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SICKNESS ABSENTEEISM AMONG INDUSTRIAL WORKERS, THIRD AND FOURTH QUARTERS OF 1945 [1]

By W. M. GAFAFER, *Principal Statistician, United States Public Health Service*

An analysis is herewith presented of the morbidity experience of approximately 200,000 male workers during the third and fourth quarters of 1945. The basic data, covering disabilities of more than 1 week, are derived from periodic reports from industrial sick benefit associations, company relief departments, and group insurance plans.

THIRD QUARTER, 1945

Table 1 gives average annual frequency rates for the third quarters of 1945 and 1944 according to specific cause of disability. An examination of the rates for the two third-quarter periods reveals (1) a slight increase in the 1945 rate for all causes, (2) relatively stable rates in the 2 years for the groups of respiratory and digestive diseases, and (3) an increase of 8 percent in the 1945 rate for the group of nonrespiratory-nondigestive diseases. Among the specific nonrespiratory-nondigestive causes, only the 1945 rate for diseases of organs of movement except diseases of joints failed to equal or exceed the corresponding rate for 1944.

FOURTH QUARTER, 1945

Average annual frequency rates by cause are shown in table 2 for the fourth quarters of 1945 and 1944. Notable is the 1945 frequency of influenza and grippe, the rate (35.0 absences per 1,000 males) assuming epidemic proportions and contributing half of the total

[1] From Industrial Hygiene Division, Bureau of State Services. The report for second quarter appeared in PUBLIC HEALTH REPORTS, 60: 1179-1181 (Oct. 5, 1945).

respiratory rate recorded for the quarter. Attention is directed also to the increases of 9 and 7 percent, respectively, in the 1945 rates for all causes and for the group of nonrespiratory-nondigestive diseases. The latter increase, while not large, is almost the same as that observed above in the corresponding third-quarter rates.

TABLE 1.—*Average annual number of absences per 1,000 males on account of sickness and nonindustrial injuries disabling for 8 consecutive calendar days or longer, by cause, experience of* MALE *employees in various industries, third quarter of 1945 compared with third quarter of 1944, and first 9 months of 1945 compared with first 9 months of years 1940–44, inclusive* [1]

Cause [2]	Annual number of absences per 1,000 males				
	Third quarter		First 9 months		
	1945	1944	1945	1944	1940–44
Sickness and nonindustrial injuries	120.4	117.4	143.9	140.1	117.7
Nonindustrial injuries (169–195)	12.3	13.5	13.6	11.9	11.9
Sickness	108.1	103.9	130.3	128.2	105.8
Respiratory diseases	29.8	29.9	50.8	57.4	49.1
Tuberculosis of respiratory system (13)	.8	.7	.7	.8	.8
Influenza, grippe (33)	8.5	8.2	17.3	25.7	20.9
Bronchitis, acute and chronic (106)	5.4	6.0	9.2	8.8	7.5
Pneumonia, all forms (107–109)	2.9	2.5	5.4	6.6	6.0
Diseases of pharynx and tonsils (115b, 115c)	4.3	4.9	6.2	6.1	6.0
Other respiratory diseases (104, 105, 110–114)	7.9	7.6	12.0	9.4	7.9
Digestive diseases	21.3	20.7	21.2	19.3	16.7
Diseases of stomach except cancer (117, 118)	8.5	7.3	7.9	6.4	5.0
Diarrhea and enteritis (120)	2.8	3.6	2.7	2.8	2.0
Appendicitis (121)	3.3	4.8	4.0	4.7	4.9
Hernia (122a)	2.8	2.1	2.8	2.0	1.8
Other digestive diseases (115a, 115d, 116, 122b–129)	3.9	2.9	3.8	3.4	3.0
Nonrespiratory-nondigestive diseases	51.2	47.6	52.4	45.8	36.5
Infectious and parasitic diseases (1–12, 14–24, 26–29, 31, 32, 34–44) [3]	2.5	2.1	3.1	2.5	2.5
Rheumatism, acute and chronic (58, 59)	6.4	6.0	7.1	6.1	4.6
Neurasthenia and the like (part of 84d)	3.0	2.6	2.8	2.3	1.4
Neuralgia, neuritis, sciatica (87b)	4.1	2.9	4.0	3.1	2.5
Other diseases of nervous system (80–85, 87, except part of 84d, and 87b)	2.4	2.4	2.3	2.0	1.4
Diseases of heart and arteries, and nephritis (90–99, 102, 130–132)	8.0	7.3	8.6	7.4	5.2
Other diseases of genitourinary system (133–138)	4.2	3.9	3.7	3.6	2.8
Diseases of skin (151–153)	4.0	3.7	3.8	3.5	3.1
Diseases of organs of movement except diseases of joints (156b)	3.4	4.0	3.9	3.8	3.3
All other diseases (45–57, 60–79, 88, 89, 100, 101, 103, 154, 155, 156a, 157, 162)	13.2	12.7	13.1	11.5	9.7
Ill-defined and unknown causes (200)	5.8	5.7	5.9	5.7	3.5
Average number of males	208,867	239,104	218,262	247,409	1,203,290

[1] Industrial injuries and venereal diseases are not included.
[2] Numbers in parentheses are disease title numbers from International List of Causes of Death, 1939.
[3] Exclusive of influenza and grippe, respiratory tuberculosis, and venereal diseases.

THIRD AND FOURTH QUARTERS, 1936–45

Broad cause groups.—Figure 1 presents graphically for the third and fourth quarters of the 10 years 1936–45 the contribution of each of the four broad cause groups to the total frequency of sickness and nonindustrial injuries.

TABLE 2.—*Average annual number of absences per 1,000 males on account of sickness and nonindustrial injuries disabling for 8 consecutive calendar days or longer, by cause, experience of* MALE *employees in various industries, fourth quarter of 1945 compared with fourth quarter of 1944, and year 1945 compared with years 1940–44, inclusive* [1]

Cause [2]	Annual number of absences per 1,000 males				
	Fourth quarter		Year		
	1945	1944	1945	1944	1940–44
Sickness and nonindustrial injuries	157.8	144.3	147.1	140.7	117.8
Nonindustrial injuries (169–195)	12.8	11.7	13.4	11.9	11.9
Sickness	145.0	132.6	133.7	128.8	105.9
Respiratory diseases	70.0	59.9	55.2	57.9	49.8
Tuberculosis of respiratory system (13)	.5	.5	.7	.7	.7
Influenza, grippe (33)	35.0	20.5	21.4	24.5	21.4
Bronchitis, acute and chronic (106)	10.7	13.9	9.6	10.0	7.9
Pneumonia, all forms (107–109)	5.2	5.8	5.3	6.5	5.8
Diseases of pharynx and tonsils (115b, 115c)	4.2	5.5	5.7	5.9	5.7
Other respiratory diseases (104, 105, 110–114)	14.4	13.7	12.5	10.3	8.3
Digestive diseases	18.0	19.4	20.4	19.2	16.5
Diseases of stomach except cancer (117, 118)	6.2	6.8	7.5	6.4	5.1
Diarrhea and enteritis (120)	2.6	2.4	2.7	2.7	1.9
Appendicitis (121)	2.8	4.3	3.7	4.7	4.8
Hernia (122a)	2.5	2.2	2.7	2.0	1.8
Other digestive diseases (115a, 115d, 116, 122b–129)	3.9	3.7	3.8	3.4	2.9
Nonrespiratory-nondigestive diseases	50.2	47.0	51.9	45.8	36.0
Infectious and parasitic diseases (1–12, 14–24, 26–29, 31, 32, 34–44) [3]	2.5	2.2	3.0	2.4	2.3
Rheumatism, acute and chronic (58, 59)	5.9	6.0	6.8	6.1	4.5
Neurasthenia and the like (part of 84d)	2.0	2.1	2.6	2.2	1.4
Neuralgia, neuritis, sciatica (87b)	4.0	3.6	4.0	3.2	2.5
Other diseases of nervous system (80–85, 87, except part of 84d, and 87b)	1.7	2.1	2.2	2.0	1.4
Diseases of heart and arteries, and nephritis (90–99, 102, 130–132)	8.9	8.0	8.7	7.5	5.2
Other diseases of genitourinary system (133–138)	3.5	3.6	3.6	3.6	2.8
Diseases of skin (151–153)	4.0	3.3	3.8	3.5	3.1
Diseases of organs of movement except diseases of joints (156b)	4.1	3.7	3.9	3.7	3.2
All other diseases (45–57, 60–79, 88, 89, 100, 101, 103, 154, 155, 156a, 157, 162)	13.6	12.4	13.3	11.6	9.6
Ill-defined and unknown causes (200)	6.8	6.3	6.2	5.9	3.6
Average number of males	196,472	230,906	212,819	241,206	1,207,351

[1] Industrial injuries and venereal diseases are not included.
[2] Numbers in parentheses are disease title numbers from International List of Causes of Death, 1939.
[3] Exclusive of influenza and grippe, respiratory tuberculosis, and venereal diseases.

The varying total third-quarter frequency reveals an upward trend from 1939 to 1945. The rate for 1945 is 70 percent above the minimum rate recorded for 1939, and 33 percent above the mean rate (90.4 absences per 1,000) for the 10-year period.

The total fourth-quarter rate also tended to increase from 1939 to 1945. The 1945 rate is almost twice the minimum rate for 1939, and over 45 percent above the mean (108.3 absences per 1,000) for the 10 years.

Of interest in figure 1 is the behavior of the third- and fourth-quarter rates for the group of nonrespiratory-nondigestive diseases. Although the rates for each quarter rise steadily from 1938 through 1945, the yearly change from 1938 to 1942 is slight, becoming somewhat more marked from 1942 to 1945. The greatest yearly increase

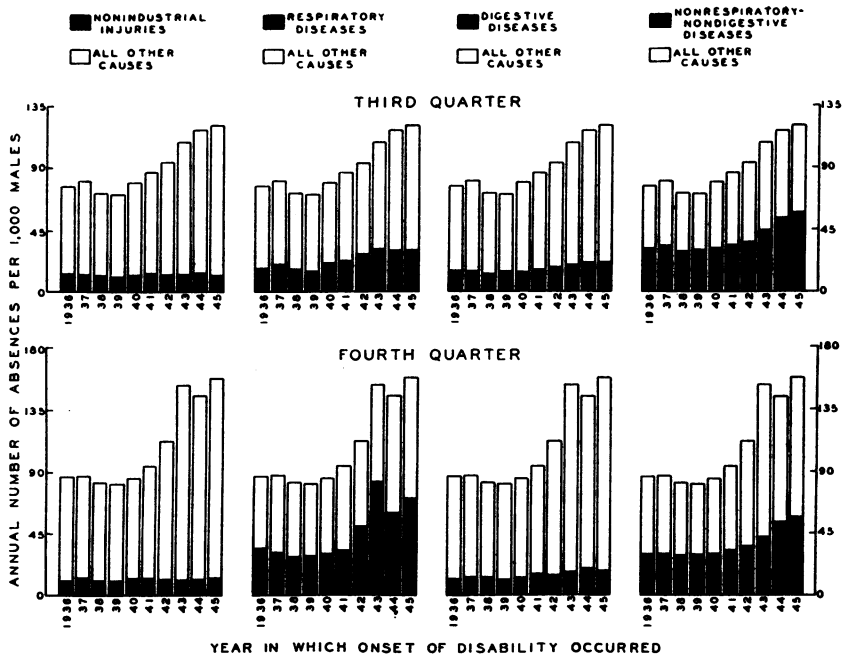

FIGURE 1.—Average annual number of absences per 1,000 males on account of sickness and nonindustrial injuries disabling for 8 consecutive calendar days or longer, by broad cause group; experience of MALE employees in various industries, third and fourth quarters of years 1936–45, inclusive. (Each bar for a particular year represents average annual frequency from all sickness and nonindustrial injuries, and contribution made to that frequency by a particular cause group. Nonrespiratory-nondigestive diseases include "ill-defined and unknown causes.")

recorded for either the third or fourth quarter occurs in these last 3 years and is approximately 25 percent.

