reports was below the 5-year (1935–39) median. As compared with the preceding week, slight increases are recorded for diphtheria, poliomyelitis, and typhoid fever, while only measles and scarlet fever are above the figures for the corresponding week last year.

As compared with the preceding week, the number of cases of poliomyelitis increased from 42 to 51, with 15 cases in California (11 last week), 9 cases in Washington State (17 last week), 5 cases in Michigan (none last week), and 3 cases in Texas (none last week). The other cases were scattered, with only 2 States reporting as many as 2 cases.

Typhoid fever increased from 154 cases for the preceding week to 209 cases, the largest numbers being reported from Texas (28), Louisiana (23), Georgia (17), and Missouri (16).

The incidence of smallpox decreased from 78 to 40 cases, 14 of which were reported in Illinois, the same number as reported last week.

Of 24 cases of Rocky Mountain spotted fever, 15 occurred in eastern States and 9 in the northwestern States. Of 21 cases of endemic typhus fever, 7 cases were reported in Georgia, 5 in Texas, and 3 each in Alabama and Louisiana. One case of tularaemia was reported in North Carolina.

For the current week the Bureau of the Census reports 7,646 deaths in 88 large cities, as compared with 7,956 for the preceding week and with a 3-year (1937–39) average of 7,527 for the corresponding week.

Telegraphic morbidity reports from State health officers for the week ended June 22, 1940, and comparison with corresponding week of 1939 and 5-year median

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

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median, 1935–39	Week ended—		Median, 1935–39	Week ended—		Median, 1935–39	Week ended—		Median, 1935–39
	June 22, 1940	June 24, 1939		June 22, 1940	June 24, 1939		June 22, 1940	June 24, 1939		June 22, 1940	June 24, 1939	
NEW ENG.												
Maine	0	1	1	6	-------	-------	317	143	143	0	0	0
New Hampshire	0	0	0	-------	-------	-------	18	22	9	0	0	0
Vermont	0	0	0	-------	-------	-------	6	194	97	0	0	0
Massachusetts	3	1	2	-------	-------	-------	1,164	711	521	0	1	1
Rhode Island	1	2	1	-------	-------	-------	118	87	43	0	0	0
Connecticut	1	1	3	1	3	-------	13	348	107	0	0	0
MID. ATL.												
New York	9	19	30	[1] 7	[1] 4	[1] 4	832	1,146	1,985	0	2	7
New Jersey	8	8	8	1	6	3	933	39	647	0	0	1
Pennsylvania [2]	7	15	17	-------	-------	-------	463	189	778	4	7	7
E. NO. CEN.												
Ohio	16	4	17	11	8	8	40	29	419	1	0	4
Indiana	0	4	6	2	1	3	12	9	66	3	1	1
Illinois [2]	21	16	42	2	15	13	217	22	422	1	3	4
Michigan [3]	4	8	8	8	1	1	508	256	288	0	1	2
Wisconsin	4	0	3	9	13	15	954	400	400	0	0	1
W. NO. CEN.												
Minnesota	0	2	2	-------	3	1	65	91	103	0	1	1
Iowa [2]	10	2	3	-------	5	-------	141	84	41	1	1	0
Missouri [2 4]	1	7	12	2	-------	23	16	8	26	0	0	0
North Dakota	1	2	2	-------	17	2	4	10	10	0	0	0
South Dakota	0	0	1	-------	1	-------	3	45	2	0	1	0
Nebraska	1	1	2	-------	-------	-------	17	52	50	0	0	0
Kansas [4]	4	3	5	-------	4	4	225	54	54	0	0	0
SO. ATL.												
Delaware	0	0	0	-------	-------	-------	2	9	9	0	0	0
Maryland [2 3]	1	1	4	2	5	1	1	79	93	0	2	2
Dist. of Col	0	1	6	-------	1	-------	3	96	43	0	0	1
Virginia [3]	5	12	10	22	17	-------	138	247	167	3	3	3
West Virginia [3]	3	4	4	3	5	8	20	11	43	1	0	1
North Carolina	4	9	10	-------	-------	-------	84	192	192	0	0	3
South Carolina	6	5	4	110	108	52	18	8	21	0	1	1
Georgia [4]	2	8	6	2	13	-------	53	42	0	0	1	0
Florida	1	4	4	-------	4	1	32	45	7	0	0	1
E. SO. CEN.												
Kentucky	4	2	3	12	6	4	102	6	63	0	0	3
Tennessee [2 4]	0	1	3	9	10	13	50	48	44	0	0	1
Alabama [4]	7	3	3	1	46	6	72	47	36	2	2	2
Mississippi [3]	1	0	3	-------	-------	-------	-------	-------	-------	1	1	1
W. SO. CEN.												
Arkansas	6	2	1	10	9	4	17	11	11	1	0	0
Louisiana [4]	3	10	12	19	5	9	2	23	9	1	0	1
Oklahoma	1	0	3	6	2	15	10	60	20	0	1	1
Texas [4]	20	9	22	80	51	66	379	174	158	1	0	2
MOUNTAIN												
Montana [2]	1	1	0	-------	9	2	49	72	55	0	0	0
Idaho [2 5]	0	0	0	-------	-------	1	9	35	18	1	0	0
Wyoming [2]	0	1	0	2	-------	-------	8	40	5	0	0	0
Colorado [5]	15	10	5	1	3	-------	44	69	69	0	0	0
New Mexico	1	5	3	-------	-------	-------	62	7	13	0	0	0
Arizona	2	1	2	21	31	17	43	12	12	1	0	0
Utah [3]	3	0	0	-------	-------	-------	204	81	65	0	0	0
PACIFIC												
Washington [3]	2	0	1	-------	-------	-------	141	849	178	0	0	0
Oregon [2]	8	0	1	-------	11	8	127	85	34	0	0	0
California	15	22	22	56	20	20	174	1,038	928	0	2	4
Total	202	207	336	405	437	437	7,910	7,325	8,288	22	31	73
25 weeks	7,629	9,980	11,940	166,266	149,068	138,936	201,321	329,389	329,389	925	1,139	3,546

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended June 22, 1940 and comparison with corresponding week of 1939 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typohid and paratyphoid fever		
	Week ended		Median, 1935–39	Week ended		Median, 1935–39	Week ended		Median, 1935–39	Week ended		Median, 1935–39
	June 22, 1940	June 24, 1939		June 22, 1940	June 24, 1939		June 22, 1940	June 24, 1939		June 22, 1940	June 24, 1939	
NEW ENG.												
Maine	0	0	0	7	4	13	0	0	0	2	0	1
New Hampshire	0	0	0	1	5	7	0	0	0	0	0	0
Vermont	0	0	0	3	2	5	0	0	0	1	0	0
Massachusetts	1	1	1	81	97	152	0	0	0	1	1	2
Rhode Island	0	0	0	0	6	14	0	0	0	3	1	0
Connecticut	0	0	0	36	25	45	0	0	0	2	1	1
MID. ATL.												
New York	0	1	1	328	217	350	0	0	0	7	10	10
New Jersey	0	0	0	161	70	70	0	0	0	0	2	3
Pennsylvania [2]	0	1	0	163	174	353	0	0	0	8	7	9
E. NO. CEN.												
Ohio	1	0	2	117	50	92	0	6	0	5	4	6
Indiana	1	1	1	23	41	41	3	10	6	2	6	4
Illinois [2]	1	2	1	317	174	247	14	5	8	4	2	9
Michigan [3]	5	2	1	148	208	283	1	2	1	3	1	2
Wisconsin	0	0	0	67	73	143	0	0	4	2	1	1
W. NO. CEN.												
Minnesota	1	1	0	26	19	58	1	8	8	0	0	0
Iowa [2]	1	0	0	21	23	55	2	3	17	2	2	2
Missouri [2 4]	1	0	0	11	25	25	0	2	2	16	6	6
North Dakota	0	0	0	12	6	29	0	0	1	0	0	1
South Dakota	0	0	0	7	4	6	1	0	7	0	0	0
Nebraska	1	1	0	11	13	13	1	5	8	1	0	0
Kansas [4]	0	0	0	16	33	33	0	1	4	3	3	3
SO. ATL.												
Delaware	0	0	0	4	1	1	0	0	0	1	0	0
Maryland [2 3]	1	0	0	19	9	36	0	0	0	1	0	4
Dist. of Col	1	0	0	6	5	7	0	0	0	1	0	0
Virginia [2]	2	2	2	5	11	12	0	0	0	3	19	10
West Virginia [2]	1	0	0	15	8	22	0	1	1	3	12	5
North Carolina	1	3	3	9	16	13	0	0	1	5	11	11
South Carolina	0	30	1	3	1	1	0	0	0	4	11	26
Georgia [4]	1	3	1	6	2	8	0	0	0	17	35	35
Florida	0	1	1	1	10	3	0	0	0	2	2	2
E. SO. CEN.												
Kentucky	2	0	1	24	9	15	0	0	0	7	11	11
Tennessee [2 4]	0	2	1	23	14	10	0	8	0	5	10	17
Alabama [4]	0	2	5	9	14	3	1	1	0	9	8	13
Mississippi [3]	0	0	0	4	4	4	1	0	0	2	3	11
W. SO. CEN.												
Arkansas	0	3	1	4	6	6	4	4	3	6	9	15
Louisiana [4]	1	0	2	5	5	5	0	0	0	23	22	21
Oklahoma	1	1	1	8	7	10	0	8	3	5	8	10
Texas [4]	3	3	1	18	15	31	5	0	2	28	24	24
MOUNTAIN												
Montana [2]	0	0	0	5	6	13	0	1	3	1	2	2
Idaho [2 5]	0	0	0	6	2	2	0	0	0	2	0	1
Wyoming [2]	0	0	0	3	2	3	0	1	1	0	0	0
Colorado [6]	0	3	0	17	20	20	3	3	1	2	6	2
New Mexico	0	0	0	0	4	9	0	1	1	1	1	2
Arizona	0	6	1	3	1	5	0	0	0	4	1	2
Utah [3]	0	0	0	2	5	18	0	0	0	0	1	1
PACIFIC												
Washington [2]	9	0	0	29	19	25	0	0	1	2	18	1
Oregon [2]	0	0	0	6	6	23	2	10	4	2	0	1
California	15	14	9	75	107	110	1	12	7	11	4	5
Total	51	83	82	1,865	1,578	2,937	40	92	144	209	255	301
25 weeks	695	713	657	111,454	109,521	155,134	1,725	8,164	7,219	2,451	3,498	3,498

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended June 22, 1940, and comparison with corresponding week of 1939 and 5-year median—Con.