Attention is directed also to the fourth-quarter respiratory rates, which reveal frequencies of epidemic magnitude in 1943 and 1945.

Nonrespiratory-nondigestive diseases.—The gradual increase in the third- and fourth-quarter rates for the group of nonrespiratory-nondigestive diseases during the 10-year period under consideration results in rates for 1945 which are well above those recorded for the early years of the decade. Additional information on the cumulative effect of the yearly increases is given in table 3 which presents average annual frequency rates for the third and fourth quarters of the initial and terminal years of the period according to specific nonrespiratory-nondigestive causes.

Table 3 reveals a number of notable relationships which may be briefly summarized as follows:

(1) For each specific cause as well as for the total group of nonrespiratory-nondigestive causes the rates for 1945 are higher than the corresponding rates for 1936, the excesses in the third- and fourth-quarter rates for the group of nonrespiratory-nondigestive diseases being 82 and 90 percent, respectively.

TABLE 3.—*Average annual number of absences per 1,000 males on account of nonrespiratory-nondigestive diseases disabling for 8 consecutive calendar days or longer, experience of* MALE *employees in various industries, third and fourth quarters of 1945 compared with third and fourth quarters of 1936*

Cause	Annual number of absences per 1,000 males					
	Third quarter			Fourth quarter		
	1945	1936	Percentage change 1936 to 1945	1945	1936	Percentage change, 1936 to 1945
Nonrespiratory-nondigestive diseases	57.0	31.4	+82	57.0	30.0	+90
Infectious and parasitic diseases	2.5	1.4	+79	2.5	1.7	+47
Rheumatic diseases [1]	13.9	9.5	+46	14.0	8.7	+61
Diseases of nervous system [2]	5.4	2.1	+157	3.7	2.0	+85
Diseases of heart and arteries, and nephritis	8.0	3.3	+142	8.9	3.4	+162
Other diseases of genitourinary system	4.2	2.2	+91	3.5	2.1	+67
Diseases of skin	4.0	3.8	+5	4.0	3.3	+21
Ill-defined and unknown causes	5.8	3.1	+87	6.8	3.2	+112
All other diseases	13.2	6.0	+120	13.6	5.6	+143

[1] Including rheumatism, acute and chronic; neuralgia, neuritis, and sciatica; and diseases of organs of movement except diseases of joints.
[2] Including neurasthenia and the like; and "other diseases of nervous system."

(2) With the exception of diseases of the skin the excesses in the third- and fourth-quarter rates for 1945 are over 45 percent for each of the specific causes.

(3) Particularly notable are the increases recorded for diseases of the heart and arteries, and nephritis—the 1945 rate for both the third and fourth quarter being approximately two and one-half times the corresponding rate for 1936.

(4) Striking increases in 1945 are also shown in each quarter for diseases of the nervous system, and "all other diseases," the latter group including, among others, such causes as diseases of the eyes and ears, diseases of the veins, high blood pressure, and other diseases of the circulatory system (except diseases of the heart and arteries).

(5) In each of the 2 years the third- and fourth-quarter rates for particular causes are remarkably stable, denoting the general absence of seasonal variation in the rates.

Comment.—In any comparison of rates for 1945 and 1936 reference must be made to the different economic conditions prevailing in the 2 years, and the changes in the character of the labor force under observation. The year 1936 was part of a period of economic depression while the year 1945 was part of a war period. Thus the selection of the industrial population in respect of age, fitness, and many other factors must be taken into consideration. A quantitative evaluation of the effects of many of these factors is difficult. Nevertheless all relevant factors must be borne in mind in any interpretation of the data.

AN EPIDEMIC OF A SEVERE PNEUMONITIS IN THE BAYOU REGION OF LOUISIANA

VII. HISTOPATHOLOGY IN LABORATORY ANIMALS[1]

By G. L. FITE, *Surgeon;* C. L. LARSON, *Passed Assistant Surgeon;* and B. J. OLSON, *Surgeon, United States Public Health Service*

INTRODUCTION

The tissues of laboratory animals infected by the agent of Louisiana pneumonitis (the epidemiological, clinical, pathological, and etiological aspects of which have been described in previous papers of this series (*1*, *2*, *3*, *4*, *5*, *6*) were subjected to histological examination. A majority of the animals were inoculated with suspensions of infected yolk sacs of chicken embryos, a few with suspensions of infected animal tissues, and a moderate number with suspensions of tissues obtained from human cases. A group of 98 animals inoculated with the agent of meningopneumonitis and a group of 108 animals inoculated with strains of psittacosis virus were also studied. The strains of these viruses were those employed in the previously reported studies on the etiology of Louisiana pneumonitis (*4*, *5*, *6*). The route of inoculation and the species of animals inoculated with Louisiana pneumonitis virus are shown in table 1. All tissues were stained with Giemsa stains which are effective in demonstrating elementary bodies.

The lesions produced in animals by inoculation of Louisiana pneumonitis virus varied according to the species of animal used and the route of inoculation employed, but the source of this virus did not influence the type of lesions. Mice, guinea pigs, and cotton rats showed extensive lesions. Lesions were also observed in hamsters and albino rats, but these were of limited extent. Characteristic lesions were not found in the other species of animals studied.

MICE

LESIONS FOLLOWING INTRAPERITONEAL INOCULATION OF VIRUS

Lesions were consistently found in the livers and spleens and were also noted in the other organs of mice which had been inoculated intraperitoneally with the agent of Louisiana pneumonitis. In some mice, a small amount of peritoneal exudate, together with a slight cellular infiltration of the omental tissues, was noted, but these findings were also noted in certain of the other animals studied.

The lesions seen in mice inoculated intraperitoneally with dilute suspensions of infective material were uniformly much less extensive than those seen in mice inoculated with larger doses of virus, but were of the same type.

[1] From the Pathology Laboratory and the Division of Infectious Diseases, National Institute of Health.

TABLE 1.—*Species and number of animals inoculated, by various routes, with Louisiana pneumonitis virus*

Animals inoculated	Method of inoculation				Number of inoculations
	Intraperitoneal	Subcutaneous or intramuscular	Intranasal	Intracerebral	
Mice	129	16	24	17	186
Guinea pigs	49				49
Cotton rats	12			2	14
Albino rats	12			3	15
Muskrats	10		11		21
Hamsters	9			4	13
Deer mice	9				9
Rice rats	4				4
Nutria	5		9		14
Ferrets	2				2
Monkeys			3		3
Total	241	16	47	26	330

TABLE 2.—*Mice showing visceral lesions following intraperitoneal inoculation of the virus of Louisiana pneumonitis, according to dosage and duration of the disease from time of inoculation*

Duration in days	Dose (dilution of infective tissue)			
	1:100		1:10,000	
	Number of mice inoculated	Number of mice with lesions	Number of mice inoculated	Number of mice with lesions
1	8	4		
2	11	8		
3	9	8		
4	7	6	7	4
5	9	8		
6	15	15	8	8
8	5	4		
9			6	3

Liver.—Two intermingling types of lesions were observed in the liver. In one of these types there was early occurrence of sinusoidal fibrin thrombi which subsequently led to necrosis of a few neighboring liver cells. This type of lesion was unusual in mice, and was seen only in extensively involved tissues. The other type, which began with enlargement of Kupffer cells, was common. The Kupffer cells were joined by monocytes and lymphocytes and, later, by polymorphonuclear leucocytes to form small focal lesions scattered throughout the liver. A few necrotic liver cells were included in these foci. Deposition of fibrin was found in all these foci but this did not appear to be the earliest change. These foci began in sinusoids as accumulations of cells which later became necrotic. Elementary bodies were found in mononuclear cells and lying free in necrotic areas of certain of the larger focal lesions, but they were present in only a very small

percentage of the total number of foci. Organization of the lesions manifested by the appearance of fibroblasts and the development of cells into ordinary histiocytes was seen in animals surviving to the eighth day. Occasionally, extremely large foci presented the appearance of abscesses.

Spleen.—Similar focal lesions were regularly found in the spleens of infected mice, and were accompanied by fibrin deposits in the nearby splenic sinuses, as well as by the deposition of much fibrin in the necrotic centers of the foci. In some animals stains for fibrin showed fibrin thrombi which were not accompanied by cellular exudates but these were never extensive. An increase or prominence of the cells of the pulp, and to a less degree of the endothelium of the sinuses was also present in variable degree. Elementary bodies were noted in the inflammatory foci and in mononuclear cells in the centers of malpighian bodies. The amount of cellular degeneration and phagocytosis in the germinal centers of the malpighian bodies was always increased above the normal. Focal necrotic lesions occurred at the margins of malpighian bodies extending into the pulp. The malpighian bodies were rarely involved.

Lung.—In the majority of mice inoculated intraperitoneally no changes occurred in the lungs. About a third of the mice showed small or minute interstitial cellular foci in the lungs which were of the same character as those observed in the liver. Small fibrin thrombi in the capillaries and small blood vessels were present in and about the larger foci. The smaller foci consisted of a collection of a few interstitial mononuclear cells in the alveolar walls, marked swelling of the endothelium of the vessels, and occasionally a few alveolar phagocytes in adjacent alveoli. Larger foci also showed a few polymorphonuclear leucocytes as well as fibrin deposits, but these foci were rarely as prominent as those in the liver and occurred only in animals with severe involvement.

In 13 mice, additional lesions occurred in the lungs and mediastinum. These consisted of proliferation of large mononuclear cells along and in the outer walls of the main pulmonary vessels, both arteries and veins. These were probably the result of extension of infection along the lymphatics of the blood vessels. In the mice showing relatively few lesions, the presence of these large mononuclear cells in the edematous outer vascular coats were the only abnormal finding. In mice showing more extensive involvement there was spread of the infiltrating cells into mediastinal fat lobules and mediastinal lymph nodes. In these necrotic areas with deposit of much fibrin, many polymorphonuclear leucocytes were found. In 2 animals necrotic lesions in contact with the pleural cavities gave rise to fibrinopurulent pleurisy, and in 3 animals a pericarditis resulted from extension from

the mediastinal lesions. The pericarditis was largely localized about the auricular appendages. Elementary bodies were readily demonstrated in the more advanced pulmonary and mediastinal lesions.