Division and State	Whooping cough	
	Week ended	
	June 22, 1940	June 24, 1939
NEW ENG.		
Maine	13	73
New Hampshire	10	18
Vermont	15	25
Massachusetts	116	144
Rhode Island	5	41
Connecticut	54	54
MID. ATL.		
New York	300	362
New Jersey	94	273
Pennsylvania [2]	301	536
E. NO. CEN.		
Ohio	204	109
Indiana	24	75
Illinois [2]	93	310
Michigan [3]	207	162
Wisconsin	92	194
W. NO. CEN.		
Minnesota	34	16
Iowa [2]	44	19
Missouri [2 4]	30	28
North Dakota	13	9
South Dakota	1	1
Nebraska	19	25
Kansas [4]	56	36
SO. ATL.		
Delaware	1	9
Maryland [2 3]	148	64
Dist. of Col	4	54
Virginia [2]	52	128
West Virginia [3]	33	12
North Carolina	155	267
South Carolina	8	72
Georgia [4]	20	47
Florida	9	24
E. SO. CEN.		
Kentucky	75	44
Tennessee [2 4]	31	68
Alabama [4]	19	56
Mississippi [3]		
W. SO. CEN.		
Arkansas	31	20
Louisiana [4]	32	37
Oklahoma	34	4
Texas [4]	359	88
MOUNTAIN		
Montana [2]	1	14
Idaho [2 5]	9	1
Wyoming [2]	7	2
Colorado [5]	24	50
New Mexico	17	33
Arizona	11	31
Utah [3]	159	46
PACIFIC		
Washington [2]	63	14
Oregon [2]	31	21
California	368	146
Total	3,426	3,862
25 weeks	80,316	98,028

[1] New York City only.
[2] Rocky Mountain spotted fever, week ended June 22, 1940, 24 cases, as follows: Pennsylvania, 2; Illinois, 4; Iowa, 1; Missouri, 3; Maryland, 1; Virginia, 3; Tennessee, 1; Montana, 1; Idaho, 1; Wyoming, 3; Washington, 1; Oregon, 3.
[3] Period ended earlier than Saturday.
[4] Typhus fever, week ended June 22, 1940, 21 cases, as follows: Missouri, 1; Kansas, 1; Georgia, 7; Tennessee, 1; Alabama, 3; Louisiana, 3; Texas, 5.
[5] Colorado tick fever, week ended June 22, 1940, 8 cases, as follows: Idaho, 1; Colorado, 7.

VENEREAL DISEASES

New Cases Reported for April 1940 [1]

Reports from States

	Syphilis										Gonorrhea		Other venereal diseases	
	Early			Late		Congenital		All syphilis [2]						
	Primary and secondary	Early latent [3]	Rate per 10,000 population	Includes late-latent	Rate per 10,000 population	Number	Rate per 10,000 population	Number	Rate per 10,000 population		Number	Rate per 10,000 population	Number	Rate per 10,000 population
Alabama	260	228	1.67	336	1.15	33	0.11	1,594	5.44		342	1.17	9	0.03
Alaska [4]														
Arizona	33	13	1.10	68	1.63	21	.50	213	5.10		153	3.66	2	.05
Arkansas	143	236	1.83	366	1.76	11	.05	787	3.79		73	.35	6	.03
California	[5] 352	------	.56	1,363	2.18	85	.14	1,920	3.07		1,333	2.13	29	.05
Colorado	78	------	.72	131	1.22	15	.14	224	2.08		75	.70	1	.01
Connecticut	12	18	.17	86	.49	10	.06	166	.95		84	.48	------	------
Delaware	13	12	.95	42	1.60	7	.27	172	6.54		42	1.60	------	------
Dist. of Columbia	------	------	------	------	------	------	------	707	11.12		255	4.01	4	.06
Florida	------	489	2.88	1,016	5.98	48	.28	1,720	10.12		168	.99	22	.13
Georgia	------	1,357	4.36	724	2.33	------	------	2,081	6.68		72	.23	11	.04
Hawaii	11	6	.42	29	.72	4	.10	63	1.56		71	1.76	------	------
Idaho	14	------	.28	[6] 24	.48	------	------	40	.80		21	.42	1	.02
Illinois	119	374	.62	1,255	1.59	79	.10	1,827	2.31		1,287	1.63	22	.03
Indiana	119	250	1.06	621	1.78	56	.16	1,317	3.77		128	.37	3	.01
Iowa [4]														
Kansas	73	40	.61	89	.48	15	.08	292	1.56		116	.62	------	------
Kentucky	78	24	.34	204	.69	22	.07	509	1.72		261	.88	1	.003
Louisiana	342	------	1.60	------	------	3	.01	755	3.52		115	.54	5	.02
Maine	8	------	.09	23	.27	------	------	31	.36		39	.45	2	.02
Maryland	104	30	.80	187	1.11	24	.14	874	5.19		246	1.46	20	.12
Massachusetts	51	------	.12	389	.88	39	.09	479	1.08		368	.83	------	------
Mchigan	106	132	.49	478	.98	31	.06	980	2.01		520	1.07	22	.05
Minnesota	13	23	.13	187	.70	9	.03	233	.87		137	.51	------	------
Mississippi	241	821	5.21	867	4.25	100	.49	5,018	24.60		2,480	12.16	3	.01
Missouri	176	397	1.42	269	.67	33	.08	939	2.33		198	.49	5	.01
Montana	18	------	.33	42	.77	2	.04	65	1.19		28	.51	------	------
Nebraska	18	4	.16	33	.24	4	.03	59	.43		56	.41	1	.01
Nevada	------	6	.59	13	1.27	2	.20	21	2.06		20	1.96	------	------
New Hampshire	------	1	.02	4	.08	3	.06	26	.51		11	.21	------	------
New Jersey	105	156	.60	510	1.17	35	.08	918	2.17		231	.53	------	------
New Mexico	31	2	.78	58	1.37	15	.36	106	2.51		20	.47	1	.02
New York	297	456	.58	2,891	2.22	195	.15	4,037	3.11		1,547	1.19	39	.03
North Carolina	244	840	3.07	788	2.23	82	.23	1,954	5.54		402	1.14	23	.07
North Dakota [4]														
Ohio	208	209	.62	693	1.03	70	.10	1,180	1.75		112	.17	4	.01
Oklahoma	97	285	1.49	471	1.83	33	.13	1,087	4.23		412	1.60	11	.04
Oregon	40	33	.70	110	1.06	6	.06	192	1.85		134	1.29	------	------
Pennsylvania [4]														
Rhode Island	3	2	.07	52	.76	3	.04	67	.98		34	.50	------	------
South Carolina	589	600	6.28	707	3.74	57	.30	1,984	10.49		62	.33	11	.06
South Dakota	15	34	.71	59	.85	8	.12	119	1.72		21	.30	------	------
Tennessee	219	403	2.13	651	2.23	65	.22	1,344	4.60		226	.77	9	.03
Texas	351	438	1.27	966	1.55	87	.14	2,352	3.77		803	1.29	40	.06
Utah	10	9	.36	73	1.40	8	.15	101	1.93		25	.48	------	------
Vermont	5	2	.18	10	.26	------	------	17	.44		7	.18	------	------
Virginia	469	347	2.97	885	3.23	89	.32	1,930	7.04		275	1.00	------	------
Washington	44	71	.69	135	.81	16	.10	283	1.69		317	1.89	------	------
West Virginia	290	134	2.23	229	1.20	71	.37	1,017	5.34		258	1.36	1	.01
Wisconsin	------	9	.03	101	.34	7	.02	117	.40		50	.17	------	------
Wyoming	10	9	.80	14	.59	2	.08	45	1.90		17	.72	------	------
Puerto Rico [4]	------	------	------	------	------	------	------	------	------		------	------	------	------
Virgin Islands [4]	------	------	------	------	------	------	------	------	------		------	------	------	------
Total	5,409	8,500	1.20	18,249	1.57	1,505	.13	41,992	3.60		13,652	1.17	308	.03

See footnotes at end of table.