Kidney.—The kidneys of infected mice rarely manifested definitive lesions. A few showed rare capillary thrombi in glomeruli, and in two animals cellular foci like those in the liver were observed. Infiltration of mononuclear cells about the renal pelvis was seen occasionally. Acute glomerulonephritis of a nonspecific nature was seen in four mice with severe infections.

Testis.—Small infiltrative cellular foci were seen in 4 of the 29 testes examined. They were few in number and consisted of mononuclear cells in the neighborhood of small vessels plugged by fibrin thrombi.

Brain.—The brains of 20 mice inoculated intraperitoneally with Louisiana pneumonitis virus were examined. Five of these showed lesions which were moderate in one animal and slight in the others. The foci were similar to those seen in the testis and consisted of a few mononuclear cells about small vessels which infrequently contained obstructive fibrin thrombi. Usually the endothelium was prominent, and the walls of the vessels showed only slight degenerative changes consisting of partial chromatolysis of nuclei and granular changes in muscle fibers. Proliferation of glial cells was seen in a few foci but was not consistently present, even though granular degeneration of the ground substance immediately adjacent to the vessel occurred in some of the foci. Small infiltrations of mononuclear cells were found infrequently along vessels in the meninges.

Intestine.—Infiltrations of mononuclear cells in the submucosa were seen in animals with severe peritoneal reactions, but in three animals appeared independent of such a reaction.

Lymph nodes.—The changes in the mesenteric lymph nodes were, for the most part, slight. There was some blocking of the central and peripheral sinuses by phagocytic cells. Elementary bodies were rarely demonstrable in these nodes. Proliferative changes were usually absent. Necrotic foci of the mesenteric nodes were found in only 4 of 36 mice. The mediastinal lymph nodes showed changes in only those animals in which other mediastinal lesions were present. No general lymphoid tissue involvement was noted.

Heart.—Lesions were seen in the auricle of animals with pericarditis resulting from extension of mediastinal foci. In addition to the pericardial changes, there was marked prominence of the endothelium of the auricular appendages in these animals and some infiltration of the auricular walls by mononuclear cells. Foci of perivascular monocytes were rare in the epicardium, and in most cases the heart was normal.

Nature of the infiltrating mononuclear cells.—The nature of the cells which were seen in many of the early lesions, and which may constitute the only reaction, is uncertain. They have large, dark-staining nuclei which have large, indistinctly marked chromatin masses. Bilobed or twin nuclei are not uncommon. The cytoplasm is abundant, but most variable in tinctorial properties when Giemsa stain is used, the cytoplasm varying from a deep azure blue to a pale pink, and being free of granules. The cells have the appearance of immature cells of the lymphoid or monocyte series, and are similar to certain cells seen in animals and man suffering from typhus fever.

LESIONS FOLLOWING SUBCUTANEOUS OR INTRAMUSCULAR INOCULATION OF VIRUS (MICE)

The lesions which developed in the viscera of mice following introduction of virus by subcutaneous or intramuscular inoculation were identical with those which resulted from intraperitoneal inoculation of virus. Five days after inoculation, minimal lesions were present in two animals; moderate ones in two others; but in three mice no lesions developed. Eight days after inoculation, lesions were present in all of nine animals examined. The visceral lesions appear to develop more slowly and to be less extensive following subcutaneous or intramuscular inoculation than following intraperitoneal injection of virus. Of six animals in which the skin from the site of inoculation was examined microscopically, only one showed a small lesion containing a few elementary bodies.

LESIONS FOLLOWING INTRANASAL INOCULATION OF VIRUS (MICE)

The pulmonary lesions following intranasal inoculation of virus differed from those following intraperitoneal inoculation. In the former instance, lesions consisted of scattered patches of lobular pneumonia which were sometimes confluent and occupied most of an entire lobe. The trachea and large bronchi showed no changes even in the presence of extensive pneumonic lesions.

The pneumonic foci appeared grossly as white spherical masses scattered in various lobes, and microscopically consisted of a diffuse, massive fibrinous exudate into alveolar sacs accompanied by cellular exudate. Many alveoli were solidly plugged with coagulum made up of fibrin with occasional cells trapped in the coagulated fluids. The cellular foci were scattered: Some were present in thickened alveolar walls; some in alveoli; and they were most numerous and most recent at the margins of the fibrinous lesion. Bronchi contained within the lesions were patent and were either free of cells or fluid, or contained only a few cells and strands of fibrin. The cells consisted of polymorphonuclear leucocytes, large mononuclear cells, and small

and large lymphocytes. Eosinophiles were absent. Although many cells appeared interstitially in alveolar walls, the appearance was different from that of the usual interstitial pneumonia. Capillaries and small vessels in alveolar walls frequently showed fibrin thrombi.

Extension of the infectious process apparently along perivascular lymphatics, with the production of infiltrations of main pulmonary vessels was seen in three animals.

Five animals were examined 1 day after intranasal inoculation of virus. Edema was noted in the lungs of two mice; the presence of interstitial mononuclear cells was observed in the lungs of one mouse; and no changes were apparent in the lungs of the others.

Two days following intranasal introduction of virus, one animal showed a well-developed pneumonitis, and the lungs of another appeared to be normal.

Four days after intranasal introduction of virus, the lungs of three animals showed extensive pneumonitis; the lungs of two others showed edema, and no lesions were present in the lungs of another.

Six days following intranasal installation of virus, pneumonic areas were present in the lungs of all six animals examined. Two of these mice also had hepatic foci such as were produced by intraperitoneal inoculation of virus.

Fourteen days after intranasal injection of virus, the lungs of one animal appeared normal, while an organizing pneumonia was noted in another mouse.

Elementary bodies in variable numbers were readily demonstrable in pneumonic foci. They were most abundant in animals with infections of 4 days' duration and occurred in mononuclear cells in alveolar septa as well as in alveoli.

LESIONS FOLLOWING INTRACEREBRAL INOCULATION OF VIRUS (MICE)

Lesions were always present in mice which had been inoculated intracerebrally with 0.03-cc. doses of suspensions of infective tissue diluted 10^{-5} in salt solution. Four mice receiving 0.03 cc. of a 10^{-8} dilution of infective tissue, when examined on the twentieth day, showed no lesions, while two mice which received 0.03 cc. of a 10^{-5} dilution of this tissue, killed on the twenty-eighth day following inoculation, showed extensive meningeal lesions. The lesions appeared to reach their height in about 6 days after intracerebral injection of virus. The lesions produced by intracerebral introduction of virus differed markedly from those produced by intraperitoneal inoculation of infective material. Meningitis and direct extensions of lesions of slight degree were present in brain tissues of all animals.

The meningeal reaction was similar to that seen in other tissues, except that deposits of fibrin were much less extensive. The cellular

exudate was not diffusely spread over the cerebral hemispheres and cerebellum of all mice. In less extensive cases, the exudate accumulated in sulci, or over limited areas, with only traces in the cerebellar meninges. There was little tendency for the exudate to accumulate at the base of the brain or along large vessels.

The cells of the exudate consisted largely of two types—the large mononuclear cells previously described, and polymorphonuclear leucocytes. In the slightly involved areas the former predominated. Segmented leucocytes tended to accumulate in foci. The meningeal reaction often appeared to be focal. The lack of extravasation of serous fluid into the meningeal spaces gave the appearance of a "dry" meningitis, the cells being closely packed together and closely applied to the brain surface. Fibrin thrombi in meningeal vessels were not seen. Extension into ventricles was minor and was frequently absent. Elementary bodies were readily demonstrated in the more extensively involved areas. Slight extension of the infectious process from the meninges into the brain tissue along sulci and cortical Virchow-Robin spaces and, frequently, along the hippocampal fissure into the hippocampus and dentate fascia occurred. Extension appeared to follow the blood vessels. Destruction of brain tissue was slight, and indiscriminately affected the various components of the brain tissue, causing disintegration of the ground substance and cells in the involved area. The vessels involved in these extensions into the brain tissue contained fibrin thrombi. Degenerative changes of the walls of these vessels were also present. Elementary bodies were noted within the brain tissue proper in a few instances: in one animal elementary bodies were found in phagocytic cells which resembled oligodendroglia.

GUINEA PIGS

LESIONS FOLLOWING INTRAPERITONEAL INOCULATION OF VIRUS

The lesions produced in guinea pigs following intraperitoneal inoculation of virus differed from those produced in mice infected by this route of inoculation.

Peritoneum.—In mice the peritoneal reaction was slight or absent, but in guinea pigs a peritoneal reaction usually occurred. This consisted of a small or moderate amount of plastic fibrinous exudate in the peritoneal cavity. The exudate was adherent to peritoneal surfaces, especially in the clefts between the lobes of the liver, in the omentum, and around the pancreas and spleen. In some instances only a few tags of fibrin were present. In other instances moderate numbers of leucocytes were present in the fibrinous exudate, and mononuclear cell infiltration of the omental fat was observed. Only

4 out of 47 animals showed more than a moderate amount of peritoneal reaction.

Liver.—In one experiment a series of animals were inoculated intraperitoneally with 0.5 cc. of a 10^{-2} or a 10^{-4} dilution of infective yolk-sac suspension in 0.85-percent salt solution. Tissues for microscopic study were taken from animals that died as a result of infection or were killed at random by ether anesthesia. Tissues from seven guinea pigs were obtained 4 days after inoculation of infective material, from eight animals 6 days after inoculation, and from seven guinea pigs 9 or 10 days after intraperitoneal introduction of virus. The lesions in animals receiving the smaller amount of virus were about as extensive as those receiving the larger amount of infective material. Four days following infection, the livers of three animals showed only minimal lesions and were normal in the other four guinea pigs. The changes noted consisted of rare fibrin thrombi in sinusoids and prominence of Kupffer cells. Six days following infection, seven of eight animals showed well-developed hepatic changes, and at the 9- and 10-day intervals all seven animals studied showed lesions. In another group of nine guinea pigs, the liver in eight had lesions 6 days after administration of an infective amount of virus. Ten days following infection the lesions had a distinctly older appearance. There was beginning organization of cellular exudates and appearance of fibroblasts and histiocytes.

The lesions in the severely infected guinea pigs were striking because of the extent of formation of fibrin thrombi in hepatic sinusoids, often without cellular exudates and because of the formation of very numerous small foci of necrotic liver cells. Some necrotic foci were related to the fibrin thrombi; others were not. A majority of the necrotic liver-cell foci were unaccompanied by a cellular reaction, but leucocytes were present about some of them, producing lesions similar to those observed in the liver of infected mice. The necrotic liver cells showed oxyphilia of the cytoplasm and partial chromatolysis of nuclei. In foci containing leucocytes, total disintegration of liver cells was seen. In some animals, brightly stained oxyphilic cells were widely scattered throughout the liver.

Spleen.—Hyaline fibrin thrombosis of the pulp vessels was the most important change occurring in the spleen. This extended through the entire organ of animals with severe infections and produced a curious fibrin web which appeared to occupy the entire capillary vascular bed of the spleen. There was considerable variation in the extent to which the spleen was involved in individual animals, but fibrinous changes were present to some degree in all animals with lesions. No changes other than the fibrin thrombi were seen in eight guinea pigs. There

were many polymorphonuclear leucocytes throughout the pulp of the spleens of two animals. In addition, there were focal aggregations of segmented leucocytes and mononuclear cells similar to those noted in infected mice and in 10 guinea pigs. No elementary bodies were identified.

Lung.—No lesions were present in the lungs of most of the guinea pigs but small interstitial septal foci of mononuclear cells were encountered in seven animals. A single animal showed numerous septal foci with many capillary thrombi, segmented leucocytes, and slight spilling over of these cells into alveoli.

Kidney.—No typical changes were found in the kidneys of the 31 guinea pigs examined. A single animal showed many small fibrin thrombi in glomerular capillaries, but no other changes.

Lymph nodes.—Slight changes were seen in mesenteric lymph nodes of 8 of 22 animals examined at various stages of infection. These consisted in filling of lymphatic channels with debris and phagocytic cells. They were considered to be similar to the usual changes encountered in mesenteric nodes following bacteria peritonitis or other septic conditions.

Testis.—Three of eight testes examined showed a few small interstitial foci consisting of fibrin clots in small vessels with infiltration of mononuclear cells along the adjacent tubules.

Brain.—The brains of 20 animals inoculated intraperitoneally were examined. Lesions were observed in the brains of 5 guinea pigs. These lesions consisted of small foci of glial cells lying adjacent to blood vessels associated with some granular degeneration of the ground substance in the area. No changes in the blood vessels themselves were seen. In one of the 5 animals exhibiting brain lesions, foci were numerous in the cerebellum and rare elsewhere; in the other 4 only a few foci were seen and these were mainly in the midbrain; in two of these 4 animals there were a few infiltrating mononuclear cells along an occasional vessel in the meninges. The lesions of the brain were indistinguishable from similar foci described in guinea pigs infected with typhus and spotted fever.

No elementary bodies were identified in any of the lesions occurring in guinea pigs. Although errors may have been made in making too fine distinctions here, it is certain that they do not occur in the numbers seen in mice.

COTTON RATS

LESIONS FOLLOWING INTRAPERITONEAL INOCULATION OF VIRUS

Twelve cotton rats (*Sigmodon hispidus*) were inoculated intraperitoneally with suspensions of Louisiana pneumonitis virus and examined histologically 4 to 7 days later. They showed an extremely

heavy, plastic, fibrinous peritonitis, with thick tenacious fibrinous membranes adherent to most of the peritoneal surfaces of the abdominal viscera. Microscopically these membranes were found to include considerable numbers of segmented leucocytes and mononuclear cells, sometimes accumulated in foci. In these areas elementary bodies were abundant and occurred both intracellularly and extracellularly. The intracellular bodies were coccoid in appearance, whereas the extracellular bodies often showed an indistinct bacillary form. They appeared to have been released from necrotic cells and to have undergone rapid degeneration thereafter. In some cases the liver tissue underlying plastic exudates showed superficial areas of necrosis and other degenerative changes.

The mesenteric lymph nodes were little altered, showing no characteristic lesions but contained phagocytes and cellular debris. Elementary bodies were seen in one of five mesenteric nodes examined.

Liver.—Only 2 of the 12 livers examined showed definite changes consisting of small cellular foci originating in sinusoids. There were no fibrin thrombi.

Spleen.—The spleen was normal in three animals, and showed varying degrees of change in nine cotton rats. The spleen from one animal was extensively involved and contained fibrin thrombi and cellular foci, the cells of which contained elementary bodies. The spleen of three of the remaining eight cotton rats showed only trivial changes such as infrequent fibrin deposits and some increase in splenic pulp cells. Even in the other five animals the changes were slight compared to those observed in the spleens of infected mice. The extremely slight involvement of the liver and spleen present in cotton rats was in sharp contrast to the copious peritoneal exudate.

Lung.—The lungs of 1 cotton rat showed a few septal foci of mononuclear cells, in which elementary bodies were absent. The lungs of the other 11 animals were normal.

Kidney.—The kidneys of 1 cotton rat contained numerous fibrin thrombi in glomerular capillaries and about 50 to 60 percent of the glomeruli were involved. The kidneys of another animal had a few infiltrations of mononuclear cells and a few segmented leucocytes in glomeruli. The kidneys in the other 10 animals were normal.

Brain.—The brains from four cotton rats were studied but no lesions were observed.

LESIONS FOLLOWING INTRACEREBRAL INOCULATION OF VIRUS

The brains of two cotton rats inoculated intracerebrally with Louisiana pneumonitis virus showed extensive meningitis. The brain of one animal, which died 3 days after inoculation, had a pure

meningitis with extensive involvement of the choroid plexus and ventricles. The brain of the other, which died 6 days after inoculation, showed marked extension of the process along the superficial vessels into the outer parts of the cortex and several fibrin thrombi in small and medium-sized meningeal vessels. Elementary bodies were abundant in both animals.

WHITE RATS

No lesions were observed in two rats killed 24 hours after intraperitoneal inoculation with Louisiana pneumonitis virus. Two animals were studied on the fourth day after infection. One of these showed extensive capillary thrombosis in the lung, liver, and spleen, extensive oxyphilic necrosis of liver cells, and slight mononuclear cell infiltration in conjunction with the thrombi. The diffuse thrombosis of splenic capillaries was similar to that observed in guinea pigs. The other animal had only a few cellular foci in the liver and rare fibrin thrombi in the spleen.

Four of five animals killed 21 days after intraperitoneal inoculation with infective material showed extensive, obviously older, lesions of liver and spleen; the fifth rat had only a few foci. In three rats, the older organizing lesions contained nests of polymorphonuclear leucocytes in addition to mononuclear cells and histiocytes. Small numbers of fibrin thrombi occurred in splenic vessels, but were shrunken and appeared to be undergoing dissolution. In the liver, fibrin thrombi were rare. The lesions in both tissues appeared well localized. A few definite elementary bodies were identified in the liver of a single animal at 21 days. Septal foci of moderate size were present in the lungs of two animals and foci in the kidney were noted in one rat. The brains contained no lesions. Three rats which had been inoculated intracerebrally with infective material and which were killed 7 days later showed meningitis. The meningitis was extensive in two rats and moderate in the other. The process showed considerable extension along superficial vessels of the brain in the animal with the greatest involvement. There were occasional thrombi and degenerative changes in the vessels, and the adjacent brain tissue was involved. Elementary bodies were plentiful in this animal.

MUSKRATS

No distinctive lesions were observed in the tissues of 10 muskrats which had been inoculated intraperitoneally with infective material. One animal showed a slight fibrinous peritoneal response and another showed a few cells infiltrating into the omentum. One muskrat, killed 16 days after inoculation, revealed atrophic or scarred foci in

the liver. Five muskrats, killed on the same day, had a few minute cellular aggregates in the sinusoids of the liver which resembled proliferated Kupffer cells and which may represent tissue response to the infective agent. The lungs of 11 muskrats inoculated intranasally with infective material showed no characteristic lesions. Pulmonary edema was noted in 2 animals, and bronchiectasis of some duration in another. All other tissues appeared normal.

HAMSTERS (*CRICETUS AURATUS*)

Four hamsters, which were killed 4 days after intraperitoneal inoculation with infective material, had lesions of varying extent in the livers and spleens. The tissues of two animals were extensively involved and there were numerous fibrin thrombi in liver, spleen, and kidney. There were many foci of oxyphilic necrotic liver cells, to which there was almost no cellular response. In the tissues of the other two animals a few small areas of liver-cell necrosis were seen, and fibrinocellular aggregates were observed in the spleens. A moderate to marked fibrinous peritonitis was present in each of the four animals. The hearts, lungs, and brains were normal. Elementary bodies were not observed. The tissues of five hamsters killed 4 weeks after intraperitoneal inoculation with infective material did not display lesions. The brains of four hamsters inoculated intracerebrally with high dilutions of suspensions of infected material showed no lesions when killed 21 days later.

DEER MICE (*PEROMYSCUS*)

Nine deer mice were examined. They had been inoculated intraperitoneally with suspensions containing infective material. They were killed and tissues obtained for further study. Three animals were killed 4 days after inoculation; two were killed after an 8-day interval, and four after a 21-day interval. Few foci were found in the spleen in one mouse killed at the end of 4 days and another at the end of an 8-day period. Both of these animals showed a slight degree of fibrinous peritonitis. All other tissues were normal.

RICE RATS

Four rice rats were killed 28 days after intraperitoneal inoculation with infective material. A few minute nondescript cellular aggregates in the livers of two animals, and pigment deposits in the livers of the other 2 rice rats were the only lesions noted.

NUTRIA (*MYOCASTOR COYPU*)

Five nutria were killed and examined 21 or 22 days after intraperitoneal inoculation with infective material. No lesions were noted in

any of the tissues. The lungs of nine nutria inoculated intranasally with infective material and killed 14 days later had no lesions attributable to the infectious agent, although four showed chronic lesions attributable to the aquatic habits of the animal.

FERRETS

Two ferrets inoculated intraperitoneally with infective material showed no lesions when killed after an interval of 22 days.

MONKEYS (*MACACUS RHESUS*)

The tissues of three monkeys which had been inoculated intranasally with sputum and intraperitoneally with suspensions of tissues from human cases showed no lesions. The material inoculated into the monkeys was infective for mice and guinea pigs.

HISTOLOGIC SUMMARY

Table 3 illustrates the difference in severity and distribution of lesions in mice, guinea pigs, and cotton rats.

TABLE 3.—*Distribution and severity of lesions, by species of animal*

	Mice	Guinea pigs	Cotton rats
Plastic peritonitis	Trace	+	++++
Liver:			
A. Cellular foci	++++	+	Rare
B. Fibrin thrombi	+	++++	0
C. Liver-cell necrosis	+	++++	0
Spleen:			
A. Cellular foci	++++	++	+
B. Fibrin thrombi	+	++++	Rare
Lung and mediastinum intraperitoneal inoculation	++	+	Rare
Kidney	Rare	Rare	+
Brain:			
A. Vascular changes	+	0	
B. Glial foci	0	+	
Testis	Rare	Rare	
Heart	Rare	Rare	0

COMPARISON OF THE LESIONS PRODUCED IN ANIMALS BY LOUISIANA PNEUMONITIS, PSITTACOSIS, AND MENINGOPNEUMONITIS VIRUS

Comparison of lesions produced by intraperitoneal and intracerebral inoculation.—The lesions produced in mice following inoculation with the virus of meningopneumonitis, Francis and Magill (*7*), or of psittacosis virus, Rivers and Berry (*8*), closely resemble those produced in mice following infection with Louisiana pneumonitis virus. The lesions produced in pocket gophers by infection with psittacosis virus, Lillie and Hoge (*9*), likewise resemble the lesions produced in guinea pigs infected with Louisiana pneumonitis virus.