Reports from cities of 200,000 population or over

	Syphilis										Gonorrhea		Other venereal diseases	
	Early			Late		Congenital		All syphilis						
	Primary and secondary	Early latent	Rate per 10,000 population	Includes late latent	Rate per 10,000 population	Number	Rate per 10,000 population	Number	Rate per 10,000 population		Number	Rate per 10,000 population	Number	Rate per 10,000 population
Akron	9	9	0.65	21	.76	2	0.07	41	1.49		19	0.69	1	0.04
Atlanta	------	195	6.49	32	1.07	------	------	227	7.56		26	.87	1	.03
Baltimore	96	13	1.30	139	1.66	6	.07	532	6.37		156	1.87	19	.23
Birmingham	92	39	4.45	143	4.86	11	.37	322	10.94		58	1.97	------	------
Boston	18	------	.23	23	.29	9	.11	155	1.95		126	1.58	------	------
Buffalo	14	5	.32	84	1.40	5	.08	108	1.80		56	.93	------	------
Chicago	80	225	.83	825	2.25	40	.11	1170	3.19		938	2.56	22	.06
Cincinnati	------	------	------	------	------	------	------	194	4.11		99	2.10	------	------
Cleveland	33	47	.85	130	1.38	14	.15	224	2.37		74	.78	11	.12
Columbus	15	23	1.21	50	1.59	12	.38	100	3.19		37	1.18	------	------
Dallas	53	56	3.59	108	3.55	2	.07	219	7.21		139	4.57	10	.33
Dayton	11	6	.77	40	1.80	------	------	57	2.57		36	1.62	1	.05
Denver	------	------	------	------	------	------	------	122	4.05		60	1.99	------	------
Detroit	37	82	.66	369	2.03	15	.08	503	2.77		251	1.38	16	.09
Houston	35	84	3.32	158	4.41	11	.31	371	10.35		107	2.99	------	------
Indianapolis	17	2	.49	33	.86	3	.08	91	2.36		30	.78	------	------
Jersey City	7	3	.31	21	.65	2	.06	33	1.02		8	.25	------	------
Kansas City [4]	------	------	------	------	------	------	------	------	------		------	------	------	------
Los Angeles [4]	------	------	------	------	------	------	------	------	------		------	------	------	------
Louisville	18	5	.68	88	2.60	6	.18	158	4.66		57	1.68	------	------
Memphis [4]	------	------	------	------	------	------	------	------	------		------	------	------	------
Milwaukee	------	3	.05	61	.97	------	------	64	1.02		17	.27	17	.27
Minneapolis	7	7	.28	43	.86	2	.04	59	1.18		33	.66	------	------
Newark	14	12	.57	159	3.50	7	.15	192	4.23		71	1.56	------	------
New Orleans [4]	------	------	------	------	------	------	------	------	------		------	------	------	------
New York	297	360	.88	1,969	2.63	117	.16	2,928	3.91		1,231	1.64	39	.05
Oakland	------	4	.13	35	1.12	1	.03	40	1.28		17	.54	------	------
Omaha	8	2	.45	9	.40	1	.04	20	.89		11	.49	1	.04
Philadelphia [4]	------	------	------	------	------	------	------	------	------		------	------	------	------
Pittsburgh	------	------	------	------	------	------	------	427	6.06		13	.18	------	------
Portland [4]	------	------	------	------	------	------	------	------	------		------	------	------	------
Providence	1	1	.08	36	1.39	1	.04	42	1.62		19	.73	------	------
Rochester	3	------	.09	17	.50	------	------	20	.58		44	1.29	------	------
St. Louis	37	284	3.81	447	5.30	27	.32	795	9.43		181	2.15	7	.08
St. Paul	------	------	------	------	------	------	------	41	1.43		23	.80	------	------
San Antonio	27	27	2.06	131	5.01	4	.15	179	6.84		56	2.14	4	.15
San Francisco	51	------	.74	185	2.68	10	.15	246	3.57		254	3.69	10	.15
Seattle	18	15	.85	81	2.09	6	.15	125	3.23		136	3.51	1	.03
Syracuse	------	------	------	65	2.88	7	.31	72	3.19		6	.27	------	------
Toledo	3	4	.23	51	1.64	3	.10	61	1.96		20	.64	------	------
Washington	------	------	------	------	------	------	------	707	11.12		255	4.01	4	.06
Total	1,001	1,513	1.01	5,553	2.23	324	.13	10,645	3.90		4,664	1.71	164	.08

[1] Figures preliminary and subject to correction.
[2] Includes "not stated" diagnosis.
[3] Duration of infection under 4 years.
[4] No report for current month.
[5] Includes early latent of less than 1 years' duration.
[6] Includes early latent, late, and late latent.

WEEKLY REPORTS FROM CITIES

City reports for week ended June 8, 1940

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Data for 90 cities:											
5-year average	128	46	23	4,466	424	1,452	16	380	34	1,202	----
Current week [1]	57	62	23	3,927	285	1,258	0	375	28	1,030	----
Maine:											
Portland	0	----	0	65	3	1	0	1	0	1	34
New Hampshire:											
Concord	0	----	0	0	0	0	0	0	0	0	9
Nashua	0	----	0	0	0	0	0	0	0	0	10
Vermont:											
Barre	----	----	----	----	----	----	----	----	----	----	----
Burlington	0	----	0	0	0	0	0	0	0	0	11
Rutland	0	----	0	0	1	0	0	0	0	0	9
Massachusetts:											
Boston	0	----	1	312	10	42	0	8	0	61	198
Fall River	0	----	0	104	1	2	0	2	0	13	25
Springfield	0	----	0	4	0	9	0	0	0	11	41
Worcester	3	----	0	220	4	2	0	1	0	4	37
Rhode Island:											
Pawtucket	0	----	0	1	0	0	0	0	0	2	15
Providence	1	----	0	152	0	4	0	3	0	4	61
Connecticut:											
Bridgeport	0	----	0	2	0	1	0	1	0	2	32
Hartford	0	----	0	2	0	10	0	0	0	1	39
New Haven	0	1	0	0	0	3	0	1	1	3	45
New York:											
Buffalo	0	----	0	3	5	14	0	9	0	8	117
New York	17	9	0	484	62	323	0	85	5	75	1,696
Rochester	0	1	0	9	1	12	0	0	1	7	65
Syracuse	0	----	0	0	0	2	0	1	0	3	47
New Jersey:											
Camden	0	----	0	4	3	4	0	0	0	0	20
Newark	0	3	1	612	4	35	0	5	0	14	115
Trenton	0	----	0	0	2	9	0	3	0	5	34
Pennsylvania:											
Philadelphia	3	4	2	206	15	71	0	25	2	31	446
Pittsburgh	1	3	1	3	6	21	0	5	0	26	181
Reading	0	----	0	0	0	0	0	1	0	21	24
Scranton	0	----	----	0	----	1	0	----	0	0	----
Ohio:											
Cincinnati	2	----	0	8	1	13	0	7	0	14	128
Cleveland	0	10	0	13	6	44	0	4	1	55	178
Columbus	2	----	0	2	4	10	0	4	0	15	90
Toledo	0	----	0	4	6	22	0	4	1	12	70
Indiana:											
Anderson	0	----	0	0	0	0	0	0	1	0	8
Fort Wayne	0	----	0	2	1	3	0	0	0	5	26
Indianapolis	1	----	1	7	14	5	0	1	4	5	110
Muncie	0	----	0	0	0	0	2	0	0	3	15
South Bend	0	----	0	0	2	0	0	1	0	2	29
Terre Haute	0	----	1	0	0	1	0	1	0	5	21
Illinois:											
Alton	0	----	0	0	1	0	0	0	0	1	5
Chicago	7	6	1	120	21	372	0	51	0	39	744
Elgin	0	----	0	0	0	0	0	0	0	0	16
Moline	0	----	0	9	0	0	0	0	0	0	14
Springfield	0	----	2	0	3	1	0	0	0	2	32
Michigan:											
Detroit	1	1	2	379	8	74	0	14	3	123	267
Flint	0	----	0	4	5	6	0	0	0	4	37
Grand Rapids	0	----	1	17	4	10	0	0	0	15	31
Wisconsin:											
Kenosha	0	----	0	43	0	0	0	0	0	0	14
Madison	0	----	0	35	0	2	0	0	0	6	13
Milwaukee	0	----	0	376	3	17	0	1	0	5	98
Racine	0	----	0	5	0	0	0	0	0	1	15
Superior	0	----	0	38	0	0	0	0	0	2	9