In the present studies the similarity of the lesions produced in mice by inoculation with these three agents was confirmed. The strains of psittacosis and meningopneumonitis employed generally produced less extensive lesions than did the strain of Louisiana pneumonitis virus, but the lesions of animals with severe infections due to the viruses of psittacosis and meningopneumonitis were indistinguishable from lesions caused by the Louisiana pneumonitis virus. Elementary bodies of similar appearance were observed in mice suffering from infection with any of the agents. The strain of meningopneumonitis virus employed tended to produce isolated large necrotic lesions in the liver, a tendency not displayed by the other viruses.

Rivers and Berry (*8*) reported meningeal lesions in rabbits and guinea pigs inoculated intracerebrally with the psittacosis virus. In the present study 20 of 24 mice inoculated intracerebrally with the agent of meningopneumonitis showed meningeal lesions indistinguishable from those produced by intracerebral inoculation of Louisiana pneumonitis virus. Two cotton rats injected intracerebrally showed the same type of meningeal exudate together with slight extension of the exudate into brain tissue along the blood vessels. Five cotton rats were inoculated intraperitoneally with the meningopneumonitis virus and of these four remained normal and were killed 30 days later. No lesions were noted in this group of four animals. The other cotton rat died on the eleventh day after inoculation; fairly extensive lesions of the liver, lungs, and mediastinum, similar to those seen in mice infected with Louisiana pneumonitis virus, were found.

Our studies indicate that the viruses of psittacosis, meningopneumonitis, and Louisiana pneumonitis cannot be separated on the basis of the character of the lesions produced in experimental animals inoculated intraperitoneally or intracerebrally with the three agents.

Comparison of lesions produced by intranasal inoculation.—Intranasal inoculation of the agents of psittacosis and meningopneumonitis into mice produced lesions distinctly different in distribution from those resulting from intranasal inoculation of Lousiana pneumonitis virus into mice. In psittacosis and meningopneumonitis infections, interstitial spread of the pneumonic process was a characteristic feature. In infections with Louisiana pneumonitis virus the interstitial manner of spread was lacking. The pneumonic areas were sharply outlined and interstitial infiltrations along bronchi and bronchioles were absent. The lesions in lungs which were only slightly involved consisted of small pneumonic patches, with intervening areas of normal lung tissue. In this study, the lesions produced in mice by intranasal inoculation of suspensions containing Louisiana pneumonitis virus offered the only histologic basis for the distinction

of the Louisiana pneumonitis virus from the viruses of psittacosis or meningopneumonitis.

RELATION OF THE LESIONS PRODUCED IN ANIMALS BY LOUISIANA PNEUMONITIS VIRUS AND THE RICKETTSIAE

The many studies of the rickettsial diseases, especially typhus and Rocky Mountain spotted fever, in laboratory animals, Mooser (*10*), Hach (*11*), and Lillie and Dyer (*12*), have shown that in these diseases the viscera of infected guinea pigs are not involved to the same degree as are the viscera of guinea pigs infected with Louisiana pneumonitis virus or the viruses of psittacosis and meningopneumonitis. Occasional foci are found in the brains of certain guinea pigs inoculated intraperitoneally with Louisiana pneumonitis virus and these bear a close similarity, or even identity, to those seen in guinea pigs similarly infected with typhus or spotted fever virus. Although the lesions are less extensive and less well developed, their relation to blood vessels appears to be the same as that of the lesions noted in the rickettsial diseases. The foci in the testes of guinea pigs infected with Louisiana pneumonitis virus are also similar to lesions seen in the testes and scrotum of guinea pigs infected with rickettsiae of typhus fever. The presence of infiltrating mononuclear cells in reminiscent of typhus fever infections. The tendency of Louisiana pneumonitis virus and the viruses of psittacosis and meningopneumonitis to produce fibrin thrombi in capillaries is far greater than that of typhus fever rickettsiae.

SUMMARY AND CONCLUSIONS

The virus of Louisiana pneumonitis produces extensive lesions in mice, guinea pigs, and cotton rats, following intraperitoneal inoculation. In albino rats and hamsters, lesions are produced by large doses of the infecting agent but the virus is infrequently lethal for these animals. Rice rats, muskrats, ferrets, deer mice, nutria, and rhesus monkeys are not susceptible to infection with this virus. The variation in the quality of the lesions produced in mice, guinea pigs, and cotton rats by the Louisiana pneumonitis virus must be considered one of its distinctive features. In mice infected intraperitoneally or intracerebrally the lesions produced are probably indistinguishable from those caused by the viruses of psittacosis and meningopneumonitis. In mice infected intranasally with Louisiana pneumonitis virus the resulting pneumonic process shows material differences from the lesions in mice similarly inoculated with the other agents. There is no bronchial involvement and no tendency toward interstitial spread of infection in the lungs of mice infected with the agent under study.

The infection in guinea pigs is characterized by extensive fibrinous thrombosis of capillaries and sinuses of the liver and spleen, with comparatively less cellular reaction than observed in the mouse.

An extensive plastic fibrinous peritonitis constitutes the chief alteration in cotton rats. Comparatively trivial changes occur in the organs.

Animals intracerebrally inoculated show a dry meningitis with slight extension of the process into the superficial brain tissues along the blood vessels. Mice and guinea pigs infected intraperitoneally occasionally may show lesions in the brain similar to those occurring in guinea pigs infected with the rickettsia of typhus fever or spotted fever.

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Single copies of this bibliography may be obtained without charge from Ralph J. VanDerwenker, Senior Sanitary Engineer (R), USPHS, Federal Public Housing Authority, Room 404 Longfellow Building, Washington 25, D. C.

DEATHS DURING WEEK ENDED JUNE 29, 1946

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

	Week ended June 29, 1946	Corresponding week, 1945
Data for 93 large cities of the United States:		
Total deaths	8,557	8,747
Average for 3 prior years	8,884	
Total deaths, first 26 weeks of year	248,525	243,311
Deaths under 1 year of age	623	561
Average for 3 prior years	615	
Deaths under 1 year of age, first 26 weeks of year	16,069	15,908
Data from industrial insurance companies:		
Policies in force	67,206,517	67,377,490
Number of death claims	11,797	14,291
Death claims per 1,000 policies in force, annual rate	9.2	11.1
Death claims per 1,000 policies, first 26 weeks of year, annual rate	10.3	10.9

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 JULY 6, 1946

Summary

The number of reported cases of poliomyelitis increased from 273 to 311. The largest increases were in the West North Central area (from 30 to 48), South Atlantic (from 34 to 54), and the East South Central (from 19 to 40). The only other area which reported an increase was the New England (from 1 to 4 cases). Of the current total, Texas reported 45 cases, Florida 32, Alabama 25, Colorado 22, and Minnesota 20—approximately 47 percent in these 5 States. The total to date this year is 2,167 cases, as compared with 1,425 for the same period in 1945, 1,290 in 1944, and 1,329 in 1943. The largest State totals this year are as follows (last year's corresponding totals in parentheses): Texas 337 (312), Florida 314 (29), California 236 (116), Alabama 122 (67), Colorado 104 (8). Rhode Island and Nevada are the only States which have reported no cases to date this year.

The increase in diphtheria, which began in 1945, continues, and the incidence is above that for last year and the 5-year (1941–45) median. The current incidence is about 50 percent above that for the corresponding weeks of recent years, and to date a total of 8,628 cases has been reported, as compared with 6,897 in 1945 and a 5-year median of 6,487 for the same period.

Two cases of smallpox were reported during the week, 1 each in Wisconsin and Texas. The outbreak on the West Coast brought the total to date (256) above last year's figure (248) for the same period.

A total of 7,885 deaths were reported in 93 large cities in the United States, as compared with 8,557 last week, 8,637 for the same week of 1945, and a 3-year average of 8,121 for the week. The cumulative total to date is 256,410, as compared with 251,948 for the same period last year.

Telegraphic morbidity reports from State health officers for the week ended July 6, 1946, and comparison with corresponding week of 1945 and 5-year median

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

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45
	July 6, 1946	July 7, 1945		July 6, 1946	July 7, 1945		July 6, 1946	July 7, 1945		July 6, 1946	July 7, 1945	
NEW ENGLAND												
Maine	0	0	0	-------	-------	-------	78	3	32	0	0	1
New Hampshire	0	0	0	-------	-------	-------	4	-------	11	0	0	0
Vermont	1	0	0	-------	-------	-------	116	23	61	0	0	0
Massachusetts	3	5	2	-------	-------	-------	711	250	365	0	4	5
Rhode Island	0	2	0	-------	22	-------	34	-------	13	0	0	0
Connecticut	1	1	1	2	-------	-------	211	34	124	1	2	2
MIDDLE ATLANTIC												
New York	12	9	8	[1] 3	[1] 4	[1] 1	1,188	72	605	5	10	10
New Jersey	2	1	1	2	-------	-------	526	61	285	2	2	3
Pennsylvania	17	2	5	3	1	-------	467	261	226	8	7	7
E. NORTH CENTRAL												
Ohio	13	4	3	-------	6	4	528	24	68	1	7	1
Indiana	4	4	4	-------	6	2	46	14	22	2	6	2
Illinois	3	2	7	-------	3	4	210	246	236	3	11	8
Michigan [2]	1	7	3	-------	-------	1	269	50	296	1	4	4
Wisconsin	2	1	1	4	9	9	638	69	509	0	1	1
W. NORTH CENTRAL												
Minnesota	2	6	4	2	-------	-------	46	7	72	0	1	1
Iowa	3	1	1	-------	-------	-------	78	34	52	1	0	0
Missouri	3	0	1	1	4	1	64	15	38	2	3	3
North Dakota	1	0	0	-------	-------	1	9	2	7	0	0	1
South Dakota	1	2	2	-------	-------	-------	5	15	10	0	1	0
Nebraska	3	1	1	-------	3	-------	22	4	23	1	0	0
Kansas	15	2	3	-------	-------	-------	18	11	51	2	1	1
SOUTH ATLANTIC												
Delaware	0	1	0	-------	-------	-------	5	1	3	0	0	1
Maryland [2]	7	4	4	1	2	2	308	8	59	0	1	6
District of Columbia	0	0	0	-------	-------	-------	50	1	28	2	3	2
Virginia	10	6	3	55	89	37	204	11	82	2	7	6
West Virginia	5	1	3	1	-------	-------	30	2	8	0	1	1
North Carolina	16	5	3	-------	-------	-------	63	5	43	0	6	1
South Carolina	4	6	2	141	52	100	81	11	38	0	1	1
Georgia	1	5	2	2	2	5	16	5	15	3	0	1
Florida	4	2	2	4	-------	5	66	8	13	3	0	1
E. SOUTH CENTRAL												
Kentucky	1	3	1	-------	-------	-------	112	18	18	0	1	1
Tennessee	3	4	4	12	15	15	58	19	19	2	3	3
Alabama	4	0	2	4	-------	8	35	-------	13	1	0	1
Mississippi [2]	4	3	7	-------	-------	-------	-------	-------	-------	1	3	2
W. SOUTH CENTRAL												
Arkansas	0	5	2	2	3	6	31	11	21	0	1	1
Louisiana	6	4	4	12	-------	1	32	14	15	0	1	1
Oklahoma	1	1	3	3	6	5	46	14	27	1	1	1
Texas	21	26	23	245	298	289	248	146	145	7	4	4
MOUNTAIN												
Montana	0	0	1	2	5	-------	61	3	8	0	0	1
Idaho	0	2	0	8	-------	-------	11	12	12	1	0	0
Wyoming	2	0	0	-------	-------	-------	6	1	9	0	0	0
Colorado	4	4	5	1	10	11	72	9	32	1	0	0
New Mexico	1	0	0	1	-------	-------	29	3	4	0	0	0
Arizona	4	7	2	6	19	22	48	8	19	0	0	0
Utah [2]	1	1	0	-------	-------	-------	57	78	70	1	0	0
Nevada	0	0	0	-------	-------	-------	1	1	3	0	0	0
PACIFIC												
Washington	2	8	8	-------	-------	-------	62	134	121	1	1	1
Oregon	3	3	2	-------	1	1	85	54	46	0	2	1
California	16	13	13	9	21	21	459	477	477	10	13	13
Total	207	158	138	526	581	581	7,544	2,249	4,763	65	109	109
27 weeks	8,628	6,897	6,487	188,732	67,055	78,564	619,943	93,442	517,735	4,029	5,528	5,528

[1] New York City only.
[2] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended July 6, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [3]		
	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45
	July 6, 1946	July 7, 1945		July 6, 1946	July 7, 1945		July 6, 1946	July 7, 1945		July 6, 1946	July 7, 1945	
NEW ENGLAND												
Maine	1	1	0	2	23	7	0	0	0	1	0	1
New Hampshire	1	2	0	3	1	2	0	0	0	0	0	0
Vermont	0	0	0	4	3	3	0	0	0	0	1	0
Massachusetts	0	1	0	42	93	74	0	0	0	2	3	3
Rhode Island	0	0	0	3	4	4	0	0	0	0	0	0
Connecticut	2	7	1	16	8	14	0	0	0	1	0	0
MIDDLE ATLANTIC												
New York	10	21	5	121	135	111	0	0	0	5	3	5
New Jersey	2	10	1	31	25	32	0	0	0	0	0	1
Pennsylvania	2	0	1	65	87	76	0	0	0	5	4	4
EAST NORTH CENTRAL												
Ohio	8	5	3	97	96	96	0	0	0	4	4	7
Indiana	2	0	0	15	22	13	0	0	0	3	0	2
Illinois	13	2	5	48	74	57	0	0	1	1	1	2
Michigan [2]	1	3	0	45	76	76	0	0	0	0	4	4
Wisconsin	0	0	0	42	52	47	1	0	0	1	0	0
WEST NORTH CENTRAL												
Minnesota	20	0	2	14	16	21	0	0	0	0	1	0
Iowa	7	2	2	22	8	9	0	1	0	0	0	0
Missouri	13	1	1	12	11	12	0	0	0	3	0	1
North Dakota	0	1	1	1	7	5	0	0	0	0	0	0
South Dakota	0	0	0	1	5	5	0	0	0	0	1	0
Nebraska	3	0	0	2	29	7	0	0	0	2	0	0
Kansas	4	1	1	10	18	15	0	0	0	0	2	2
SOUTH ATLANTIC												
Delaware	0	1	0	1	1	2	0	0	0	0	0	0
Maryland [2]	1	3	0	19	25	25	0	0	0	0	0	2
District of Columbia	0	0	0	3	10	9	0	0	0	1	0	0
Virginia	1	5	1	21	17	13	0	0	0	4	4	4
West Virginia	0	2	0	9	9	12	0	0	0	2	3	4
North Carolina	5	1	1	15	12	11	0	0	0	4	6	4
South Carolina	0	6	3	7	5	2	0	0	0	6	11	6
Georgia	15	5	4	4	5	6	0	0	0	8	5	11
Florida	32	0	2	8	1	2	0	0	0	3	4	4
EAST SOUTH CENTRAL												
Kentucky	4	1	2	4	7	7	0	0	0	0	6	9
Tennessee	4	18	3	7	15	14	0	0	0	1	3	8
Alabama	25	5	5	7	5	5	0	1	0	1	5	5
Mississippi [2]	7	1	1	5	4	2	0	0	0	2	3	6
WEST SOUTH CENTRAL												
Arkansas	11	0	1	0	3	2	0	0	0	6	3	5
Louisiana	14	3	1	1	7	5	0	0	0	2	8	8
Oklahoma	10	6	2	1	0	2	0	0	0	1	6	4
Texas	45	21	8	15	22	22	1	0	0	26	26	26
MOUNTAIN												
Montana	1	1	0	3	1	3	0	0	0	0	0	0
Idaho	0	0	0	0	2	2	0	0	0	1	0	0
Wyoming	1	0	0	0	3	3	0	0	0	0	3	0
Colorado	22	0	0	18	15	10	0	0	0	0	0	0
New Mexico	1	0	0	3	2	1	0	0	0	2	6	1
Arizona	3	0	0	4	2	3	0	0	0	1	0	1
Utah [2]	1	0	0	4	7	7	0	0	0	0	0	0
Nevada	0	0	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	2	0	0	9	21	10	0	1	0	0	1	0
Oregon	0	0	0	4	2	5	0	0	0	0	0	0
California	17	18	8	55	144	90	0	0	0	2	2	3
Total	311	154	154	823	1,140	964	2	3	7	101	129	146
27 weeks	2,167	1,425	1,290	82,937	129,055	93,132	256	248	577	1,687	1,871	2,253

[2] Period ended earlier than Saturday.

[3] Including paratyphoid fever reported separately, as follows: Massachusetts 1; South Carolina 1; Georgia 2; Florida 1; Texas 4; New Mexico 1; California 1.

Telegraphic morbidity reports from State health officers for the week ended July 6, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Whooping cough			Week ended July 6, 1946								
	Week ended—		Median 1941–45	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever endemic	Undulant fever
	July 6, 1946	July 7, 1945		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	5	31	25								
New Hampshire											
Vermont	14	28	28								2
Massachusetts	82	100	100		1						1
Rhode Island	13	7	18		3						
Connecticut	19	30	30	1							
MIDDLE ATLANTIC											
New York	135	284	247	2	4		1				7
New Jersey	70	165	160			1					
Pennsylvania	95	196	199	2							
EAST NORTH CENTRAL											
Ohio	71	155	196					1			
Indiana	23	27	27						2		5
Illinois	106	57	78	4				1	2		8
Michigan [2]	65	35	167								2
Wisconsin	87	75	103						1		8
WEST NORTH CENTRAL											
Minnesota	7	1	41								1
Iowa	24	8	27								18
Missouri	14	24	24			1	1		1		1
North Dakota		1	14						1		1
South Dakota			1								2
Nebraska	5		14								11
Kansas	28	36	70	2							3
SOUTH ATLANTIC											
Delaware		5	4								
Maryland [2]	18	60	84					4			3
District of Columbia	8	12	12								
Virginia	107	84	84			95		3	1		1
West Virginia	13	27	34			6					
North Carolina	83	105	144					3			
South Carolina	46	94	94	3	23						
Georgia	7	9	15		1				1	16	3
Florida	27	4	8	1						11	
EAST SOUTH CENTRAL											
Kentucky	33	48	48		1						1
Tennessee	34	23	43	1	1	1	1	4	1	1	3
Alabama	12	22	39	2						16	1
Mississippi [2]									1	1	
WEST SOUTH CENTRAL											
Arkansas	15	8	20	3					19	1	7
Louisiana	16		9						1	5	
Oklahoma	20	28	25	1				5			1
Texas	188	173	250	39	392	20				29	13
MOUNTAIN											
Montana	3	4	14								
Idaho	3	5	5				1	1			1
Wyoming	6								1		
Colorado	15	37	33	1							
New Mexico	15	6	8								
Arizona	12	29	24			29					
Utah [2]	17	23	31								1
Nevada											
PACIFIC											
Washington	14	21	25								3
Oregon	22	15	26								
California	51	249	222	1	2		3			1	4
Total	1,648	2,351	3,431	63	428	153	7	22	32	81	112
Same week, 1945	2,351			50	564	208	5	16	18	100	85
Average, 1943–45	2,733			52	635	334	12	[4] 18	18	[4] 92	
27 weeks: 1946	50,863			1,506	9,176	3,422	243	192	503	1,406	2,508
1945	67,443			891	12,248	3,515	185	169	423	1,698	2,510
Average, 1943–45	75,603		[4] 102,036	904	9,597	2,978	263	[4] 205	412	[4] 1,384	

[2] Period ended earlier than Saturday.
[4] 5-year median, 1941–45.

Leprosy: Texas, 2 cases.