[1] Figures for Barre estimated; report not received.

City reports for week ended June 8, 1940—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Minnesota:											
Duluth	0	------	0	2	1	0	0	0	1	0	19
Minneapolis	1	------	0	0	9	20	0	0	0	11	115
St. Paul	0	------	0	0	1	4	0	2	0	9	56
Iowa:											
Cedar Rapids	0	------	--------	18	-------	0	0	-------	0	1	--------
Des Moines	0	------	0	9	0	0	0	0	0	0	30
Sioux City	0	------	--------	0	-------	1	0	-------	0	0	--------
Waterloo	1	------	--------	4	-------	0	0	-------	0	1	--------
Missouri:											
Kansas City	1	------	0	4	0	7	0	4	0	6	94
St. Joseph	0	------	0	0	3	1	0	0	0	0	22
St. Louis	0	1	1	0	8	17	0	3	1	13	224
North Dakota:											
Fargo	0	------	1	0	2	0	0	0	0	0	18
Grand Forks	0	------	--------	0	-------	0	0	-------	0	1	--------
Minot	0	------	0	0	0	0	0	0	0	0	4
South Dakota:											
Aberdeen	0	------	--------	0	-------	0	0	-------	0	1	--------
Sioux Falls	0	------	0	0	0	2	0	0	0	0	8
Nebraska:											
Lincoln	0	------	--------	1	-------	3	0	-------	0	2	--------
Omaha	0	------	0	13	2	4	0	0	1	2	57
Kansas:											
Lawrence	0	------	0	1	1	0	0	0	0	3	7
Topeka	0	1	0	22	0	2	0	0	0	3	19
Wichita	0	------	0	1	3	1	0	1	0	5	26
Delaware:											
Wilmington	0	------	0	0	2	2	0	0	0	2	26
Maryland:											
Baltimore	1	2	2	1	5	9	0	19	0	95	231
Cumberland	0	------	0	0	0	0	0	0	0	0	10
Frederick	0	------	0	0	0	0	0	0	0	0	3
Dist. of Columbia:											
Washington	3	2	1	2	9	21	0	8	0	5	149
Virginia:											
Lynchburg	0	------	0	0	0	1	0	0	1	12	7
Norfolk	0	5	0	15	0	6	0	0	0	2	28
Richmond	0	------	0	2	2	1	0	5	0	3	62
Roanoke	0	------	0	60	0	0	0	0	0	1	20
West Virginia:											
Charleston	0	------	0	0	2	0	0	0	0	0	21
Huntington	0	------	--------	0	-------	1	0	-------	0	0	--------
Wheeling	0	------	0	0	1	0	0	0	0	1	23
North Carolina:											
Gastonia	0	------	--------	0	-------	0	0	-------	0	1	--------
Raleigh	0	------	0	0	0	0	0	0	0	0	8
Wilmington	0	------	0	0	0	0	0	0	0	0	13
Winston-Salem	0	------	0	0	0	0	0	0	0	0	8
South Carolina:											
Charleston	0	6	0	1	0	1	0	1	0	0	18
Florence	0	------	0	0	1	0	0	1	0	0	19
Greenville	0	------	0	1	4	0	0	0	0	4	13
Georgia:											
Atlanta	0	1	2	12	2	2	0	7	0	1	75
Brunswick	0	------	0	0	0	0	0	0	0	0	6
Savannah	0	3	1	0	1	0	0	0	1	1	37
Florida:											
Miami	1	------	0	0	2	2	0	0	1	0	22
Tampa	0	------	0	89	2	0	0	0	0	2	27
Kentucky:											
Ashland	0	------	0	0	0	0	0	0	0	0	4
Covington	0	------	0	14	0	0	0	1	0	0	12
Lexington	0	------	0	39	1	2	0	0	0	7	16
Louisville	0	------	0	17	1	11	0	2	0	42	60
Tennessee:											
Knoxville	0	------	1	7	1	3	0	4	0	0	20
Memphis	0	------	0	35	1	11	0	4	0	9	79
Nashville	0	------	0	8	2	3	0	3	0	10	44
Alabama:											
Birmingham	0	3	1	5	1	2	0	3	1	0	56
Mobile	0	------	1	0	1	0	0	1	0	0	23
Montgomery	1	------	--------	0	-------	1	0	-------	0	5	--------
Arkansas:											
Fort Smith	0	------	--------	0	-------	0	0	-------	0	1	--------
Little Rock	0	------	0	2	0	0	0	1	0	2	--------

City reports for week ended June 8, 1940—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Louisiana:											
New Orleans	0	------	0	0	5	0	0	13	0	0	121
Shreveport	0	------	0	0	4	0	0	1	1	0	27
Oklahoma:											
Oklahoma City	0	------	0	0	1	3	0	0	1	4	40
Tulsa	0	------	0	1	1	1	0	1	0	6	24
Texas:											
Dallas	0	------	0	107	3	0	0	5	0	10	70
Fort Worth	0	------	0	1	1	0	0	1	0	12	39
Galveston	0	------	0	0	3	1	0	0	0	0	19
Houston	2	------	0	4	4	0	0	10	1	10	114
San Antonio	1	------	0	2	3	0	0	5	1	8	81
Montana:											
Billings	0	------	0	0	0	0	0	0	0	0	10
Great Falls	0	------	0	39	0	0	0	1	0	0	10
Helena	0	------	0	1	0	0	0	0	0	0	3
Missoula	0	------	0	0	0	0	0	0	0	0	6
Idaho:											
Boise	0	------	0	2	0	0	0	0	0	0	7
Colorado:											
Colorado Springs	0	------	0	0	0	1	0	0	0	0	9
Denver	4	------	0	19	2	1	0	6	0	0	70
Pueblo	0	------	0	5	0	1	0	0	0	0	14
New Mexico:											
Albuquerque	1	------	0	1	0	2	0	0	0	6	12
Utah:											
Salt Lake City	0	------	0	216	0	0	0	2	0	88	38
Washington:											
Seattle	0	------	0	94	0	3	0	2	2	28	81
Spokane	0	1	1	1	3	0	0	3	0	2	28
Tacoma	1	------	0	7	1	3	0	0	0	0	23
Oregon:											
Portland	1	------	0	25	2	1	0	1	0	15	78
Salem	0	------	------	1	------	0	0	------	0	0	------
California:											
Los Angeles	1	4	0	20	4	12	0	18	0	51	326
Sacramento	4	------	0	0	3	2	0	3	0	34	45
San Francisco	0	------	0	4	3	5	0	9	0	24	167

State and city	Meningococcus meningitis		Poliomyelitis cases	State and city	Meningococcus meningitis		Poliomyelitis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:				Michigan:			
Boston	1	0	0	Detroit	1	0	0
New York:				Maryland:			
Buffalo	1	0	0	Baltimore	1	1	0
New York	2	0	0	Alabama:			
Syracuse	1	0	0	Birmingham	0	1	0
Pennsylvania:				Washington:			
Pittsburgh	1	1	0	Tacoma	0	0	5
Ohio:				California:			
Cleveland	1	0	0	Los Angeles	0	0	7

NOTE.—Information has been received that instead of 10 cases of meningococcus meningitis, 10 cases of whooping cough should have been shown in the Public Health Reports of Feb. 23, p. 340, as having occurred in Seattle, Wash., during the week ended Feb. 3, 1940.

Encephalitis, epidemic or lethargic.—Cases: New York, 1; Rochester, 2; Pittsburgh, 1.

Pellagra.—Cases: Raleigh, 1; Savannah, 1; Birmingham, 1; Los Angeles, 1.

Typhus fever.—Cases: New York, 1; Raleigh, 1; Savannah, 1.

FOREIGN REPORTS

SWEDEN

Notifiable diseases—April 1940.—During the month of April 1940, cases of certain notifiable diseases were reported in Sweden as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	6	Scarlet fever	3,120
Diphtheria	10	Syphilis	25
Dysentery	14	Typhoid fever	2
Gonorrhea	720	Undulant fever	12
Paratyphoid fever	3	Weil's disease	2
Poliomyelitis	14		

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Health, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. 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.

CHOLERA

[C indicates cases; D, deaths]

NOTE.—Since many of the figures in the following tables are from weekly reports, the accumulated totals are for approximate dates.

Place		January-March 1940	April 1940	May 1940—week ended—			
				4	11	18	25
ASIA							
India	C	8,568					
Bassein	C		12	54	30	32	14
Calcutta	C	540	268	62	87	64	94
Cawnpore	C		10				1
Chittagong	C			1		2	1
Madras	C	1					
Porto Novo	C	1					
Rangoon	C	80	1	1	2	1	1
India (French)	C	16					
Indochina (French)	C	436					
Thailand	C	232	3				

PLAGUE

AFRICA							
Belgian Congo	C	8		4			1
British East Africa:							
Kenya	C	6					
Uganda	C	53					
Egypt	C	240	115	14	22	9	[1] 6
Madagascar	C	413					
Morocco.[2]							
Rhodesia, Northern	C	1					
Senegal:							
Dakar	D	[3] 1					
Thies	C			1			
Union of South Africa	C	6	6				

[1] Includes 5 cases of pneumonic plague.
[2] A report dated May 11, 1940, stated that there was an epidemic of bubonic plague in southern Morocco, where several hundred cases had been unofficially reported.
[3] Imported.