WEEKLY REPORTS FROM CITIES

City reports for week ended June 29, 1946

This table lists the reports from 84 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	0	------	0	40	0	3	0	2	0	0	4
New Hampshire:												
Concord	0	0	------	0	------	0	0	0	0	0	0	------
Vermont:												
Barre	0	0	------	0	1	0	1	0	1	0	0	------
Massachusetts:												
Boston	1	0	------	0	154	0	8	0	33	0	2	20
Fall River	0	0	------	0	15	0	0	0	0	0	0	2
Springfield	0	0	------	0	50	0	0	0	6	0	1	3
Worcester	0	0	------	0	168	0	5	0	4	0	0	53
Rhode Island:												
Providence	0	0	------	0	81	0	1	0	1	0	1	25
Connecticut:												
Bridgeport	0	0	------	0	------	0	1	0	0	0	1	------
Hartford	0	0	------	0	2	0	1	0	0	0	0	2
New Haven	0	0	------	0	24	0	0	0	3	0	0	------
MIDDLE ATLANTIC												
New York:												
Buffalo	2	0	------	0	11	0	2	0	5	0	0	1
New York	5	1	4	1	347	4	36	9	67	0	5	27
Rochester	0	0	------	0	34	0	2	0	14	0	0	2
Syracuse	0	0	------	0	------	0	0	1	2	0	0	1
New Jersey:												
Camden	0	0	------	0	1	0	1	0	2	0	0	------
Newark	0	0	------	0	38	1	3	1	14	0	0	15
Trenton	0	0	1	0	33	0	2	0	1	0	0	5
Pennsylvania:												
Philadelphia	3	0	2	2	52	1	12	0	27	0	0	12
Pittsburgh	0	0	------	0	16	4	0	0	9	0	0	14
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	2	0	------	0	9	1	2	0	4	0	0	3
Cleveland	0	0	1	1	251	2	2	4	9	0	0	15
Columbus	1	0	------	0	5	0	0	0	2	0	0	------
Indiana:												
Fort Wayne	0	0	------	0	2	0	2	0	1	0	0	1
Indianapolis	0	0	------	0	7	0	3	1	4	0	0	7
Terre Haute	0	0	------	0	13	0	1	0	0	0	0	------
Illinois:												
Chicago	0	0	------	0	52	2	18	2	39	0	1	38
Springfield	0	0	------	0	------	0	0	0	0	0	2	------
Michigan:												
Detroit	0	1	1	0	26	1	8	1	22	0	0	45
Flint	0	0	------	0	------	0	3	0	1	0	0	1
Grand Rapids	0	0	------	0	20	0	2	0	2	0	1	8
Wisconsin:												
Kenosha	0	0	------	0	33	0	0	0	0	0	0	1
Milwaukee	0	0	------	0	84	0	4	0	8	0	0	74
Racine	1	0	------	0	137	0	0	1	1	0	0	------
Superior	0	0	------	0	3	0	0	0	1	0	0	2
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	------	0	2	1	0	0	1	0	0	3
Minneapolis	0	0	------	0	5	0	0	7	4	0	0	------
Missouri:												
Kansas City	1	0	------	1	2	0	6	1	2	0	0	14
St. Joseph	0	0	------	0	------	0	0	0	0	0	0	------
St. Louis	1	1	------	1	39	0	7	0	2	0	2	

City reports for week ended June 29, 1946—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
Nebraska:												
Omaha	0	0	------	0	12	1	5	0	1	0	0	------
Kansas:												
Topeka	0	0	------	0	2	0	0	0	2	0	0	3
Wichita	0	0	------	0	7	0	0	0	1	0	0	1
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	2	0	3	0	1	0	0	------
Maryland:												
Baltimore	6	0	------	0	260	0	7	0	9	0	0	20
Cumberland	0	0	------	0	------	0	1	0	4	0	0	------
Frederick	0	0	------	0	1	0	1	0	0	0	0	------
District of Columbia:												
Washington	0	0	------	0	64	0	7	0	4	0	0	13
Virginia:												
Lynchburg	0	0	------	0	4	0	0	0	0	0	1	------
Richmond	0	0	------	0	30	0	0	0	0	0	0	11
Roanoke	0	0	------	0	2	0	0	0	1	0	0	3
West Virginia:												
Charleston	0	0	------	0	5	0	0	0	2	0	0	------
Wheeling	0	0	------	0	------	0	0	0	1	0	0	10
North Carolina:												
Raleigh	0	0	------	0	------	0	0	1	0	0	0	4
Winston-Salem	0	0	------	0	15	0	2	0	0	0	0	15
South Carolina:												
Charleston	1	0	8	0	------	0	0	0	2	0	0	------
Georgia:												
Atlanta	0	0	1	1	9	0	1	1	1	0	0	------
Brunswick	0	0	------	0	------	0	0	0	0	0	0	------
Savannah	0	0	------	0	2	0	1	0	0	0	0	1
Florida:												
Tampa	0	0	------	0	1	1	1	4	1	0	0	4
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	1	0	------	0	5	0	8	1	0	0	0	2
Nashville	0	0	------	0	1	0	0	2	0	0	0	1
Alabama:												
Birmingham	1	0	1	0	3	0	3	0	0	0	1	1
Mobile	0	0	1	0	1	1	0	1	0	0	2	------
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	------	0	2	0	0	3	0	0	0	1
Louisiana:												
New Orleans	0	0	1	0	16	0	7	*1	0	0	1	------
Shreveport	0	0	------	0	------	0	0	0	0	0	1	------
Texas:												
Dallas	0	0	------	0	2	0	2	7	2	0	0	2
Galveston	0	0	------	0	1	0	1	0	0	0	0	2
Houston	0	0	------	0	3	0	4	0	0	0	0	------
San Antonio	2	0	------	1	------	0	1	5	0	0	0	1
MOUNTAIN												
Montana:												
Billings	0	0	------	0	9	0	1	0	0	0	0	------
Great Falls	0	0	------	0	4	0	0	0	0	0	0	------
Helena	0	0	------	0	1	0	0	0	0	0	0	------
Missoula	0	0	------	0	------	0	1	0	0	0	0	------
Idaho:												
Boise	0	0	------	0	------	0	0	0	0	0	2	------
Colorado:												
Denver	4	0	------	0	25	0	5	12	7	0	0	14
Pueblo	0	0	------	0	46	0	0	0	3	0	0	2
Utah:												
Salt Lake City	1	0	------	0	29	0	0	2	3	0	0	------

*Exclusive of 11 imported cases.

City reports for week ended June 29, 1946—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle	0	0	------	0	24	1	2	1	8	0	0	4
Spokane	0	0	------	0	3	0	1	0	0	0	0	6
Tacoma	0	0	------	0	1	0	0	0	1	0	0	1
California:												
Sacramento	2	0	------	0	1	0	2	0	1	0	0	------
San Francisco	0	0	------	0	25	0	4	3	6	0	0	1
Total	35	3	21	8	2,375	21	207	72	355	0	24	523
Corresponding week, 1945	34	------	12	11	1,334	------	250	------	480	0	15	721
Average, 1941–45	47	------	23	[1] 9	[2] 2,215	------	[1] 248	------	494	1	19	945

[1] 3-year average, 1943–45.
[2] 5-year median, 1941–45.

Dysentery, amebic.—Cases: New York 3; Chicago 3; Baltimore 1.
Dysentery, bacillary.—Cases: New York 1; Charleston, S. C., 2; Memphis 1.
Dysentery, unspecified.—Cases: San Antonio 9.
Rocky Mountain spotted fever.—Cases: St. Louis 1; Frederick 1; Lynchburg 1; Memphis 1.
Tularemia.—Cases: Memphis 1; Mobile 2.
Typhus fever, endemic.—Cases: New York 1; Savannah 1; Nashville 1; New Orleans 1; Houston 2.

Rates (annual basis) per 100,000 population, by geographic groups, for the 84 cities in the preceding table (estimated population, 1943, 32,123,700)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England	2.6	0.0	0.0	0.0	1,398	0.0	52.3	0.0	131	0.0	13.1	285
Middle Atlantic	4.7	0.5	3.3	1.4	248	4.7	27.1	5.1	66	0.0	2.3	36
East North Central	2.5	0.6	1.2	0.6	395	3.7	27.7	5.5	58	0.0	2.5	120
West North Central	4.5	2.3	0.0	4.5	155	4.5	40.6	18.0	29	0.0	4.5	52
South Atlantic	11.6	0.0	14.9	1.7	656	1.7	39.8	10.0	43	0.0	1.7	134
East South Central	11.8	0.0	11.8	0.0	59	5.9	64.9	23.6	0	0.0	17.7	24
West South Central	5.7	0.0	2.9	2.9	69	0.0	43.0	45.9	6	0.0	5.7	17
Mountain	39.7	0.0	0.0	0.0	905	0.0	55.6	111.2	103	0.0	15.9	127
Pacific	6.5	0.0	0.0	0.0	176	3.3	29.4	13.1	52	0.0	0.0	39
Total	5.7	0.5	3.4	1.3	387	3.4	33.7	11.7	58	0.0	3.9	85

PLAGUE INFECTION IN SAN BENITO, SAN LUIS OBISPO, AND VENTURA COUNTIES, CALIF.

Under dates of June 24 and July 2, plague infection was reported in California as follows:

SAN BENITO COUNTY

In a pool of tissue from 5 ground squirrels, *C. beecheyi*, collected May 28 on a ranch 5 miles east of Tres Pinos; in tissue from 11 ground squirrels, *C. beecheyi*, taken May 30 from a ranch 7 miles east of

Tres Pinos, and tissue from 11 ground squirrels, same species, taken on May 31 from the same ranch.

SAN LUIS OBISPO COUNTY

In a pool of 224 fleas from 11 ground squirrels, *C. beecheyi*, received at the laboratory on May 10 from the Dixon ranch east of Pozo, San Luis Obispo County, Calif., and proved positive June 18, 1946; in a pool of 387 fleas from burrows 4 miles south and 1 mile east of Atascadero; in pools of 400 fleas from 76 ground squirrels, *C. beecheyi*, and 200 fleas from burrows, 3 miles west of Santa Margarita.

These specimens were received at the laboratory May 29, 1946, and proved positive June 27, 1946.

VENTURA COUNTY

In a pool of 4 fleas from 8 harvest mice, *Reithrodontomys megalotis*, collected April 10 from a ranch 1 mile south and 2 miles east of Santa Paula, and a pool of 58 fleas from 1 ground squirrel, *C. beecheyi*, taken on April 16 from a ranch ½ mile south and 1 mile east of Santa Paula.

TERRITORIES AND POSSESSIONS

Hawaii Territory

Plague (rodent).—Tissue from 1 rat found dead on May 10, 1946, in District 7A, Honokaa area, Hamakua District, Island of Hawaii, T. H., was proved positive for plague on May 17, 1946.

Panama Canal Zone

Notifiable diseases—May 1946.—During the month of May 1946, certain notifiable diseases were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Panama		Colon		Canal Zone		Outside the Zone and terminal cities		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chickenpox	3		2		1		2		8	
Diphtheria	6	1	1				3		10	1
Dysentery:										
Amebic	1		1		6		1		9	
Bacillary					4		1		5	
Leprosy				1						1
Malaria [1]	7		1	1	15		33	2	56	3
Measles	4				20		3		27	
Meningitis, meningococcus							1		1	
Mumps	2						1		3	
Paratyphoid fever	1								1	
Pneumonia		4		3	31			2	[2] 31	9
Tuberculosis		19		6	1	2		6	[2] 1	33
Typhoid fever	1								1	
Typhus fever							1		1	

[1] 10 recurrent cases. [2] In the Canal Zone only.