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths]

Place		January-March 1940	April 1940	May 1940—week ended— 4	11	18	25
ASIA							
Dutch East Indies: Java and Madura	C	121					
India	C	8,115					
Bassein	C	9	7	1			
Cochin	C	1					
Plague-infected rats		3					
Rangoon	C	[4] 4					
Indochina (French)	C	3					
Thailand:							
Bangkok	C	3					
Bisnulok Province	C	3					
Dhonpuri Province	C	1					
Jayanad Province	C	3					
Kamphaeng Bajr Province	C	29					
Kanchanapuri Province	C	12					
Koan Kaen Province	C	5					
Nagara Svarga Province	C	30					
Noangkhay Province	C	4					
Sukhodaya Province	C	22					
EUROPE							
Portugal: Azores Islands	C	2					
NORTH AMERICA							
United States. (See issues of June 14, p. 1094, and June 21, p. 1138.)							
SOUTH AMERICA							
Argentina:							
Salta Province	C	2					
Santiago del Estero Province	C		6				
Tucuman Province	C		3				
Peru:							
Cajamarca Department	C	9					
Lambayeque Department	C	8					
Libertad Department	C	42					
Lima Department	C	24					
Piura Department	C	6					
OCEANIA							
Hawaii Territory: Plague-infected rats		10	2		1		

[4] Includes 1 imported case.

SMALLPOX

AFRICA							
Algeria	C	1					
Angola	C	20					
Belgian Congo	C	1,004	352	59	6	3	8
British East Africa	C	9					
Dahomey	C	17					
French Guinea	C		13				
Gibraltar	C	[1] 1					
Ivory Coast	C	97	13				
Nigeria	C	959					
Niger Territory	C	302	57		41		
Nyasaland	C	7					
Rhodesia, Southern	C	109	20				
Senegal	C	67	36	28			
Sierra Leone	C	7					
Sudan (Anglo-Egyptian)	C	204	84	30	21	30	14
Sudan (French)	C				1		
Union of South Africa	C	46					
ASIA							
Arabia	C	255					
China	C	372	140	26	44	3	32
Chosen	C	533					

[1] Imported.

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths]

Place		January-March 1940	April 1940	May 1940—week ended— 4	11	18	25
ASIA—continued							
Dutch East Indies—Sabang	C	4					
India	C	49,311					
India (French)	C	5					
India (Portuguese)	C	4					
Indochina (French)	C	710					
Iran	C	142					
Iraq	C	82	31	12		5	5
Japan	C	262		[1] 196			
Straits Settlements	C	1					
Sumatra	C	1					
Thailand	C		5	1			2
EUROPE							
Great Britain	C	2					
Greece	C	16					
Portugal	C	46	3	3	3		
Spain	C	209	29				
Turkey	C	139					
NORTH AMERICA							
Guatemala	C	1					
Mexico	C	43		4			
SOUTH AMERICA							
Bolivia	C	24					
Brazil	C	1					
Colombia	C	539					
Ecuador	C			1			
Venezuela (alastrim)	C	85	16				

[1] For the period Mar. 27 to May 3, 1940.

TYPHUS FEVER

AFRICA							
Algeria	C	567	385		159		118
Belgian Congo	C	1,194	16				
British East Africa	C	1					
Egypt	C	1,708	813		158	139	96
Eritrea	C	40					
Morocco	C	152	64	31	9	12	6
Tunisia	C		247	268			
Union of South Africa	C	74					
ASIA							
China	C	284	462				
Chosen	C	5					
India	C	2	1				
Iran	C	196					
Iraq	C	29	43		2	2	10
Japan	C	1	1				
Palestine	C	20	14	1	3		5
Trans-Jordan	C	13				2	
EUROPE							
Bulgaria	C	48	9	5	16	2	5
Germany	C	24	47				
Greece	C	6	8	3	1	5	1
Hungary	C	36	16	1	1	2	13
Lithuania	C	31					
Rumania	C	868	109	61		32	22
Spain	C	3		3			
Turkey	C	421					
Yugoslavia	C	155	66				
NORTH AMERICA							
Guatemala	C	127	2				
Mexico	C	199	38	1			1
Panama Canal Zone	C	3					

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER—Continued

[C indicates cases; D, deaths]

Place		January–March 1940	April 1940	May 1940—week ended—			
				4	11	18	25
SOUTH AMERICA							
Bolivia	C	165					
Chile	C	30					
Ecuador	C	1	1				
Venezuela	C	4					
OCEANIA							
Australia	C	8	1	1			
Hawaii Territory	C	7	5			1	

YELLOW FEVER

Place							
AFRICA							
Cameroon: Nkongsamba	C	[1] 1					
French Equatorial Africa: Fort Archambault	C	[1] 1					
Gold Coast	C		1				
Ivory Coast	C	1					
Nigeria: Oshogbo	C			[1] 1			
SOUTH AMERICA							
Brazil:							
Espirito Santo State	D	[2] 28					
Rio de Janeiro State	D	[2] 1					
Colombia:							
Antioquia Department—San Luis	D	2					
Caldas Department—							
La Pradera	D	1					
Samana	D	1					
Victoria	D	1					

[1] Suspected.
[2] Jungle type.

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