Puerto Rico

Notifiable diseases—4 weeks ended June 15, 1946.—During the 4 weeks ended June 15, 1946, cases of certain notifiable diseases were reported in Puerto Rico as follows:

Disease	Cases	Disease	Cases
Chickenpox	54	Syphilis	163
Diphtheria	51	Tetanus	16
Dysentery, unspecified	14	Tetanus, infantile	1
Gonorrhea	180	Tuberculosis (all forms)	622
Influenza	57	Typhoid and paratyphoid fever	34
Malaria	316	Typhus fever (murine)	11
Measles	29	Whooping cough	170
Poliomyelitis	5		

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended June 8, 1946.—During the week ended June 8, 1946, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		31		157	311	36	38	36	85	694
Diphtheria		3		25	5	2	1	1		37
Dysentery, unspecified					2					2
German measles		11		27	13		2	18	10	81
Influenza		4			1				1	6
Measles		88	18	479	548	129	73	336	168	1,839
Mumps		1		43	373	73	35	64	183	772
Poliomyelitis	1	2							1	4
Scarlet fever		3	3	83	56	14	3	13	13	188
Tuberculosis (all forms)		11	12	115	55	17	24	28	68	330
Typhoid and paratyphoid fever			1	6	4		1		5	17
Undulant fever				2	4				2	8
Venereal diseases:										
Gonorrhea		22	15	86	114	37	61	54	111	500
Syphilis		23	5	86	87	14	24	6	31	276
Whooping cough		9		40	98	2	1	10		160

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]

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

Place		January–April 1946	May 1946	June 1946—week ended— 1	8	15	22	29
ASIA								
Burma	C	422	151	19				
Bassein	C	9	2					
Moulmein	C	37	4					
Rangoon	C	3	1					
Ceylon	C	3	28	1			9	
China:								
Fukien Province	C	1						
Hunan Province	C	1						
Hupeh Province	C	194	11					
Kiangsi Province	C	[1] 37	69		85			
Kwangtung Province	C	610	48					
Canton	C	509	30					
India	C	22,580	18,340	4,110	2,022			
Calcutta	C	1,089	295		48	28		
Chittagong	C	3	4					
Madras	C	2	1					

CHOLERA—Continued

Place		January–April 1946	May 1946	June 1946—week ended— 1	8	15	22	29
Indochina (French): Cochinchina	C	513	265					
Bien Hoa	C	24						
Chaudok	C	21						
Mytho	C	126	16					
Saigon-Cholon	C	14	1					
Vinh-long	C	7						
Malay States	C				7	2		18
Straits Settlements: **Singapore**	C	[1] 1						
Thailand (Siam)	C	1,375	238	198				
Bangkok	C	337	18	9				

[1] Imported.

PLAGUE

[C indicates cases; P, present]

AFRICA								
Algeria	C	2						
Bechuanaland	C	10						
Belgian Congo	C	2	2					
British East Africa:								
Kenya	C	13	5	2	1			
Uganda	C	8	4					
Egypt	C	52	41	9	12	13	14	
Alexandria	C	28	25	4	8	11	12	
Ismailiya	C	16	4					
Port Said	C	1				1	1	
Suez	C	7	12	5	4	1	1	
Madagascar	C	126	2					
Union of South Africa	C	1						
ASIA								
Burma	C	498	150	10				
Bassein	C	14	1		1			
Rangoon	C	99	10	2		5		
China:								
Chekiang Province	C	134	6					
Fukien Province	C	1,015	197					
Foochow	C	383	87					
Kiangsi Province	C	66						
Kwangtung Province	C	212						
Yunnan Province	C	26						
India	C	11,052	663	153	84			
Indochina (French): Cochinchina	C		1					
Japan: Formosa	C							[1] 3
Java	C	16						
Manchuria	C	[2] 52						
Mukden	C	[2] 39						
Palestine	C	13				2		
Thailand (Siam)	C	16						
EUROPE								
Great Britain: Malta	C	2			1	3		
Portugal: Azores	C	[3] 13						
SOUTH AMERICA								
Bolivia:								
Santa Cruz Department	C	12						
Tarija Department—Plague-infected rats		P						
Ecuador: Loja Province	C	6						
Peru:								
Lambayeque Department	C	8	3					
Lima Department	C	19						
OCEANIA								
Hawaii Territory: Plague-infected rats		[4] 4	1					

[1] Imported from the China coast. [2] Pneumonic. [3] Includes 2 cases of pneumonic plague.
[4] Plague infection was also proved positive in Hawaii Territory on Feb. 5, 1946, in a pool of 29 rats, and on Apr. 13, 1946, in a pool of 54 fleas and 15 lice collected from 7 rats and 22 mice.

SMALLPOX

[C indicates cases; P, present]

Place		January–April 1946	May 1946	June 1946—week ended— 1	8	15	22	29
AFRICA								
Algeria	C	13						
Basutoland	C	6	2					
Belgian Congo	C	[1] 711	[1] 141	[1] 36	[1] 63			
British East Africa:								
Kenya	C	371	88	21	12			
Nyasaland	C	135	43	27	4		17	
Tanganyika	C	1,666						
Uganda	C	289	146					
Cameroon (French)	C	59	3					
Dahomey	C	949	161					
Egypt	C	166	77					
Eritrea	C		[1] 2					
French Equatorial Africa	C	128	26					
French Guinea	C	542	32					
French West Africa: Dakar District	C	36	2					
Gambia	C	2	4	1				
Gold Coast	C	707						
Ivory Coast	C	500	242					
Libya	C	47	5	1	6	1		
Mauritania	C	1						
Morocco (French)	C	1,535	203		[2] 34			
Morocco (Int. Zone)	C	165	10					
Nigeria	C	3,830						
Niger Territory	C	325	73					
Rhodesia:								
Northern	C	228	5					
Southern	C	1						
Senegal	C	68	26					
Sierra Leone	C	266						
Sudan (Anglo-Egyptian)	C	25	7		1	3		
Sudan (French)	C	1,714	123					
Togo (French)	C	101	39					
Tunisia	C	30	3					
Union of South Africa	C	102	P	P				
ASIA								
Arabia	C	1						
Burma	C	934	360	59				
Ceylon	C	342						
China	C	439	116					
India	C	40,875	7,228	1,185	872			
Indochina (French):								
Cochinchina	C	105	6					
Laos	C	9						
Iran	C	24						
Iraq	C	5						
Japan	C	495						
Malay States	C		5	128	74	55	39	
Palestine	C	[3] 2						
Rhodes (Island of)	C		[4] 1					
Straits Settlements	C	[4] 1		4	7	5	5	
Syria and Lebanon	C	7	1					
Thailand (Siam)	C	8,053	771					
Turkey (See Turkey in Europe).								
EUROPE								
Czechoslovakia	C	24						
France	C	13	1					
Germany	C		1					
Gibraltar	C	2	1					
Great Britain:								
England and Wales	C	[5] 33	[5] 14		3	2		
Scotland	C	2						
Greece	C	113	1					
Italy	C	335						
Portugal	C	19	3	1				
Spain	C		[1] 4					
Turkey	C	11		5				

[1] Includes alastrim.
[2] For the period June 1–10, 1946.
[3] Includes 1 imported case.
[4] Imported.
[5] Includes imported cases.

SMALLPOX—Continued

Place		January–April 1946	May 1946	June 1946—week ended— 1	8	15	22	29
NORTH AMERICA								
Canada	C	2						
Guatemala	C	55						
Honduras	C	3						
Mexico	C	218	78					
SOUTH AMERICA								
Argentina	C	62						
Bolivia	C	229						
Brazil	C	[1] 13	2					
Colombia	C	436	55					
Ecuador	C	9	30					
Peru	C	109						
Uruguay	C	11						
Venezuela	C	[1] 482	[1] 116		[2] 34			
OCEANIA								
Hawaii Territory	C	[6] 1						

[1] Includes alastrim. [2] For the period June 1–10, 1946. [6] Off-shipping.

TYPHUS FEVER*

[C indicates cases; P, present]

AFRICA								
Algeria	C	21						
Basutoland	C	3						
Belgian Congo [1]	C	1,554	244	37	103			
British East Africa: Kenya [1]	C	14	6					
Egypt	C	986	53					
Eritrea	C	266	22	26	20			
Libya	C	29	26	5	2	4		
Morocco (French)	C	2,312	619		[2] 199			
Morocco (Int. Zone)	C	46	6					
Morocco (Spanish)	C	1						
Nigeria	C	26						
Rhodesia, Northern	C	1						
Sierra Leone [1]	C	3						
Tunisia [1]	C	177	6					
Union of South Africa [1]	C	98	P	P				
ASIA								
Arabia [3]	C	1						
China	C	24	3	1				
India	C	262						
Indochina (French)	C	2						
Iran	C	115						
Iraq	C	77	37	7		5		
Japan	C	128						
Malay States	C			3				
Palestine [3]	C	23	6		2			
Straits Settlements	C	1				5		
Syria and Lebanon	C	61	14		2			
Trans-Jordan	C	14			1	2		
Turkey (See Turkey in Europe).								
EUROPE								
Albania	C	53						
Austria	C	30						
Belgium	C		1					
Bulgaria	C	598	158	21				
Czechoslovakia [1]	C	608	117	31				
France [1]	C	11	1					
Germany	C	1,794	11					
Great Britain:								
England and Wales	C		1					
Malta [3]	C	8						
Greece [1]	C	204	29	11		13		

*Reports from some areas are probably murine type, while others probably include both murine and louse-borne types.

For footnotes, see page 1130.

TYPHUS FEVER—Continued

Place		January–April 1946	May 1946	June 1946—week ended— 1	8	15	22	29
Hungary	C	477	138	19				
Italy	C	6						
Netherlands	C	15						
Poland	C	2,014	419	71	22			
Portugal	C	2	1					
Rumania	C	4,766	1,286					
Spain	C	2	3					
Sweden [3]	C		1					
Turkey	C	835	137	23	9	20	31	
Yugoslavia	C	2,219						
NORTH AMERICA								
Costa Rica [3]	C	34	7		3	4		
Cuba [3]	C	4				1		
Guatemala	C	308						
Jamaica [3]	C	13	1	2				
Mexico	C	465	124					
Panama (Republic)	C	1	1					
Puerto Rico [3]	C	19	16	5	4			
Virgin Islands [3]	C	1						
SOUTH AMERICA								
Argentina	C	2						
Bolivia	C	67						
Chile	C	97						
Colombia	C	117						
Ecuador [1]	C	344	65					
Paraguay	C	1						
Peru	C	290						
Venezuela [1]	C	44	15					
OCEANIA								
Australia [3]	C	66	10					
Hawaii Territory [3]	C	17	1		1		1	

[1] Includes cases of murine type. [2] For the period June 1–10, 1946. [3] Murine type.

YELLOW FEVER

[C indicates cases; D, deaths]

AFRICA								
Nigeria:								
Ibadan	C	1						
Ogbomosho	C		[1] 25				[2] 33	6
Sierra Leone: Pujehan	C					1		
SOUTH AMERICA								
Bolivia: Santa Cruz Department	D	[3] 40						
Brazil: Para State	D	1						
Colombia:								
Caqueta Territory	D	1						
Magdalena Department	D	1						
Santander Department	D	1						
Venezuela:								
Tachira State	C	4						
Trujillo State	C	4						
Zulia State	C	4						

[1] Includes 24 cases of suspected yellow fever.
[2] For the period June 11–20, 1946.
[3] 14 of these deaths have been confirmed.

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